

## Major Activities of the Centre during July– December, 2017

1. Centre organized a 2 day National Workshop of PRCs on 11-12 September, 2017 at Goa in collaboration with MoHFW, New Delhi. Director General, Dy. Director General, Director, Statistics Division, MoHFW, New Delhi and Finance Officer, JSS, Dharwad attended the workshop. Total 32 papers were presented from 18 PRCs of the country. 4 papers were presented from the centre.

- a. Mr. Javeed A. Golandaj Neonatal morbidities and treatment seeking behavior in Rural North Karnataka
- b. Dr. Jyoti S. Hallad Rent Seeking Behaviour while getting Maternal Health Care Services in Bidar District, Karnataka
- c. Dr. Rajarama K.E.T. Childhood Morbidity, Treatment Patterns and Cost of Treatment: A Study in Hubli-Dharwad Slums, Karnataka
- d. Dr. Shriprasad H. Tobacco Use and Alcohol Consumption among College Students: A Behavioural Study in Belagavi City, Karnataka

2. Dr. Rajarama K.E.T., Asst. Director, presented a research paper on 'Child Health' in the 15th IASSH conference held at National Institute of Rural Development and Panchayat Raj, Hyderabad during 16-18 November, 2017.

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**Padma Vibhushana Dr. D. Veerendra Heggade  
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## IER JOURNAL OF HEALTH AND DEMOGRAPHY

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- RV Deshpande and S. R. Vatavati
- ❖ *Experience of Post-Partum Intra-Uterine Contraceptive Device (PPIUCD) Acceptors in Sagar District of Madhya Pradesh*  
- Nikhilesh Parchure, Kumar Raghubanshi Mani Singh<sup>2</sup>, Niklesh Kumar<sup>2</sup>, Jyoti Tiwari, Reena Basu
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## Living Arrangements and Health Seeking Behaviour of Elderly

RV Deshpande<sup>1</sup> and S. R. Vatavani<sup>2</sup>

**Abstract:** *Rapidly growing elderly population and decline in joint family system due to changing socio-economic and demographic dimensions influencing the living arrangements of elderly. Understanding their living arrangements, health status and social support system, which are considered as key indicators to assess their well being, is important. This paper focuses on these aspects based on the field study conducted in rural and urban areas in Dharwad district of Karnataka. In all, 148 households from rural and 150 households from urban areas were randomly selected and covered.*

*The analysis showed that about 6 percent of elderly stay alone and remaining stay in co-residence. Elderly staying alone is found more in urban than in rural areas. The factors such as age, living sons and education of elderly are found to influence living arrangements. Both in rural and urban areas, proportion staying alone decreases with increase in age. Sons who are considered as source old age security, positively influences living arrangements. Further, the tendency of living alone is found more among urban elderly. Study also revealed that co-residence diminishes with increase in education both in rural and urban but intensity is more in urban.*

*On preference of living arrangements, which is an indication of likely changes in future, majority of elderly prefer to stay with children and more of rural than urban elderly prefer to stay with children. Substantial proportion of elderly reported to be suffering from chronic illness and this proportion is high among those stay alone. Diabetic and hypertension are the common illnesses reported among urban elderly and joint pain and cataract was reported more among rural elderly. Awareness on social security schemes is better among rural elderly and awareness about special facilities is better among urban elderly. However, utilisation is very much limited both among rural and urban elderly. Appropriate policy to promote co-residence and measures to improve awareness and utilisation of social security schemes and facilities is suggested.*

### Background:

The decline in fertility and mortality since 1990s resulted in considerable changes in age structure of the population in India. The decline in mortality coupled with increase in life expectancy due to advancement in medical sciences has led to a marked shift in the age structure of the population—shrinking at the younger ages and bulging at the older ones. The increase in number of older ones is evident from the data that the proportion of older population (60+) in India which was 5.6 percent in 1950 increased to 7.6 percent in 2000. It is projected that it will increase to 12.5 percent in 2025 and to 20.6 percent in 2050 (UN, 2002). Such a rapid rise in the elderly population poses several challenges. Lack of guaranteed and sufficient income to support themselves, absence of social security, non-availability of opportunities for creative use of time, persistent ill health are some of the problems of the elderly. Providing a decent and comfortable life for them continues to be a major challenge. Living arrangement of elderly is one indicator to understand the well being of the elderly.

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1. Retd. Assistant Director and 2. Field Investigator, Population Research Centre, Dharwad

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Living arrangements for the elderly was not an issue until recently as they are expected to be cared by the family members/children. Changes that are taking place in the socio-economic and demographic dimensions in terms of reduction in number of children a couple has, physical separation of parents and adult children due to urbanisation and modernisation, spread of western culture and life style and growing individualism have had their impact on the traditional family system. These changes have led to serious implications for the support and care of the elderly. The implications include breakdown of joint families which has reduced physical, financial and psychological support to the elderly, shortage of caregivers during ill health etc.

Living arrangements of the elderly is an important indicator for assessing the well being of the elderly. The concept of living arrangement refers to the familial system of support and care of the elderly. The elderly expect economic, social and emotional support from family members as their economic productivity and physical strength decline with advancing age. Thus, living arrangement becomes an important constituent of the overall well being of the elderly.

Many studies have found that majority of elderly live with family/children and small proportion stay alone and with other relatives/non-relatives (Rajan, 2003; James et.al,2013). These studies have identified a number of factors such as age, sex, occupation, education, place of residence, number of children etc as the important factors influencing living arrangements. Yadava and Sharma (1996), Jaiprakash (1999). Velkoff (2001) have found that living arrangements are influenced mainly by financial wellbeing, marital status, family size and cultural traditions. Dreze (1990) finds that decision on co-residence with children (sons in particular) is based on the situations and preferences of the older as well as the younger generations. Further, currently married status reduces the probability of the elderly co-residence with children and having more children increases the chance of co-residence (Rajan, 1995a). In the survey of literature related to the living arrangements among the elderly, D'Souza (1989) observed that changes in living arrangements, family structure and mode of retirement adversely affect the old. Most of the primary surveys which have investigated the preference of the aged regarding their place of stay have found that a majority prefer to stay with their children or family members in their old age (Nandal et. al 1987). Studies attempted to understand the influence of living arrangements on health status of the elderly indicate that elderly who are living alone are likely to suffer more from chronic illnesses and acute illnesses.

The literature largely revealed that majority of elderly in India live with family/children and living arrangement is influenced by host of socio-economic, demographic, cultural and traditional factors. Literature also highlighted that living arrangement also has an impact on health status of the elderly.

Though studies on the patterns in living arrangements are not new in India, existing studies largely confined to specific areas. Studies highlighting rural-urban disparities in living arrangements and health status of elderly are limited. In this background, present study aims to focus on these with the following objectives.



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**Objectives:**

1. To understand living arrangements of elderly by place of residence
2. To study socio-economic and demographic factors influencing living arrangements
3. To understand morbidity profile of elderly by living arrangements and health seeking behaviour
4. To understand awareness and benefits availed of social security schemes and facilities by elderly

**Methodology:**

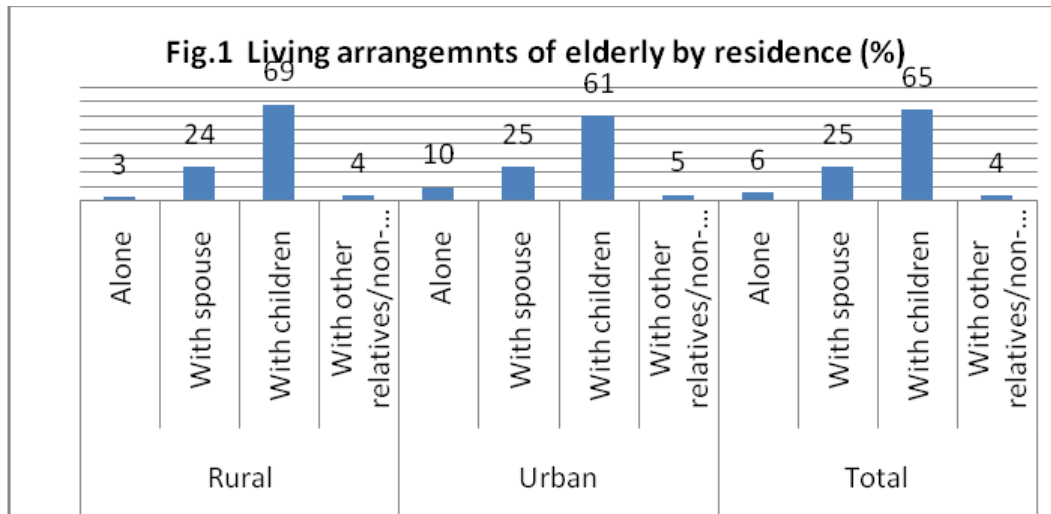
Study is conducted in Dharwad district of Karnataka state. A total of 150 households from rural and 150 households from urban areas found reasonable to provide insights into stated objectives of the study. For selection of households in rural areas, in the first stage, villages with population as per 2011 census are arranged taluka wise and from the arranged list three villages are selected randomly using PPS method. In the selected village, listing of households was done to identify households with elderly aged 60 years and above. Since, it was decided to cover 50 households of elderly from each village, to get required number households with elderly, it is required to list about 225 households taking into account of 6 percent of elderly with average household size of 4 for the district. From the house-list, 55 households with elderly are selected, taking into account of non-coverage, with systematic sampling method. If the selected household has more than one elderly, elderly whose name comes alphabetically first in the selected household is selected and interviewed. In case selected village has more than 225 households, village has been segmented and one segment was selected randomly.

For urban areas, list of urban wards in all the talukas of the district are obtained from the concerned Municipal Corporation/civic bodies and are arranged taluka wise as per population of 2011 census. From the list, three wards have been selected using PPS. If the selected ward has more than 225 households, ward has been segmented and one segment was selected randomly.

In each ward, listing and selection of households was done as per the procedure adopted for rural areas. In all, 148 elderly from rural and 150 elderly from urban areas have been covered.

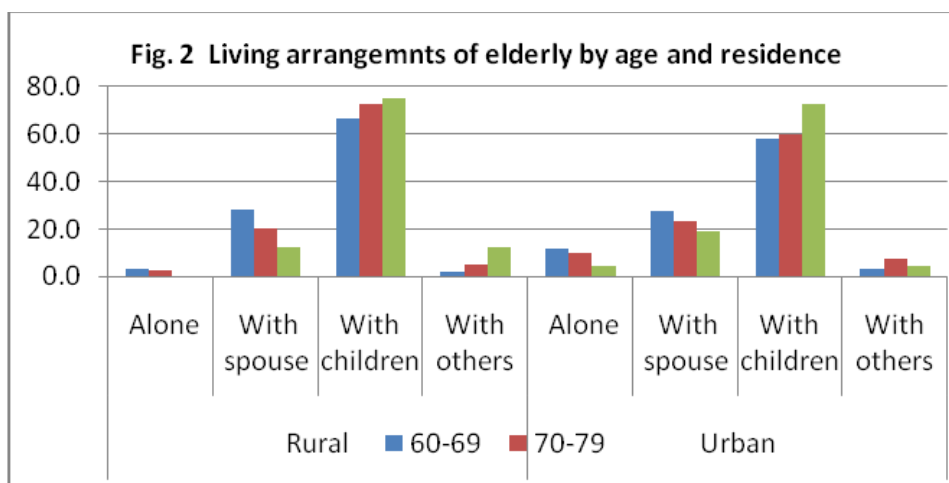
**Findings:****Demographic differentials in Living Arrangements:**

The major demographic factors considered to understand the differentials in living arrangements are age, sex, marital status, living sons and living daughters. In the survey, each elderly was asked on their current living arrangement and responses are categorised into four namely; alone, living with spouse, living with children and living with others. “Living alone” is defined to be those who didn't report any other member of the household apart from him/her self. “Living with spouse” is those reported living with spouse and unmarried children. “Living with children” is those households reported living with or without spouse but with children or with grand children.



Overall, about 6 percent of elderly stay alone, majority (65 percent) stay with children followed by with spouse (25 percent) and about 4 percent stay with other relatives or non-relatives. In other words, about 10 percent of the elderly in the study area are living in household where their immediate kinship is not present. Patterns of living arrangements in rural-urban as depicted in Fig.1 showed that elderly staying alone is found more in urban areas than in rural and traditional co-residential pattern of staying with children is found more in rural than in urban areas.

The disaggregation by age showed that (Fig. 2) proportion living alone decreases by increase in age of elderly both in rural and urban areas and proportion staying with children increases with increase in age of elderly. This may be due to declining capacity of self-care as they grow older. Further, proportion living with spouse decreases with increase in age as they get older chances of widowhood increases.



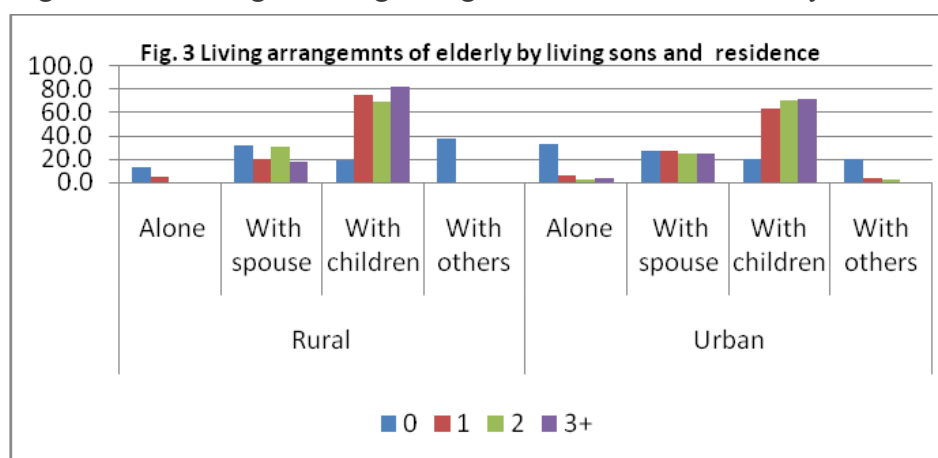
Gender of the elderly is another important demographic indicator that determines their living arrangements. The proportion of elderly women who lived alone was higher (11 percent) than that of elderly men who lived alone (1 percent) and similar observation is made by place of residence. Among those who were in co-residence, majority of females than males lived with children both in rural and urban areas may be due to higher incidence of widowhood among females.

Regarding marital status, about one in ten elderly widowed stayed alone and proportion staying alone is higher (13 percent) in urban areas than rural areas (6 percent). Majority (82 percent) of elderly widowed lived with children in both rural and urban areas and this could be true in the Indian traditional context that the widowed elderly are generally looked after by their children. The chi-square test also confirmed the existence of a significant difference in living arrangements of elderly according to their marital status. Another important demographic factor that determines the living arrangements of the elderly is the presence of living sons and daughters. In India, son is considered as the most important care provider for parents in their old age.

It is evident from the Fig. 3 that there exists a positive relationship between number of surviving sons and co-residence; proportion co-residence with children increases with increase in number of sons. Further, negative association between staying alone with number of sons and staying with relatives/non-relatives with living sons is observed. The proportion living with relatives/non-relatives decreases with increase in living sons and proportion staying alone decreases with increase in number of sons. The trend is same for both rural and urban areas. \

The number of living daughters is also equally important in determining the living arrangements of the elderly. Somewhat different scenario emerging between living arrangements and living daughters. It is interesting to note that, unlike with living sons, elderly living alone increases with increase in number of daughters. Further, elderly co-residence with children doesn't consistently increase with increase in number of daughters indicating the importance of living sons in determining the living arrangements of elderly.

From the above discussion, it is clear that the demographic variables like age, marital status and number of living sons influencing the living arrangement choices of the elderly.



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From the above discussion, it is clear that the demographic variables like age, marital status and number of living sons influencing the living arrangement choices of the elderly.

### **Socio-economic and cultural differentials in Living Arrangements:**

Socio-economic and cultural factors are also likely to influence the living arrangements. Table 1 presents data on living arrangements by select factors namely; religion/caste, education, household status, agriculture land and source of income according to type of residence. Co-residence is found almost same (about 65 percent) between Hindus and Muslims. Hindu and Muslim elderly in rural areas are more likely to stay with children than their urban counterparts. With respect to caste, slightly higher proportion of elderly belonging to upper caste groups both in rural and urban areas stay alone compared to other castes. It is also to be noted that scheduled caste and scheduled tribe elderly are less likely to stay alone and are more likely to stay with children both in rural and urban areas. However, chi-square test was found to be insignificant with the association of caste and living arrangements of elderly.

Education level of the elderly also plays an important role in determining their living arrangements. The analysis (Fig.4) showed inverse relationship between education of elderly and living arrangements and is statistically significant indicating there is a significant difference in the living arrangements of elderly based on the level of education. It is observed that with increase in their education level, the pattern of co-residence systematically diminished both in rural and urban areas but intensity is more in urban than in rural areas. For instance, elderly urban with no education are twice likely to stay with children compared to elderly urban with education 10 years and above (38 percent versus 78 percent). However, education of elderly rural don't seem to exert much influence on co-residence with children; 68 percent of elderly with 10 years and above stay with children compared to 73 percent with no education. Possession of land is an indicator that determines the economic status of the elderly. Table showed that ownership of land didn't show any influence on living arrangements and majority lived in co-residence irrespective of whether or not they possess land.

### **Preferred living arrangements:**

The preference of living arrangements provides an indication of the changes that are likely to take place in living arrangements in the future. Table 2 shows that a large majority (about 75 percent) of elderly prefer to live with children and more of rural elderly prefer to stay with children (86 percent) compared to urban elderly (72 percent). A small proportion (3 percent) of elderly prefer to stay alone and preference to stay alone is expressed more by urban elderly than rural (table not given).

When the present living arrangements are compared with the preferred living arrangements, it is found that from the table 2 that, in the majority of the cases, the preferred and current living arrangements correspond. Nearly three-fourths of elderly in rural and about four-fifths of elderly in urban who preferred to live with their children are presently doing so. Similar is the case for living with spouse where for majority of elderly preferred to live with spouse are currently doing same. However, all elderly staying alone in rural area expressed preference to stay with children.



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### **Reasons for preferred living arrangement:**

All the elderly were asked the reasons for preferred living arrangements and responses are presented in Table 3. Those who preferred to live with children, majority expressed that it is the culture and tradition of their family to live with children and also added that it enhances the respect and status in the society and an indication of an unity. This was expressed more by rural elderly compared to urban elderly. Physical needs and emotional support, economically dependent on children and continuation of good relationship with children are the other reasons reported for preferred living arrangements. No other option except to stay with child/ren because of mutual dependency is also quoted as a reason. However, privacy or independence was the reason reported by those preferred to stay alone.

### **Interaction with co-resident children:**

Interaction with children forms an important dimension contributing towards the overall happiness and well-being of the elderly. Therefore, in the survey, an attempt is made to assess the interaction in terms of communication, advice and contribution of elderly within the family and results are presented in Table 4. Majority (about 75 percent) of elderly reported that they conduct casual conversation with co-resident child/ren and one in ten elderly reported no conversation with <sup>co</sup>-resident child/ren. Majority of elderly also reported they take meals with child/ren always. Further, more than 60 percent of elderly reported that children involve them in discussions on family matters and also advice children in family matters. Survey also examined financial help of elderly to children. Nearly half of elderly expressed that they are not providing financial help to their children as they are either dependent on children or their earning is limited.

Feeling of children on their parents important in the family is an indication of happiness and satisfaction of the elderly. Nearly two-thirds (65 percent) of elderly expressed that co-resident children feel their presence important in the family.

### **Living arrangements and morbidity:**

In order to understand the association between prevalence of morbidity and living arrangements of elderly, all the elderly in the survey were asked on whether they are suffering from any illness. The responses are presented in table 5 according to living arrangements. It is found that elderly living alone reported to be suffering more (74 percent) from chronic illnesses followed by elderly staying with children (71 percent) and spouse (59 percent). Diabetic and hypertension are reported more by those living alone compared to other type of living arrangements.

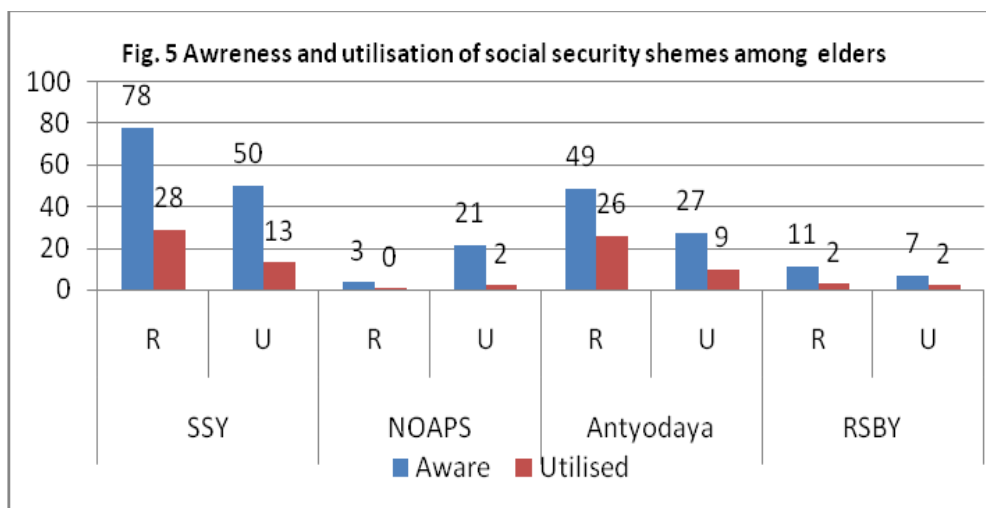
### **Treatments seeking behaviour:**

Elderly reported suffering from illness were asked whether sought treatment for the illness. The responses presented in table 6 showed that majority had availed treatment. However, one in five elderly staying alone had not sought treatment and this proportion is higher among rural than urban elderly. Further, among those sought treatment, majority were availed treatment in private hospital irrespective

of their living arrangements. On person who had spent for illness, it is self followed by spouse and children who mainly spent for illness.

**Social security schemes:**

In order to understand the extent of awareness and utilisation of social security schemes, all interviewed elderly were asked on schemes namely; Sandhya Suraksha Scheme, Anthyodaya/Annapurna scheme and health insurance scheme namely Rastriya Swasthya Bhima Yojana. The Sandhya Suraksha scheme is state sponsored programme aimed to provide income security to the elderly belonging to BPL by providing monthly pension of Rs.500. Annapurna/Anthyodaya scheme aimed to provide food security to the elderly by providing additional quantity of food grains free of cost to the elderly belonging to BPL. In addition to income security and food security schemes, the RSBY is aimed to provide health security to the elderly which guaranteed free health checkups and treatment to the elderly in the government hospitals. In addition, questions were asked regarding the awareness and utilisation of special government facilities for the elderly. Awareness and utilisation of various schemes and facilities are presented in tables 7 and 8.



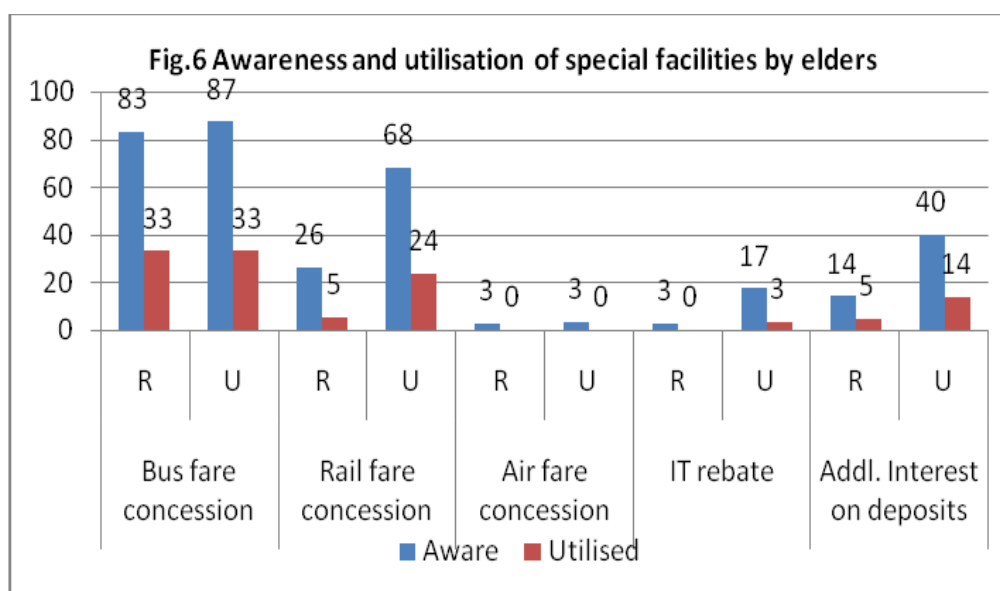
**Awareness and utilisation of social security schemes and special facilities:**

i. **Awareness:** It is seen from the tables and figure 5 that awareness about Sandhya Suraksha Scheme is more among rural elderly compared to urban elderly. Around three-fourths of the rural elderly and about half of the urban elderly are aware of sandhya suraksha scheme.

However, awareness about Anthyodaya/Annapurna scheme is less; only half of the rural elderly are aware of this scheme and this proportion is still less among urban elderly. Awareness of social security scheme didn't differ much among type of living arrangements. The awareness about RSBY is limited.

Only one in ten elderly are aware of this and urban elderly are less known about RSBY compared to rural elderly. Regarding awareness of various facilities among elderly, awareness about bus fare concession being given is higher; more than 80 percent of elderly reported aware of this facility followed by rail fare concession. Air fare concession was least known (only 3 percent). The awareness of other facilities such as income tax rebate is known to only 10 percent of elderly and expectedly more of urban elderly are aware of this facility. Further, awareness on additional interest rates for bank deposits is limited to only 27 percent of elderly.

Above analysis showed that awareness on social security schemes is better among rural elderly and awareness about facilities is better among urban elderly. Further, awareness of these facilities didn't differ much between different living arrangement patterns.



**ii. Utilisation:** With respect to utilisation of schemes and facilities, the data presented in table 8 and figure 6 reveals that though awareness levels are quite high, utilisation of these schemes and facilities is very limited. A little more than one fourth (28 percent) of rural elderly and one-in ten urban elderly utilised Sandhya Suraksha Scheme. Anthyodaya scheme, aiming to provide food security to the elderly, was also utilised by about same proportion of elderly. The utilisation of Rastriya Swasthya Bhima Yojana (RSBY) was negligible as about 2 percent of rural and urban elderly benefited out of this scheme. The data further showed that benefit of the schemes were more availed by elderly living with spouse or with children than living alone. Elderly living alone in urban area are least utilised by the sandhya suraksha scheme. With respect to facilities, one-third of elderly both in rural and urban areas

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are availed bus fare concession facility and more of urban than rural elderly availed benefit of rail fare concession. None of the rural and urban elderly utilised air fare concession facility and income tax rebate are utilised by negligible proportion of urban elderly. However, about 5 percent of rural and 14 percent of urban elderly benefited the facility of higher interest rate on bank deposits. The analysis showed that more of urban elderly than rural elderly are utilised these facilities.

### **Summary**

The changes taking place in socio-economic and demographic dimensions may influence the well being of elderly differently in rural and urban areas. Understanding the living arrangements of elderly, their health status and social support system, which are said to be indicators to assess the well being of elderly, assumes important. About 6 percent of elderly stay alone and others stay in co-residence and staying alone is found more in urban than in rural areas. Demographic and social factors such as age of the elderly, living sons and education of elderly are found to influence living arrangements. Both in rural and urban areas, proportion staying alone decreases with increase in age and proportion staying with children increase with increase in age. The son, which is strongly considered as source old age security, influences living arrangements; co-residence increases with increase in number of sons. Both in rural and urban areas, chances of elderly staying alone are found among those with no living son. Significant differences are found based on education of elderly; co-residence diminishes systematically with increase in education both in rural and urban areas.

On preference of living arrangements, which is an indication of likely changes in future, majority of elderly prefer to stay with children and more of rural than urban elderly prefer to stay with children. The comparison of present and future living arrangements showed that majority preferred to stay with children are currently doing same. Physical needs, emotional support, culture/tradition and is a sign of family unity are reasons for quoted for preferring co-residence.

Substantial proportion of elderly reported to be suffering from illness of more than one year and this proportion is high among those stay alone. Diabetic and hypertension are the common illnesses reported among urban elderly and joint pain and cataract was reported more by rural elderly. Awareness on social security schemes is better among rural elderly and awareness about facilities is better among urban elderly. However, utilisation of schemes and facilities among elderly is very much limited both in rural and urban areas.

### **Recommendation:**

1. Many elderly preferred to live in co-residence because of physical, emotional, and traditional values. Hence, more attention is needed to promote co-residence through appropriate policies.



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2. Morbidity among elderly need to be addressed adequately by opening geriatric care services in all the public health services which helps to ensure health needs of the elderly.

3. Awareness and utilisation of social security schemes and facilities needs to be improved.

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Table 1 Percent distribution of Living Arrangements of Elderly according to place of residence by Soci o-economic characteristics

| Characteristics         | Rural      |             |               |                                     | Urban       |             |               |                                     | Total      |             |               |                                     |
|-------------------------|------------|-------------|---------------|-------------------------------------|-------------|-------------|---------------|-------------------------------------|------------|-------------|---------------|-------------------------------------|
|                         | Alone      | With spouse | With children | With other relatives /non-relatives | Alone       | With spouse | With children | With other relatives/ non-relatives | Alone      | With spouse | With children | With other relatives/ non-relatives |
| <b>Religion</b>         |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| Hindu                   | 3.0        | 25.6        | 67.7          | 3.8                                 | 11.3        | 21.7        | 61.7          | 5.2                                 | 6.9        | 23.8        | 64.9          | 4.4                                 |
| Muslim                  | 0.0        | 0.0         | 87.5          | 12.5                                | 6.7         | 33.3        | 60.0          | 0.0                                 | 5.3        | 26.3        | 65.8          | 2.6                                 |
| Other                   | 0.0        | 28.6        | 71.4          | 0.0                                 | 0.0         | 40.0        | 40.0          | 20.0                                | 0.0        | 33.3        | 58.3          | 8.3                                 |
| <b>Caste</b>            |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| SC                      | 0.0        | 0.0         | 100.0         | 0.0                                 | 0.0         | 0.0         | 0.0           | 0.0                                 | 0.0        | 0.0         | 100.0         | 0.0                                 |
| ST                      | 0.0        | 25.0        | 75.0          | 0.0                                 | 0.0         | 0.0         | 100.0         | 0.0                                 | 0.0        | 20.0        | 80.0          | 0.0                                 |
| OBC                     | 2.8        | 25.0        | 66.7          | 5.6                                 | 5.0         | 30.0        | 62.5          | 2.5                                 | 3.9        | 27.6        | 64.5          | 3.9                                 |
| Other                   | 3.5        | 27.9        | 64.0          | 4.7                                 | 12.1        | 23.4        | 58.9          | 5.6                                 | 8.3        | 25.4        | 61.1          | 5.2                                 |
| <b>Education*</b>       |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| Illiterate              | 2.3        | 18.6        | 73.3          | 5.8                                 | 12.5        | 10.0        | 77.5          | 0.0                                 | 5.6        | 15.9        | 74.6          | 4.0                                 |
| 1-9                     | 4.3        | 31.9        | 61.7          | 2.1                                 | 10.0        | 20.0        | 68.3          | 1.7                                 | 7.5        | 25.2        | 65.4          | 1.9                                 |
| 10+                     | 0.0        | 33.3        | 66.7          | 0.0                                 | 8.0         | 42.0        | 38.0          | 12.0                                | 6.2        | 40.0        | 44.6          | 9.2                                 |
| <b>HH status</b>        |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| BPL                     | 2.7        | 24.3        | 70.3          | 2.7                                 | 9.7         | 29.0        | 59.7          | 1.6                                 | 5.2        | 26.0        | 66.5          | 2.3                                 |
| APL                     | 0.0        | 30.8        | 69.2          | 0.0                                 | 6.3         | 25.0        | 62.5          | 6.3                                 | 4.4        | 26.7        | 64.4          | 4.4                                 |
| No card                 | 4.2        | 20.8        | 62.5          | 12.5                                | 12.5        | 19.6        | 60.7          | 7.1                                 | 10.0       | 20.0        | 61.3          | 8.8                                 |
| <b>Agri land</b>        |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| Landless                | 4.3        | 19.6        | 71.7          | 4.3                                 | 11.2        | 26.4        | 58.4          | 4.0                                 | 9.4        | 24.6        | 62.0          | 4.1                                 |
| 1-4 acres               | 1.5        | 25.4        | 70.1          | 3.0                                 | 0.0         | 20.0        | 73.3          | 6.7                                 | 1.2        | 24.4        | 70.7          | 3.7                                 |
| 5-9 acres               | 5.3        | 26.3        | 63.2          | 5.3                                 | 0.0         | 50.0        | 50.0          | 0.0                                 | 4.8        | 28.6        | 61.9          | 4.8                                 |
| 10+ acres               | 0.0        | 26.7        | 66.7          | 6.7                                 | 12.5        | 0.0         | 75.0          | 12.5                                | 4.3        | 17.4        | 69.6          | 8.7                                 |
| <b>Source of income</b> |            |             |               |                                     |             |             |               |                                     |            |             |               |                                     |
| Cultivation             | 1.6        | 25.0        | 68.8          | 4.7                                 | 0.0         | 0.0         | 83.3          | 16.7                                | 1.4        | 22.9        | 70.0          | 5.7                                 |
| Agri/non agri coolie    | 0.0        | 17.6        | 78.4          | 3.9                                 | 3.1         | 25.0        | 71.9          | 0.0                                 | 1.2        | 20.5        | 75.9          | 2.4                                 |
| Business                | 0.0        | 12.5        | 87.5          | 0.0                                 | 0.0         | 20.7        | 79.3          | 0.0                                 | 0.0        | 18.9        | 81.1          | 0.0                                 |
| Salary                  | 0.0        | 66.7        | 33.3          | 0.0                                 | 3.7         | 33.3        | 63.0          | 0.0                                 | 3.0        | 39.4        | 57.6          | 0.0                                 |
| Pension                 | 8.3        | 33.3        | 50.0          | 8.3                                 | 23.5        | 20.6        | 38.2          | 17.6                                | 19.6       | 23.9        | 41.3          | 15.2                                |
| Other                   | 28.6       | 28.6        | 42.9          | 0.0                                 | 22.7        | 31.8        | 45.5          | 0.0                                 | 24.1       | 31.0        | 44.8          | 0.0                                 |
| <b>N</b>                | <b>4</b>   | <b>35</b>   | <b>102</b>    | <b>6</b>                            | <b>4</b>    | <b>35</b>   | <b>102</b>    | <b>6</b>                            | <b>19</b>  | <b>72</b>   | <b>193</b>    | <b>13</b>                           |
| <b>Percentage</b>       | <b>2.7</b> | <b>24.3</b> | <b>68.9</b>   | <b>4.1</b>                          | <b>10.0</b> | <b>24.7</b> | <b>60.7</b>   | <b>4.7</b>                          | <b>6.4</b> | <b>24.5</b> | <b>64.8</b>   | <b>4.4</b>                          |

Table 2 Percent distribution of current living arrangements of elderly by preferred living arrangements according to place of residence

| Current living arrangement    | Preferred living arrangement |             |               |                              |       |             |               |                              |
|-------------------------------|------------------------------|-------------|---------------|------------------------------|-------|-------------|---------------|------------------------------|
|                               | Rural                        |             |               |                              | Urban |             |               |                              |
|                               | Alone                        | With spouse | With children | With relatives/non-relatives | Alone | With spouse | With children | With relatives/non-relatives |
| Alone                         | 0.0                          | 0.0         | 100.0         | 0.0                          | 100.0 | 0.0         | 0.0           | 0.0                          |
| With spouse                   | 0.0                          | 71.4        | 28.6          | 0.0                          | 3.6   | 71.4        | 17.9          | 7.1                          |
| With children                 | 3.2                          | 22.2        | 73.8          | 0.8                          | 2.9   | 15.2        | 81.9          | 0.0                          |
| With relatives /non-relatives | 0.0                          | 27.3        | 27.3          | 45.5                         | 50.0  | 8.3         | 0.0           | 41.7                         |
| Total                         | 2.7                          | 24.3        | 68.9          | 4.1                          | 10.0  | 24.7        | 60.7          | 4.7                          |

Table 3 Preferred living arrangements by reasons

| Reasons                            | Place | Alone | With spouse | With children | With relatives/non-children |
|------------------------------------|-------|-------|-------------|---------------|-----------------------------|
| Physical needs & emotional support | Rural | 0.0   | 0.0         | 17.5          | 30.0                        |
|                                    | Urban | 0.0   | 0.0         | 32.4          | 30.0                        |
| Privacy or independence            | Rural | 75.0  | 0.0         | 0.0           | 0.0                         |
|                                    | Urban | 20.0  | 86.7        | 0.0           | 0.0                         |
| Family Cultural/tradition          | Rural | 0.0   | 0.0         | 42.1          | 0.0                         |
|                                    | Urban | 0.0   | 0.0         | 29.5          | 0.0                         |
| Economically dependent             | Rural | 0.0   | 0.0         | 26.2          | 0.0                         |
|                                    | Urban | 0.0   | 0.0         | 19.0          | 20.0                        |
| Don't want to be burden            | Rural | 0.0   | 0.0         | 0.0           | 0.0                         |
|                                    | Urban | 0.0   | 0.0         | 0.0           | 0.0                         |
| To maintain good relationship      | Rural | 0.0   | 0.0         | 0.0           | 30.0                        |
|                                    | Urban | 0.0   | 0.0         | 14.3          | 20.0                        |
| No other option                    | Rural | 0.0   | 71.4        | 11.1          | 20.0                        |
|                                    | Urban | 20.0  | 0.0         | 2.9           | 20.0                        |
| Other                              | Rural | 25.0  | 28.6        | 3.2           | 20.0                        |
|                                    | Urban | 60.0  | 6.7         | 1.9           | 10.0                        |

Table 4 Interaction of elderly with Co-resident children

| Type of interaction                            | Rural  |            |            | Urban  |            |            | Total  |            |            |
|--|--------|------------|------------|--------|------------|------------|--------|------------|------------|
|  | Always | Some times | Not at all | Always | Some times | Not at all | Always | Some times | Not at all |
| Conduct casual conversation with children      | 74.5   | 18.4       | 8.2        | 75.0   | 15.5       | 13.1       | 72.5   | 16.6       | 9.8        |
| Have meals with children?                      | 55.1   | 24.5       | 22.4       | 71.4   | 27.4       | 6.0        | 60.6   | 25.4       | 14.0       |
| Involve in family decisions?                   | 63.3   | 21.4       | 17.3       | 67.9   | 19.0       | 15.5       | 63.2   | 20.2       | 15.5       |
| Advice children in family matters?             | 58.2   | 26.5       | 17.3       | 64.3   | 25.0       | 14.3       | 59.1   | 24.9       | 15.5       |
| Accompany children in family outings?          | 25.5   | 28.6       | 48.0       | 28.6   | 36.9       | 38.1       | 26.4   | 32.1       | 40.9       |
| Provide financial help to children?            | 41.9   | 11.1       | 47.0       | 33.3   | 14.3       | 52.4       | 37.3   | 12.4       | 50.2       |
| Whether children feel you important in family? | 61.2   | 31.6       | 9.2        | 72.6   | 26.2       | 4.8        | 64.2   | 28.5       | 6.7        |

**Table 5 Percent distribution of elderly reported suffering from chronic illness according to type of living arrangements**

| Experiencing any Chronic disease | Total     |             |               |             |
|----------------------------------|-----------|-------------|---------------|-------------|
|                                  | Alone     | With spouse | With children | With others |
| <b>Yes</b>                       | 73.7      | 58.9        | 70.9          | 61.5        |
| <b>No</b>                        | 26.3      | 41.1        | 29.1          | 38.5        |
| <b>N</b>                         | <b>19</b> | <b>73</b>   | <b>192</b>    | <b>13</b>   |



| Type of disease        | Alone     | With spouse | With children | With others |
|------------------------|-----------|-------------|---------------|-------------|
| Diabetic               | 28.6      | 25.6        | 30.9          | 0.0         |
| BP                     | 64.3      | 32.6        | 44.9          | 37.5        |
| Cardiovascular disease | 7.1       | 16.3        | 10.3          | 0.0         |
| Cancer                 | 0.0       | 0.0         | 0.7           | 0.0         |
| Joint/leg pain         | 28.6      | 37.2        | 41.2          | 25.0        |
| TB/leprosy             | 7.1       | 0.0         | 0.7           | 0.0         |
| Thyroid                | 0.0       | 0.0         | 0.0           | 0.0         |
| Asthma                 | 7.1       | 11.6        | 7.4           | 0.0         |
| Cataract               | 14.3      | 7.0         | 13.2          | 50.0        |
| Skin disease           | 0.0       | 2.3         | 1.5           | 0.0         |
| Paralysis              | 0.0       | 2.3         | 4.4           | 0.0         |
| Other                  | 28.6      | 14.0        | 12.5          | 37.5        |
| <b>N</b>               | <b>14</b> | <b>43</b>   | <b>136</b>    | <b>8</b>    |

**Table 6 Percent elderly sought treatment, place of treatment and person spent for illness according to type of living arrangement**

| Sought treatment                         | Total     |             |               |                              |
|--|-----------|-------------|---------------|------------------------------|
|  | Alone     | With spouse | With children | With relatives/non-relatives |
| Yes                                      | 92.8      | 95.3        | 97.8          | 100.0                        |
| <b>Health facility visited</b>           |           |             |               |                              |
| Government                               | 15.4      | 9.5         | 9.8           | 12.5                         |
| Private                                  | 76.9      | 85.7        | 89.5          | 87.5                         |
| Other                                    | 7.6       | 4.7         | 0.7           | 0                            |
| <b>Person mainly spent for treatment</b> |           |             |               |                              |
| Self                                     | 50.0      | 51.1        | 38.0          | 33.3                         |
| Spouse                                   | 7.1       | 14.9        | 8.0           | 0.0                          |
| Son                                      | 14.3      | 29.8        | 43.3          | 11.1                         |
| Daughter                                 | 0.0       | 2.1         | 4.7           | 11.1                         |
| son/d-in-law                             | 0.0       | 0.0         | 2.0           | 0.0                          |
| Relatives                                | 21.4      | 0.0         | 0.0           | 11.1                         |
| Other                                    | 7.1       | 2.1         | 4.0           | 33.3                         |
| <b>N</b>                                 | <b>14</b> | <b>43</b>   | <b>136</b>    | <b>8</b>                     |

**Table 7 Percent distribution of elders by their awareness of social security schemes and facilities**

| Social security Schemes                               | Rural    |             |               |             | Rural total | Urban     |             |               |             | Urban total |
|---|----------|-------------|---------------|-------------|-------------|-----------|-------------|---------------|-------------|-------------|
|   | Alone    | With spouse | With children | With others |             | Alone     | With spouse | With children | With others |             |
| Sandy Suresh scheme                                   | 75.0     | 77.8        | 77.5          | 83.3        | 77.7        | 46.7      | 45.9        | 48.9          | 100.0       | 50.0        |
| National Old age pension scheme                       | 0.0      | 2.8         | 3.9           | 0.0         | 3.4         | 13.3      | 21.6        | 22.2          | 28.6        | 21.3        |
| Anthodia/Ann apurna scheme                            | 50.0     | 50.0        | 48.0          | 0.0         | 48.6        | 46.7      | 24.3        | 24.4          | 28.6        | 27.3        |
| Astray Swarthy Baima yeoman                           | 0.0      | 16.7        | 9.8           | 0.0         | 10.8        | 13.3      | 21.6        | 13.3          | 57.1        | 6.7         |
| <b>Facilities</b>                                     |          |             |               |             |             |           |             |               |             |             |
| Bus fare concession                                   | 50.0     | 94.4        | 82.4          | 50.0        | 83.1        | 86.7      | 89.2        | 85.6          | 100.0       | 87.3        |
| Rail fare concession                                  | 50.0     | 30.6        | 25.5          | 0.0         | 26.4        | 73.3      | 75.7        | 63.3          | 71.4        | 68.0        |
| Air fare concession                                   | 0.0      | 5.6         | 2.0           | 0.0         | 2.7         | 6.7       | 2.7         | 2.2           | 14.3        | 3.4         |
| Income tax rebate                                     | 0.0      | 8.3         | 2.0           | 0.0         | 3.4         | 13.3      | 21.6        | 13.3          | 57.1        | 17.4        |
| Additional interest rates on FDs in bank/post offices | 0.0      | 22.2        | 12.7          | 0.0         | 14.2        | 13.3      | 21.6        | 13.3          | 57.1        | 40.0        |
| <b>Total</b>  | <b>4</b> | <b>36</b>   | <b>102</b>    | <b>6</b>    | <b>148</b>  | <b>15</b> | <b>37</b>   | <b>90</b>     | <b>7</b>    | <b>150</b>  |

**Table 8 Percent distribution of elders by utilization of social security schemes and facilities**

| Social security Schemes                               | Rural    |             |               |             | Rural total | Urban     |             |               |             | Urban Total |
|---|----------|-------------|---------------|-------------|-------------|-----------|-------------|---------------|-------------|-------------|
|   | Alone    | With spouse | With children | With others |             | Alone     | With spouse | With children | With others |             |
| Sandy Suresh scheme                                   | 33.3     | 51.7        | 48.2          | 80.0        | 52.2        | 14.3      | 47.1        | 43.2          | 28.6        | 40.0        |
| National Old age pension scheme                       | 0.0      | 33.3        | 0.0           | 0.0         | 16.6        | 0.0       | 12.5        | 15.0          | 0.0         | 12.5        |
| Anthyoday/annapurna scheme                            | 50.0     | 78.9        | 72.0          | 100.0       | 75.0        | 57.1      | 55.6        | 52.2          | 0.0         | 52.3        |
| Rastriya Swasthya Bhima yojana                        | 0.0      | 50.0        | 20.0          | 0.0         | 31.3        | 0.0       | 40.0        | 100.0         | 0.0         | 40.0        |
| <b>Facilities</b>                                     |          |             |               |             |             |           |             |               |             |             |
| Bus fare concession                                   | 50.0     | 45.5        | 60.2          | 66.7        | 56.9        | 69.2      | 66.7        | 53.8          | 42.9        | 58.3        |
| Rail fare concession                                  | 50.0     | 33.3        | 22.2          | 0.0         | 28.2        | 45.5      | 71.4        | 45.6          | 60.0        | 53.9        |
| Air fare concession                                   | 0.0      | 0.0         | 0.0           | 0.0         | 0.0         | 0.0       | 0.0         | 0.0           | 0.0         | 0.0         |
| Income tax rebate                                     | 0.0      | 0.0         | 0.0           | 0.0         | 0.0         | 0.0       | 0.0         | 37.5          | 33.3        | 30.8        |
| Additional interest rates on FDs in bank/post offices | 0.0      | 44.4        | 46.2          | 0.0         | 47.6        | 13.3      | 21.6        | 13.3          | 57.1        | 53.3        |
| <b>Total</b>  | <b>4</b> | <b>36</b>   | <b>102</b>    | <b>6</b>    | <b>148</b>  | <b>15</b> | <b>37</b>   | <b>90</b>     | <b>7</b>    | <b>150</b>  |

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## Experience of Post-Partum Intra-Uterine Contraceptive Device (PPIUCD) Acceptors in Sagar District of Madhya Pradesh

Nikhilesh Parchure<sup>1</sup>, Kumar Raghubansh Mani Singh<sup>2</sup>, Niklesh Kumar<sup>3</sup>, Jyoti Tiwari<sup>4</sup>, Reena Basu<sup>5</sup>

**Abstract:** Increasing numbers of institutional deliveries has provided a new thrust to popularize post-partum intra uterine contraceptive device (PPIUCD) in India. Majority health facilities at district and sub-district level are now offering PPIUCD services. Follow-up data on user experience and post-insertion outcomes of PPIUCD is less studied area in Madhya Pradesh state of India.

Study objectives were to understand acceptors' satisfaction with PPIUCD; importance of counseling within the perspective of overall decision making process for PPIUCD and the post-insertion outcomes. A qualitative in-depth study was done to assess the PPIUCD users' perspective in Sagar district of Madhya Pradesh in India.

A semi-structured in-depth interview schedule was administered to 63 randomly selected PPIUCD acceptors from three municipal wards of Sagar city and four villages in Sagar district, after getting standardized oral consent in local language.

Among sampled women 44 percent were currently using PPIUCD. One-fifths acceptors have got sterilization operation done after removal of PPIUCD. Two-thirds of acceptors (40 out of 63) expressed dissatisfaction with the pre-insertion counseling, casual information given to them, that too after PPIUCD insertion and about PPIUCD insertion procedure.

Study revealed that 26 acceptors regretted their decision to go for PPIUCD insertion. Two-thirds of acceptors were not advised for any follow-up visit after PPIUCD insertion. High rate of removal (35 out of 63 acceptors) indicate lacunas in providing effective counseling and PPIUCD services. Study highlights hesitation of health staffs in building rapport and explaining all aspects of PPIUCD insertion to users.

### 1. Introduction

In 1952, India launched the world's first national program emphasizing family planning to the extent necessary for reducing birth rate "to stabilize the population at a level consistent with the requirement of national economy" (NCP, 2000). Since then, the family planning program has evolved and the program is currently being repositioned not only to achieve population stabilization but also to promote reproductive health and reduce maternal, infant and child mortality and morbidity. Family planning can avert nearly one-third of maternal deaths and 10 percent of child mortality when couples space their pregnancies more than two years apart (Cleland et al, 2006). Short intervals between births are linked with higher maternal and child mortality and morbidity (Grundy, 2005). Postpartum family planning (PPFP) is the prevention of unintended and closely spaced pregnancies through the first twelve months following childbirth. Couples need a range of effective contraceptive methods to be able to prevent an unplanned pregnancy, within a short interval specially in post partum period.

Among the options available, the multi-year cost of the Copper T380A IUD makes it one of the most cost-effective contraceptive options available. The Copper T 380A intra-uterine contraceptive device (IUCD) is a highly effective, non-hormonal method that can be safely used by all women regardless of breastfeeding status during this interval. According to the World Health Organization Medical Eligibility Criteria, an IUCD can be inserted in 48 hours postpartum, referred to here as a postpartum IUCD (PPIUCD), or after four weeks following a birth (WHO, 2015). A 2010 Cochrane

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<sup>1</sup>Research Investigator, <sup>2</sup>Field Investigator, <sup>3</sup>Assistant Director – Population Research Centre, Dr. H. S. Gour Central University, Sagar (M.P.); Correspondence: [parchuren@rediffmail.com](mailto:parchuren@rediffmail.com)



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review concluded that PPIUCDs were a safe and effective contraceptive method. From health point of view, benefits from PPIUCDs stemmed from the women's increased accessibility to PPIUCDs following facility births, as PPIUCDs could be offered at health facilities after childbirth. This, in turn, decreased opportunity and other costs incurred by clients who may otherwise have to return to facilities to access contraceptive services (Grimes, 2010).

In India, the 2005–2006 National Family Health Survey (NFHS 3) reported that 61% of births were spaced less than three years and that 22% of married women had an unmet need for family planning. NFHS-3 reported very high unmet need (40 percent) for spacing within first three months post-partum in India (IIPS, 2007).

A subsequent stratified analysis suggested that 65% of women in the first year of postpartum had an unmet need for family planning. IUCDs are used by only two percent of current users of contraception in India (Borda, 2009). Recognizing the potential impact of improved family planning programme on maternal and child health, the Government of India has committed for expanding access to family planning as part of achieving Millennium Development Goals 4 and 5, related to reduction of child and maternal mortality. In 2005, the Government of India launched the Janani Sukraksha Yojana (JSY) under the National Rural Health Mission (NRHM) program, a conditional cash transfer scheme, to encourage the use of facilities for care at birth. Since the inception of JSY, facility-based births in the public sector health facilities have increased from 700,000 in 2005 to more than 18 million in March, 2015 (HMIS, MoHFW, GoI).

With increasing numbers of women electing to give birth in health institutions, the Government of India decided to strengthen post-partum family planning and to introduce PPIUCD services in a phased manner, with the first batch of clinician trainings, in 2009. A national training centre was established at Safdarjung Hospital in New Delhi, as well as three regional training centres in Mumbai, Jabalpur, and Lucknow in 2009–2010. The provision of PPIUCDs is being rapidly scaled up in India. By the year 2013, health facilities in 19 states were offering this method including state of Madhya Pradesh.

PPIUCD is rapidly emerging as a new contraception choice in India. Between 2010-2014, Madhya Pradesh was the leading state with more than 60000 PPIUCD insertions. During this period total 2.5 lakh PPIUCD insertions were done in India (Sood, 2015).

Follow-up data on complications with PPIUCD insertions shows that available from international sources, given the scale at which PPIUCD services are being introduced in India, it was important to generate country-based evidence on the post-insertion outcomes after the introduction of PPIUCD program. Additionally, information related to the demographic profile of women who accept PPIUCDs, the dynamics of their decision making process, their satisfaction with this method of contraception, and complications with the IUCD have not been much studied in Madhya Pradesh. Therefore, qualitative in-depth study was necessary to assess the PPIUCD users' perspective in Madhya Pradesh.

Specific aims were to determine the demographic characteristics, knowledge, awareness and decision-making among women who accepted PPIUCDs, their perception and satisfaction with PPIUCDs, and complications that occurred after insertion of PPIUCDs. Specifically this study addressed the issues of acceptors' satisfaction with PPIUCD as a family planning method; importance of counseling services within the perspective of overall decision making process of the acceptor and her family for acceptance of postpartum family planning method; and the post-insertion outcomes.

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## 2. Objectives

The objectives of the study were to assess the level of PPIUCD services vis-à-vis acceptors satisfaction level from PPIUCD. Specifically,

1. To study PPIUCD acceptors' knowledge and awareness about PPIUCD vis-à-vis other family planning methods and their utilization pattern.
2. To assess acceptors' perception and satisfaction on pre and post PPIUCD services.
3. To analyze duration of PPIUCD retention among acceptors.
4. To assess the challenges and bottlenecks in implementation of PPIUCD services.

## 3. Study Design and Sample

Study was conducted in Sagar district of Madhya Pradesh. Both primary and secondary data was used for the study. The study used both qualitative and quantitative methods to assess the quality of PPIUCD services.

To understand the perspective on PPIUCD services, a semi-structured schedule was administered to PPIUCD acceptors who had been inserted PPIUCD at public health facilities. Acceptors from urban areas i.e. randomly selected municipal wards of Sagar city and from rural areas i.e. randomly selected villages in Sagar district were interviewed. The acceptors were selected randomly from the list of PPIUCD acceptors available with ASHA or Anganwadi worker in the selected villages and municipal wards of Sagar city. In all 64 PPIUCD acceptors were interviewed in-depth. All married women in the selected area who received PPIUCD services were identified and contacted at their home. Women were enrolled in the study after getting standardized oral consent in the local language.

The semi-structured interview schedule consisted of information on socio-demographic background, knowledge, awareness, utilization, experience of complication and satisfaction from PPIUCD insertion services at government health facility. It also collected information about the clients' overall satisfaction with the method, problems or complications related to the method, and retention of the PPIUCD.

Apart from this, discussion with various stakeholders such as Civil Surgeon, CMHO, Gynaecologist in the District Hospital Sagar, DPM, ASHA and Anganwadi Workers were held to understand the implementation and programmatic issues related to PPIUCD.

## 4. Results and Discussion

### 4.1 PPIUCD Acceptors' Profile

An assessment of PPIUCD services through the perspective of PPIUCD acceptors was done in Sagar district. In all 64 PPIUCD acceptors were interviewed in-depth to understand knowledge and awareness, prior use of family planning, decision making process for PPIUCD acceptance and quality of PPIUCD services received by them.

**Background Characteristics:** Background characteristics of the interviewed acceptors' household are given in Table 1. Out of total acceptors, 54.7 percent are residing in rural areas and residing in a sub-health centre village. Majority acceptors live in a joint family and are Hindus. Two-thirds of them belong to other backward caste group and 30 percent households belong to scheduled caste category. Nearly half have informed that they belong to below poverty line category. Socio-demographic profile (Table 2) of PPIUCD acceptors show that their average age was 24.3 years and average age at marriage was 19.0 years. About half (54.7 percent) of acceptors were in the age group of 20-24 years and one third in the age group of 25-29 year.

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Three-fourths of all the acceptors were married between 18-25 years of age. One-fifth of the acceptors were married before attaining age of 18 years. More than half (58 percent) of the acceptors have studied between 8<sup>th</sup> and 10<sup>th</sup> standard. Nearly one in every 10 acceptors was illiterate. More than two-thirds of acceptors were housewives and one-fifth were labourers. Mean age of the acceptors' husband was 27.9 years and their average age at marriage was 21.9 years. Nearly one-fourth of acceptors' husband had studied beyond 10<sup>th</sup> standard. Majority of the acceptors' husband had been working as labourer and one-fifth of husbands had occupation such as vegetable selling, mechanic etc (Table 2).

**Fertility Profile of Acceptors:** On an average each acceptors had 2 children ever born to them; rural acceptors had 2.1 and urban had 1.8 children ever born to them. It is noted that acceptors living in nuclear family had 2.3 children ever born while those living in joint family had only 1.8 children ever born to them. Number of children ever born to the acceptors who belonged to scheduled caste family were 2.6, while it was 1.7 children to those belonging to other backward caste.

The youngest child of fifty-three percent of acceptors was male. Two-fifths of acceptors responded that age of their youngest child was less than 6 months. On desire for more children in future, half of the acceptors want to have more children in future but want to wait for 2-5 years for the next child.

PPIUCD acceptors were asked about the ideal family size they perceive to understand the family size norms prevailing in the community of PPIUCD acceptors. It is revealed that 68 percent of PPIUCD acceptors perceive that ideally a family should consist of two children - a boy and a girl. Another one-fourth of the acceptors also perceive ideal family size of two children irrespective of whether it is boys or girls.

#### **4.2 Awareness and Current Use of Family Planning**

Awareness and knowledge of family planning methods is primarily important to motivate any couple to use one or the other family planning methods. The choice of PPIUCD acceptors is also reflected from the knowledge and awareness about various family planning methods among them. Nearly all the acceptors except six acceptors knew about at least one family planning method. Table 3 shows the percentage distribution of family planning methods known to PPIUCD acceptors and proportion of PPIUCD acceptors having knowledge of different family planning methods.

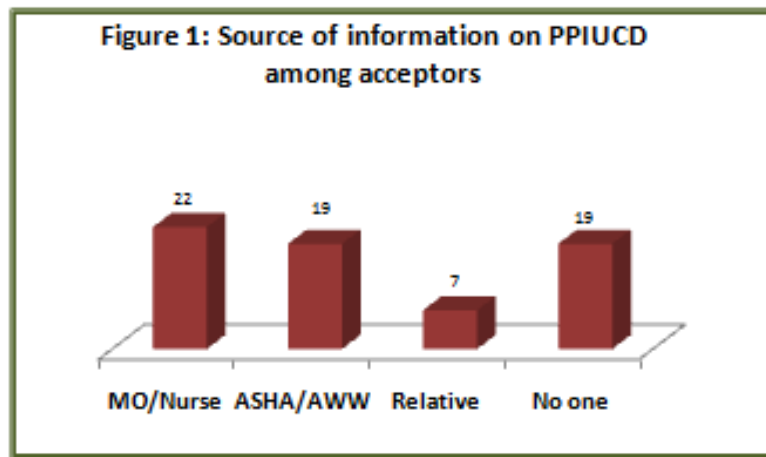
The study found that among different type of family planning methods, Oral Contraceptive Pill (OCP) is the most commonly known method (27 percent) among acceptors followed by IUCD and female sterilization (22 percent) as shown in Table 3. Further it is revealed that majority (66 percent) acceptors were aware of OCP, female sterilization and IUCD (54 percent) and condom (46 percent). Nearly 10 percent of acceptors also knew about injectable contraceptives.

Majority acceptors came to know about family planning methods through Anganwadi Workers (AWW), followed by ASHA, health personnel and friends and relatives. A few acceptors also got the family planning information through IEC, news papers, TV advertisements etc. The study pinpointed that still majority females are aware only of female family planning methods. Male participation in family planning is largely low as female family planning methods are primarily promoted in IEC activities.

All the interviewed acceptors were asked about the current use of family planning. Table 4 shows the responses of PPIUCD acceptors about current use of family planning methods. More than two-fifths of the PPIUCD acceptors were using PPIUCD at the time of interview e.g. they were

currently using IUCD. One-fifths of all the acceptors were using condom and another one-fifths were using non-modern methods.

One in ten acceptors was also using OC pills and another one-fifths acceptors have got sterilization operation done after removal of PPIUCD. Use of family planning prior to the current use indicated that majority acceptors had been using the same method since long. A few of the acceptors told that they were using some other method prior to the current one and narrated their experience with the family planning method they had used.



– माला-डी लेते है शुरू से [I have been taking Mala-D since beginning] (Woman age 24 years; Currently using PPIUCD)

– पहली बच्ची के बाद परहेज, दूसरी के बाद कॉपर-टी डाली थी, वो पता नहीं अपने आप नकिल गई, क्या हुआ, तो फरि तीसरी बच्ची हो गई [After first child, which was girl, we were abstaining. After second girl child I went for Copper-T, but I don't know how it (Cu-T) got expelled automatically!, and consequently I had my third child – a girl again] (Woman age 26 years married at the age of 14 currently using PPIUCD)

Majority current users of PPIUCD were motivated by the health staff in district hospital. Acceptors were informed about the benefits of PPIUCD as it lasts long and can be removed whenever couple wants another child or to go for limiting method. Acceptors of other methods were mostly self motivated.

Some of the women said about motivation

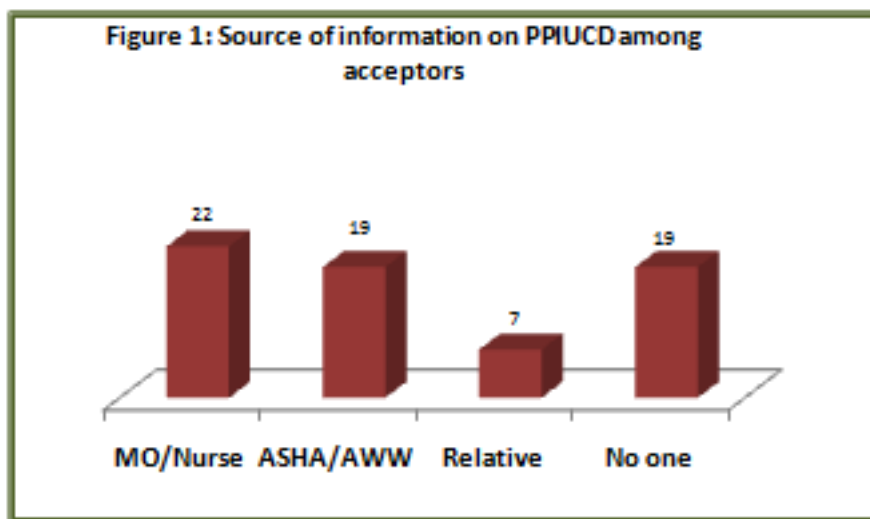
– इंजेक्शन गोली से फायदा नहीं रहता है, फेल हो जाते है, इसलिये परहेज रखते है [Injection and Pills does not benefit they usually fail [to prevent pregnancy], that's why we prefer abstinence] (Woman age 24 years; currently abstaining after removal of PPIUCD)

– अस्पताल में बताया था की कॉपर-टी यहाँ बच्चे के बाद डलती है, जब ऑपरेशन करवाना हो तब नकिलवा लेना [Health staff told in the district hospital that Cu-T after delivery is inserted here, whenever wants to go for sterilization one can get it removed] (Woman age 26 years; currently using PPIUCD)

### 4.3 Perspective on PPIUCD Services

Perspective on PPIUCD Services includes knowledge and awareness of PPIUCD as a method of family planning, availability of services, counseling, misconceptions and satisfaction from services.

**Knowledge about PPIUCD:** Majority acceptors had no knowledge about PPIUCD before the acceptance. Acceptors responded that they came to know about it only at the time of delivery or just after delivery when hospital staff was inserting IUCD. This reveals that IEC activities are not being targeted at the prospective users or the pregnant women during antenatal period.



It was found that out of 63 acceptors, nearly two-thirds came to know about PPIUCD from service providers and ASHA / AWW while rest one-third didn't know anything about PPIUCD prior to acceptance (Figure 1). Majority acceptors came to know only at the time of delivery and few others even came to know only after some post delivery complications. Majority acceptors were not given any general idea about PPIUCD by any means before insertions. Many acceptors took it as a surprise when staff nurse told them after PPIUCD insertions just after delivery. A few acceptors told that even after opposing the IUCD insertion nurses at the district hospital gave no ear to the appeal. Out of 63 acceptors, 37 responded that nobody motivated them to go for PPIUCD insertion. Few acceptors, however, informed that nurse / doctors told them about PPIUCD after insertion.

Acceptors responded –

- कभी पहले नहीं बताया, बच्चा होते से ही डाल दी [It was never informed earlier, just inserted it (PPIUCD) after the child birth] (Ever user of PPIUCD; age 24 years).
- पहले से पता नहीं था, दो-ढाई महीने बाद अपने आप से दर्द हो रहा था तो जांच के लिए गए थे प्राइवेट में, मकरोनिया में (तब पता चला) [I had no prior information, after delivery stomach pain started in 2-3 months ... then I went for checkup at private hospital ... there I came to know (that they have inserted PPIUCD)] (Current user of PPIUCD; age 21 years)
- वहीं अस्पताल में डलिवरी के बाद, हमारी सास भी साथ थी, उन्होंने (Service Provider) बच्चा होने के बाद डाल दी, कहा- "आपकी बहु को दवा डाल दी है वो कमजोर है तो तीन साल तक अब बच्चा नहीं होगा",



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हम समझे कोई दवा डाली होगी लेकिन वो तो कॉपर-टी थी (गांव में नर्स ने बताया था) [At hospital they (nurse) inserted PPIUCD after delivery. My mother-in-law was there with me. They told to her – “We have given medicine to your daughter-in-law, as she is very weak. Now she will not have another child for 3 years”. We thought it as some medicine, but it was copper-t (we came to know from nurse in the village)] (Ever user of PPIUCD; age 24 years)

**Pre and Post PPIUCD Counseling :** Counseling is an important component of family planning services. Health facilities where service load is high should have separate counsellor for family planning. As per the PPIUCD guidelines all the services providers are required to provide counseling to pregnant woman – during ANC visits, during admission for delivery, during early labour, on the first day of post-partum period and prior to scheduled caesarean section. All the PPIUCD acceptors are also required to be counselled in the post insertion period for – Post insertion care and follow-up visits.

It was found that counseling on PPIUCD was absent in case of 46 out of 63 acceptors. Ever users and current users have not shown any difference regarding contents of counseling during pre and post PPIUCD insertion. Acceptors who were counselled reported about casual information given to them, mostly after PPIUCD insertion. Counseling on different aspects of PPIUCD insertion was not provided at all. Thus both ever and current users were not prepared mentally for accepting PPIUCD. Mostly doctors or nurses asked acceptors to contact health care provider in case of any complication.

- दस साल के लिये डाल रहे है ऐसा बोला, जब बच्चा चाहिये हो तब नकिल लेना [They told that PPIUCD is inserted for ten years, whenever you want child get it removed] (Ever User, Age 22 years)
- नहीं/ पहले नहीं बताया था, डलिवरी के बाद लगाते समय बताया था की अगर कोई तकलीफ हो तो नकिलवा सकते हो, [No!, did not tell anything prior (to delivery). After delivery, during insertion advised to remove it (PPIUCD) in case of any complication] (Ever user, age 24 years)
- कहा की तीन साल तक बच्चा नहीं होगा, कोई और जानकारी नहीं दी [They (service provider) said that there wouldn't be any child for three years. No other information was given] (Current user, age 26 years)
- बस थोडासा बताया कलिंगवा लो कोई दक्कित नहीं होता है [Just told that there is no problem in it (using PPIUCD)] (Current user, age 21 years)
- नर्स ने दबाव से लगाई, कहा कलिंगाओगे तो तीन साल तक बच्चे में अंतर रख सकोगे [Nurse insisted for insertion, told that if get it (PPIUCD) inserted, you will be able to keep gap for three years between children] (Ever user, age 21 years)

In few cases acceptors were not given any chance to ask question, rather they were scolded by the staffs for not being cooperative.

- आधे घंटे में ही (डलिवरी के बाद) लगा दी थी, जबरदस्ती से लगा दी, कहा लगाना ही पड़ेगी [Inserted PPIUCD within half an hour after delivery. They (nurses) inserted forcefully and said you ought to get it inserted] (Ever user, age 24 years)
- कुछ नहीं बताया, दो साल बाद दखिने के लिये गये तो भी नहीं बताया| बोला लगी होगी तो अभी नहीं नकिलेंगे| प्राईवेट में चले जाओ [They did not informed anything (at the time of PPIUCD insertion). Even after 2 years they did not tell anything and said – if it (PPIUCD) is inserted even then we will not remove it now. If you want (to remove) go to any private facility.

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(Current user, age 21 year)

Regarding misconceptions about PPIUCD, two-thirds of acceptors did not express about any misconception regarding PPIUCD. The reason behind was acceptors had not been given adequate counseling and time to make informed choice to make any decision. A few acceptors were skeptical about PPIUCD insertion process; right from counseling, precautions to post insertion health conditions. Acceptors were worried about health issues such as irregular periods, back pain and other associated health problems. Few acceptors had raised fear about side effects. Acceptors also expressed doubts regarding its suitability.

- कोई जानकारी नहीं थी| उन्होंने कॉपर-टी बताई भी नहीं थी|[I had no information. They (staff) did not even show me Copper-T] (Ever user, age 24 years)
- मन में थोडा डर है ककिभी कुछ हो जाएगा [Yes, I have some fear in mind that anything can happen anytime.] (Current user, age 20 years)
- हां/ दर्द, कमजोरी का डर है, भाभी को भी PPIUCD लगाने के बाद बहुत ज्यादा तकलीफ हुई थी इसलिये डर लगता है [Yes! I'm worried about pain and weakness (after PPIUCD), my sister-in-law had severe health problem after PPIUCD insertion, so I feel fear (about it)] (Current user, age 24 years)
- ये (PPIUCD) गल जाती है इसलिये डर लगा था [I was fearing that it (PPIUCD) gets dissolved in the body] (Ever user, age 26 years)

Acceptors expressed dissatisfaction for they were not given adequate information while PPIUCD insertion. Two-thirds of acceptors (40 out of 63) were not satisfied with the counseling provided to them. Acceptors opined that staffs should give all the information including pre-insertion consent, possible health problems, side-effects and post-insertion precautions. Acceptors were worried about expulsion of PPIUCD on its own and pain in lower abdomen after PPIUCD insertion. Such doubts were not discussed with the acceptors or accompanying persons by the staffs at the facility. Few acceptors and their accompanying relatives expressed deep concern about the behaviour of staff when they wanted to ask some clarification or information about PPIUCD.

- सातवें महीने से चेकअप (ANC) के समय ही बताना चाहिए [Counseling should be done since 7<sup>th</sup> month of pregnancy with ANC check-up] (Ever user, age 24 years)
- कुछ नहीं बताया (डफरनि में), प्राइवेट डॉक्टर ने बताया के परहेज हो सके तो करना [In hospital they (staff) did not tell anything, a private doctor advised for abstinence (for avoiding possibility of pregnancy)] (Current user, age 21 years)
- ऐसे क्यों नकिल जाती है (कॉपर-टी) अपने आप?[Why this (PPIUCD) comes out by its own?] (Current user, age 26 years)
- कुछ जानकारी नहीं देते हैं, उन्हें देना चाहिए ककि कुछ तकलीफ हुई तो क्या करना है [They (staff) don't give any information. They should inform (acceptors) what to do in case of any complication] (Current user, age 26 years)
- उन्होंने कुछ नहीं बताया, आठ दिन बाद वो (PPIUCD) अपने आप ही नकिल गयी, कुछ तो बताना चाहिये था [They did not tell anything, PPIUCD expelled automatically after 8 days of insertion. They (staff) should have told some thing (about it)] (Ever user, age 30 years)
- Counseling देना चाहिये, दर्द क्यूं होता था ये बताना चाहिये [Counseling should be done, they should also clarify about the pain (after insertion)] (Current user, age 30 years)

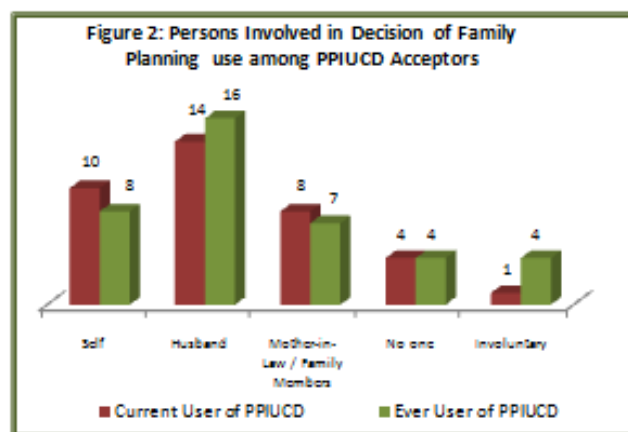


– समझाती नहीं है नर्स, (Mother-in-Law intervened) - "हम कपडा लेने आए बाहर उतनी देर में उन्होंने कॉपर-टी डाल दी, अगर उनसे (नर्स से) ज्यादा पूछो तो चलि्ला चोट करती है कहती है यहाँ क्यों आए घर ही कर लेते (डलिवरी)" [Nurses do not explain properly. When my mother-in-law went to bring some cloths for the baby, they inserted PPIUCD. If somebody asks more questions to nurses, they scold and shout and say – why you came here (for delivery), you should have delivered at home instead] (Ever user, age 24 years)

#### 4.4 Decision making on PPIUCD acceptance

To understand the decision making process about PPIUCD acceptance, acceptors were asked about the motivation about the family planning in general and PPIUCD in particular, discussion about PPIUCD use with family members, who decided about PPIUCD acceptance and satisfaction about the decision. It is vital for the couples to discuss family planning prior to accepting any method. The discussions also help in choosing right method suitable for both the couples. Acceptors' decision to use a particular family planning method is usually driven by the consensus among the couple and discussion with elder female members in the family, mostly mother-in-law, and after considering pros and cons of that method. For majority acceptors (74 percent) mother-in-law accompanied during PPIUCD insertion, followed by husband (44 percent). Nearly one-fourth of acceptors were accompanied by ASHA or AWW for the delivery and they were also present during PPIUCD insertion. However, among current users of PPIUCD, the decision was based on prior information, prior use of temporary methods and word of mouth among relatives and friends for PPIUCD acceptance. Ideally it is expected that choice of family planning should be decided by the couple. An informed decision about family planning generally should help couple in deciding family planning.

It was found that nearly one-third of acceptors (19 out of 63) discussed regarding PPIUCD with their family members, relatives or friends prior to PPIUCD insertion. Out of the 28 current user of PPIUCD, for 14 acceptors their husband took the decision in this regard, of which five acceptors took the decision jointly with the husband. Five acceptors took it themselves. For eight respondents the decision to have PPIUCD was taken by the mother-in-law; husband either with the acceptor or her husband. Five respondents also told that there was nobody to take the decision at the time of PPIUCD insertion (Figure 2).

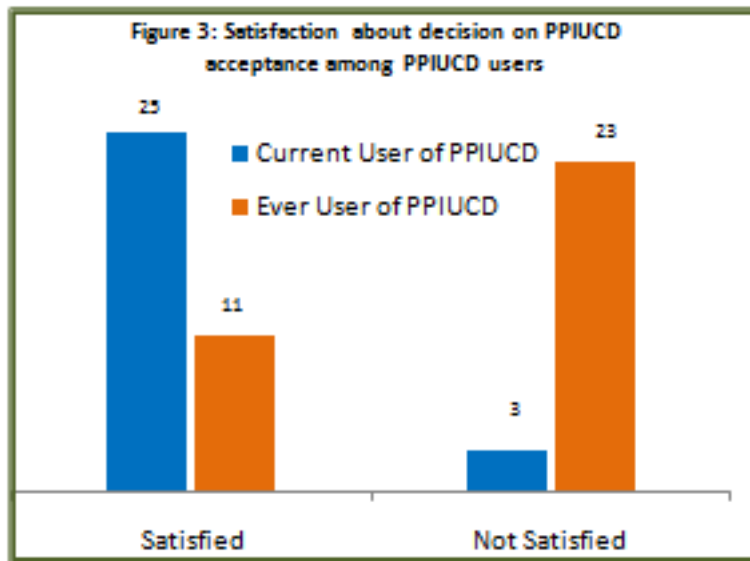


Among 35 past or ever users of PPIUCD, the decision regarding use of family planning was taken by the husband in case of 16 acceptors. Eight acceptors took the decision either by them self or with other family members. Seven respondents said that the mother-in-law takes the decision regarding

choice of family planning for them. Eight acceptors responded that no one took the decision in their family and they accepted PPIUCD method forced on them by hospital staffs.

Majority acceptors were satisfied by decision of accepting PPIUCD. Most of them wanted to have a gap between children, a few others took the decision due to health benefits and some acceptors wanted to continue since there was no problem post insertion.

- अब जब उन्होंने डाल ही दी (काँपर टी) थी तो हम संतुष्ट थीं कि, तीन साल तक अब बच्चा नहीं होगा और सेहत भी ठीक रहेगी, यहाँ डॉक्टर साहब से भी बाद में पूछा था [Now! Since PPIUCD was inserted, I felt satisfied that there will be no child for three years and I will have a good health. I later asked about it to local doctor here in my village] (Current user, age 24 years)
- ठीक है! परेशानी नहीं होगी तो डली रहेगी [It's all right! If there wouldn't be any problem, I will continue with (PPIUCD)] (Current user, age 22 years)
- अब जब लग गया है तो संतुष्ट है [Now since it has been inserted I'm satisfied] (Current user, age 29 years)
- मुझे पहले से पता था काँपर-टी के बारे में, मुझे तो ऑपरेशन करवाना था लेकिन कमजोरी थी इसलिए काँपर-टी लगाना ही ठीक लगा [I knew about Cu-T. I had to undergo sterilization operation, but due to weakness, I opted for PPIUCD] (Current user, age 20 years)



It was revealed that 26 acceptors expressed dissatisfaction about the decision to go for PPIUCD insertion (Figure 3). They were mostly concerned at not being given proper information by the health staffs at the hospital prior to PPIUCD insertion. Dissatisfied acceptors did not have prior information or knowledge about PPIUCD, afraid of health effects of PPIUCD and experienced complications like pain, abnormal periods etc. after PPIUCD insertion.

- मुझे कुछ भी नहीं पता था PPIUCD के बारे में, नर्स ने बड़ी भाभी से कहा कि अगर नहीं लगवाई तो अस्पताल से

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- बाहर नहीं जाने देंगे [I had no information about PPIUCD, nurse told my sister-in-law - if I we refuse PPIUCD, they will not allow us to leave hospital] (Current user, age 32 years)
- सास भी थी, पता भी डलिवरी के समय वहीं थे, किसी को नहीं बताया कॉपर-टी डालने के बारे में, पता नहीं चला कॉपर-टी डाली है या नहीं [My mother-in-law and husband both were present during delivery, nurse did not inform anybody about PPIUCD, Don't know! Whether PPIUCD inserted or not] (Ever user, age 24 years)

#### **4.5 Perspective on PPIUCD Insertion Procedure**

Acceptors' perspective on different dimensions of PPIUCD insertion procedure indicates that all the acceptors were inserted PPIUCD right after the delivery.

Nearly half of the acceptors (47 percent) used '108' ambulance service to go to hospital from home for delivery. On the contrary only 13 percent used 'Janani Express' ambulance and majority (60 percent) had used auto and other vehicles for returning home from hospital. It is important to understand that in absence of proper transport for women opting for PPIUCD may cause more complications. Provision of medical transport for returning home is a major part of maternal care services in post-partum period. It is a precaution that due care has to be given to the women after

Acceptors were asked about how the PPIUCD was inserted by the service provider. Majority acceptors were not aware and did not know how PPIUCD was inserted while one third responded that it was inserted by hand. The above response are not unexpected since most of the acceptors were not given detailed counseling ; clinical and non-clinical dimensions of PPIUCD insertion procedure and on post-insertion care.

#### **4.6 Quality of Care in PPIUCD services**

Quality of care is an important dimension of health care services. Acceptors were asked about different aspects on quality of care in PPIUCD services. Table 5 shows that 44 percent acceptors did not feel any pain during or after PPIUCD insertion. For 25 percent acceptors, PPIUCD insertion was a painful both during and after insertion. It was found that 42 percent acceptors felt PPIUCD insertion very painful.

Majority acceptors had not gone for any treatment for the pain. Nearly two-fifths of acceptors who had pain after PPIUCD insertion were given medicines from the hospital. Less than one-fifth of acceptors were advised for precautions to be taken after PPIUCD insertion.

- बताया था कि कॉपर-टी का धागा खींचना नहीं, अगर इसे खींचा तो कॉपर-टी निकल जाएगी, दो माह परहेज रखने को भी कहा था [I was told not to pull out thread of Copper-T, to avoid its removal. Also advised for abstinence for two months after PPIUCD insertion] (Ever user, age 24 years)
- एक माह तक वजन नहीं उठाने की सलाह दी थी [Advised not to carry weight at least for one month] (Ever user, age 26 years)

**PPIUCD Follow-up Care:** Nearly half of the acceptors were neither called for follow-up nor they visited the health facility for any follow-up. This shows poor follow-up services post PPIUCD insertion. It was observed that 67 percent of the acceptors were not given any instructions for post PPIUCD follow-up visit. Further, only one-third of all the acceptor had any follow-up visit after

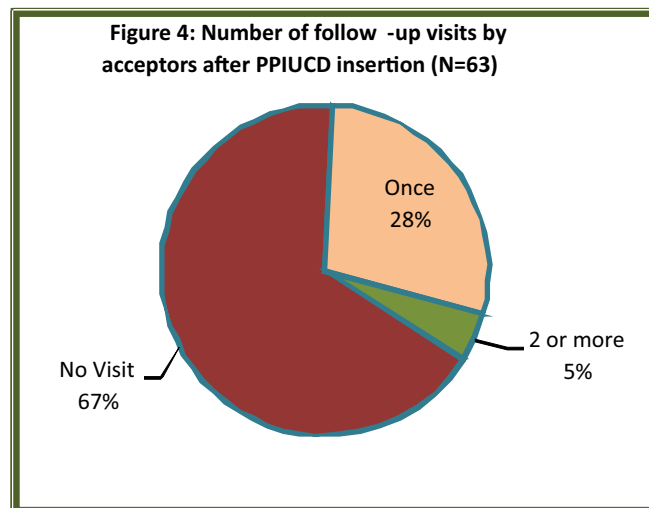
PPIUCD insertion. Among all acceptors, 28 percent had had single follow-up visit and five percent had two or more follow-ups post PPIUCD (Figure 4).

It was found that out of 20 acceptors who were asked to visit the health facility for follow-up services, 11 did so. Out of 43 acceptors who were not given any instructions for follow-up visit, 10 had gone for follow-up after PPIUCD insertion. Out of the 21 acceptors who had gone for follow-up, 15 had one or other complication.

Mostly health staffs in the hospital were advising not to remove PPIUCD for minor complications and acceptors were given medicines. Few acceptors who had complications, narrated their follow-up visit experience as -

– नकिलने पर दिखाया था, लेकिन वहां बोला कलिंगा है अभी तो, जबकि निकल गया था [I went for check-up after PPIUCD expulsion, but at the hospital they told it is still in place, whereas it was not there!] (Ever user, age 26 years)

– पूरे शरीर में दर्द था, दिखाया तो बोला सब कुछ ठीक है अभी नहीं नकिलेंगे [My body was paining, after check-up they said every this is alright, will not remove now] (Ever user, age 32 years)



– पेट में दर्द होता था इसलिए गई थीं, नर्स बोली कोई दक्कत नहीं है [I had pain in my stomach, that's why I went to the hospital, nurse told there is no issue (with IUCD)] (Current user, age 24 years)

– दर्द हो रहा था तो गए थे, नकिलने को बोला तो नहीं नकिल रही थीं, फरि १००/- रू. दिया तो नकिला [I had pain, so I told them to remove it, but they were not ready, then I gave Rs.100/- to them and then they removed IUCD] (Ever user, age 21 years)

– तकलीफ थी तो एक बार दवाई दी थी, कहा धागा नहीं है औजार से नकिलेगी, पहले दो बार तली में कहा “यहां नहीं नकिलेगी, प्राइवेट में नकिलवाना पड़ेगी” [I had some problem, firstly they gave medicine and said – there is no thread, IUCD has to be removed surgically. In the next two visits at District Hospital, they said we will not remove IUCD here, you have to go to private health care provider] (Ever user, age 28 years)

– दो महीने बाद प्राइवेट में गए थे, पेट दर्द होता था, लगती थी चुभती थी, परेशानी थी तो दिखाते गए थे की कॉपर-टी लगी है या नहीं [After two months went to a private doctor, I was suffering from

stomach pain, it (IUCD) was pinching inside, It was problematic, so wanted to confirm whether IUCD was in place or not] (Ever user, age 24 years)

- आशा साथ में गई थी अस्पताल में मकरोनिया वाले अस्पताल में, आशा ने कहा तकलीफ है तो नकिलवा लो, अस्पताल की नर्स ने बताया तुम्हे परेशानी बदि है नकिल लो सों [ASHA accompanied with me to the hospital, she advised to remove it, Nurse at the hospital also advised to remove (IUCD)] (Current user, age 21 years)
- सनौधा के अस्पताल में पूछा था, जांच के लिए गए थे तो हमने बताया था कदिर्द होता है माहवारी बार बार 7-8 दनि में आती है [I went to hospital for check-up. I had pain and menses in every 7-8 days] (Ever user, age 24 years)
- दर्द करती है, ऐसा हमने बताया था, डॉक्टर कह रहे थे कलिंगी रहने दो इससे कुछ नहीं होता है [I told doctor, that it (IUCD) pains. Doctor told to retain it, pain has no effect on it] (Current user, age 23 years)

Only 10 acceptors were told by the health care provider about steps to be taken in case to any complication, among those who had visited health facility for follow-up. It revealed that mostly health care providers advised to remove IUCD in case of any health issues or complications. It is important to mention that in the absence of IEC and proper follow-up services, mostly acceptors were linking any health issue or complication with the PPIUCD and wanted to remove it.

Only 10 acceptors expressed some concerns and questions regarding PPIUCD. Acceptors had apprehension about the less time devoted for pre and post counseling by health care providers. Few raised doubt over the suitability of PPIUCD. Acceptors were also concerned about the spontaneous expulsion of PPIUCD and wanted to know whether it is common or not?

- कॉपर-टी लगाने के पहले फायदे नुकसान बताना चाहिए| और तकलीफ होने पर उसी अस्पताल में इलाज भी होना चाहिए [They should tell benefits and disadvantages of using Copper-T before insertion. And if someone has problem then treatment should be given in the same hospital] (Ever user, age 24 year)
- हमें शंका थी की या उन्होंने क्या लगा दिया, इससे क्या फायदा नुकसान होगा कुछ पता नहीं [I had a doubt, what they have inserted? I didn't know what will be the health problem of health benefits of this] (Ever user, age 24 years)
- डलिवरी के 3 माह बाद ऑपरेशन करवाने गए थे, तब उन्होंने जांच करके बताया किकॉपर-टी गरि गई है, हमें पूछना है के क्या ये अपने आप गरि जाती है? [after 3 months of delivery I went for Family planning operation, there they examined and told that it (IUCD) expelled automatically. I wanted to ask whether it is common or not?] (Ever user, age 26 years)
- तार गडते थे, चलने में प्रॉब्लम क्यों होती है? [wires of copper-T were pinching inside, wanted to know why it feels inside while walking] (Ever user, age 24 years)

#### **4.7 Complications due to PPIUCD**

Acceptors were asked about the complications they had experienced, if any, after PPIUCD insertion. It was revealed that 60 percent acceptors had experienced some complications after PPIUCD insertion. Majority ever users had some or the other complications following PPIUCD insertions compared to the lesser among current users. Acceptors were further asked about the complications or problems they have faced after PPIUCD insertions.

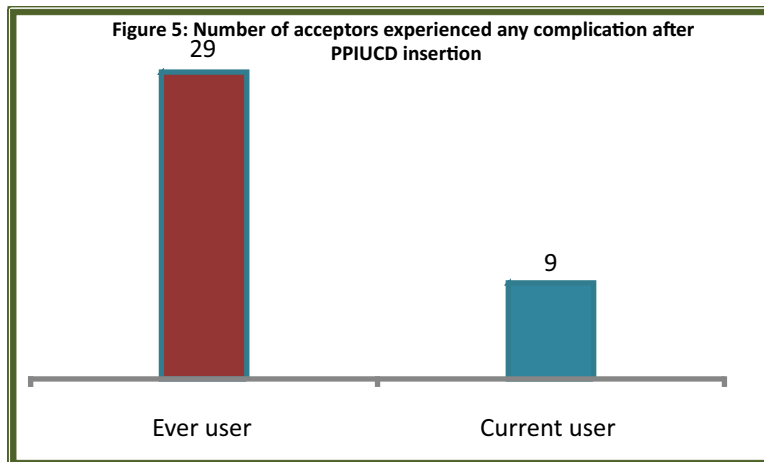


Table 6 provides the percentage of respondents by type of complications they faced. Majority acceptors complained about pain after PPIUCD insertion. This is followed by bleeding or irregular periods and pain while walking or sitting. Abdominal pain was complained by about a quarter of respondents. A few acceptors complained of back ache, pinching of PPIUCD wires inside etc. In a multi-centric study on PPIUCD users research found large variations in rates of problems and complications that were largely attributable to the individual hospitals. (Kumar et al, 2014)

Respondents narrated their experiences regarding complications after PPIUCD insertion –

- दर्द होता था उठने बैठने में, लगातार पीरियड चलता था [There was constant pain while sitting and continuous bleeding problem] (Ever user, age 24 years)
  - एक माह बाद तकलीफ शुरू हुई, पेट दर्द और कमजोरी लगती थी अगले 6 माह तक ऐसा ही चला, हमने आशा कार्यकर्ता को बताया था, उन्होंने कहा डफरनि चले जाना या यहाँ पर भी नकिलवा सकते हो, दो माह बाद बार बार MC आना शुरू हो गई थी [Problem started after a month of PPIUCD insertion, for the next 6 months I was suffering from had abdominal pain and weakness, I then asked ASHA and she advised to visit the district hospital or primary health centre to remove PPIUCD. After two months I had irregular periods as well] (Ever user, age 24 years)
- पेट, हाथ पांव दर्द, बाथरूम को बैठो तो तकलीफ होती थी, संबंध बनाने में कभी-कभी तकलीफ हुई [I had pain in abdomen and legs, even sitting for urinating was a problem, sometimes it was painful while having intercourse] (Current user, age 26 years)
- कॉपर-टी लगाने के 3-4 महीने बाद अन्दर में दर्द शुरू हुआ, हमने आशा दीदी को बताया, उन्होंने अस्पताल जाने के लिए बोला लेकिन हम नहीं गए, फिर हम अस्पताल जाने के लिए सोच रहे थे लेकिन दर्द 10-15 दिन में बंद हो गया, अब सब ठीक है [Within 3-4 months of PPIUCD insertion internal pain started, I contacted ASHA, she advised to go to hospital, I was planning to go to hospital but pain subsided within 10-15 days, now it's alright] (Current user, age 20 years)
- चलने में दक्कित होती थी, बैठने में परेशानी होती थी, डेढ़ महीने *bleeding* होती रही, नर्स को दिखाया तो उन्होंने कहा नकिलवा दो, तो पथरिया में नर्स से नकिलवा दी थी [It was paining while walking or sitting, after PPIUCD insertion, there was continuous bleeding for one and half months, then I went to the nurse, she advised to remove it, so I got it (Cu-T) removed at CHC Pathariya] (Ever user, age 24 years)



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#### **4.8 Duration of use and Retention of PPIUCD**

All the PPIUCD acceptors were asked about the status of continuation of PPIUCD and intention to continue with the PPIUCD. It revealed that out of 63 acceptors, 28 were current users and remaining 35 had ever used PPIUCD. Table 7 shows the percent distribution of acceptors according to duration of use for ever users and current users.

In all nearly three-fifths of the acceptor had used PPIUCD for less than six months. Majority acceptors who were not using PPIUCD at the time of survey had used it for less than six months. Median duration of use for ever users was only 2 months while for current users it was 5.5 months. On average, acceptors had retained PPIUCD for 4.8 months only.

A cross sectional analysis of duration of use revealed that average duration of use was higher among women residing in rural area (5.1 months), living in joint family (4.9 months), belonging to other caste (7.8 months) and have a BPL card (5.8 months).

Intention to continue PPIUCD revealed that half of the current users were willing to continue using PPIUCD for more than 2 years. About one fifth current users intend to continue with PPIUCD for 36 months i.e. they wanted to retain PPIUCD till their next child (Table 8). It was found that one-third of current users had planned to continue PPIUCD for upto 6 months period, which reflected their dissatisfaction regarding PPIUCD.

Majority of ever users had opted to remove PPIUCD due to health related issues and post PPIUCD complications. Study in three districts of Tamil Nadu also found that 38 percent of PPIUCD acceptors had discontinued its use within one year of insertion. (Muniappan P, 2000). Acceptors reported complications such as pain in abdomen, frequent bleeding, back ache etc. A few acceptors had opted for other permanent method of family planning or wanted another child and therefore went for removal of PPIUCD. A few acceptors reported that PPIUCD was expelled spontaneously after some time. Only 15 acceptors out of 35 ever users had used another method after PPIUCD removal. Family planning method opted after PPIUCD removal was female sterilization (7), male sterilization (1), OC Pills (2), Condom (3) and non-modern methods (4) by acceptors.

#### **4.9 Satisfaction about PPIUCD**

Acceptors were asked regarding their overall experience about PPIUCD including comparison with the other family planning methods they used, recommending PPIUCD to others in family and friends and satisfaction from the PPIUCD as a method of family planning for longer duration. Two-fifths of acceptors (41 percent) were unable to judge the efficacy between PPIUCD and other family planning methods since most of them had undergone PPIUCD insertion as their first family planning method. Acceptors who had removed PPIUCD were vocal in characterizing PPIUCD as painful and not suitable to them as compared to temporary methods such as Mala-D and Condom, which they had used earlier. Some even said that abstinence is best suited to them as compared to PPIUCD. A few acceptors were optimistic about PPIUCD as they did not come across any problem since the insertion. It can be concluded that in general the experience from PPIUCD was mixed.

Nearly three-fifths of the acceptors affirmed that they would recommend PPIUCD to others based on their overall experiences, but with little caution. It may be mentioned here that mostly acceptors were not confident about telling their experience with the PPIUCD due to short time interval since PPIUCD insertion. None of the acceptors had received any incentive for opting PPIUCD.



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## 1. Conclusion

This study has primarily assessed the user perspective on PPIUCD and major challenges for effective promotion of PPIUCD as a reliable and affordable spacing method for family planning.

Study revealed that majority PPIUCD acceptors were not aware of PPIUCD as a method of family planning, even at the time of insertion. This poses a greater challenge for scaling-up services of PPIUCD as an alternative spacing method as informed consent was not sought from users.

Acceptors were not given adequate counseling and had never been consulted for their choice about PPIUCD. Acceptors were also not properly advised about precautions to be taken after insertion. This has resulted in PPIUCD removal within a short interval of 3-6 months among ever users. PPIUCD services faces challenge for retention of PPIUCD for longer duration for effectively spacing of births.

PPIUCD acceptors had no prior information during antenatal period about the family planning choice. There is a major challenge to adequately educate eligible couples regarding spacing methods particularly during antenatal period. ASHAs and ANMs need to be oriented for IEC and pre-acceptance counseling to all the eligible couple on PPIUCD.

Counseling of couples on probable side effects and small complications of a temporary nature and necessary action required to be taken at the personal level and for visiting nearby health facility is urgently needed. Majority acceptors reported expected side effects as the reasons for the removal, including bleeding and abdominal pain.

Majority acceptors were critical about the behavior of health staffs when they wanted to clear their doubts regarding PPIUCD. The study has revealed that process of PPIUCD acceptance is not well devised and has thus resulted in removal of PPIUCD within a short interval. This is a major challenge to the programme for attracting more acceptors and retaining the current users. Early removal will not only give rise to unplanned pregnancies but also create burden on providing of limiting method of family planning.

Views of the service providers and programme managers regarding implementation of PPIUCD provide insight into the programmatic challenges. Shortage of trained paramedical staffs, lack of counselling services and effective pre and post insertion services are lacking at the district hospital and periphery level health institutions. PPIUCD services was given thrust very recently and to increase the number of PPIUCD acceptors, service providers i.e. staff nurses and medical officers were given incentives for each PPIUCD insertion.

An informal discussion with services providers at the district hospital and Anganwadi workers and ASHAs in the villages were held to know the training, counseling and provision of follow-up services of PPIUCD programme. It was revealed that very little attention is being given on pre-insertion counseling and post-insertion follow-up care. This is mainly due to non-availability of trained staffs for counseling services and lack of follow-up services at the periphery level health institutions.

ASHAs and AWWs are not counseling pregnant women to enable them for making any choice and voluntarily accept PPIUCD. At district hospital, staffs are more inclined towards increasing PPIUCD insertion as it is being monitored by programme officers at the higher level in the district as well as state. Consequently majority women are forced to accept PPIUCD without proper counseling and sometimes without even knowing about insertion. No data is being maintained at the periphery health institutions for PPIUCD complications and its removal. This is necessary to assess effectiveness of PPIUCD services.

The present study is limited in the sense that long-term use of and retention rates could not be determined since follow-up was based on only recent postpartum IUCD insertion. Further studies

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could be conducted that involved more than one year follow-up assessments. Another limitation of the study is very small sample size of women who have undergone PPIUCD insertion at District Hospital, Sagar and adjoining three villages and two urban wards. The findings cannot necessarily be generalized for larger programme areas since the sample was not chosen from the universe of all PPIUCD acceptors.

Expansion of access to PPIUCD programme may provide an opportunity to address the high proportion of births with short intervals and improve maternal and child health outcomes. More study is needed to assess the effects of PPIUCD on continuation and birth spacing in the future. Women who receive PPIUCD show a mixed level of satisfaction with this choice of contraception and the high rates of removal indicates lacunas in providing effective counseling and post insertion services of PPIUCD. In totality the hesitation of health staffs in building rapport and explaining all aspects of PPIUCD insertion to users will negatively impact the programme.

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| <b>Table 1: PPIUCD Acceptor s’ Household Characteristics</b> |                      |               |                |
|--|----------------------|---------------|----------------|
| <b>Household Characteristic</b>                              |                      | <b>Number</b> | <b>Percent</b> |
| <b><i>Type of Residence</i></b>                              |                      |               |                |
|  | Rural                | 35            | 54.7           |
|  | Urban                | 29            | 45.3           |
| <b><i>Type of village/city</i></b>                           |                      |               |                |
|  | Sub-Centre Village   | 36            | 56.3           |
|  | City                 | 28            | 43.8           |
| <b><i>Type of Family</i></b>                                 |                      |               |                |
|  | Nuclear              | 20            | 31.3           |
|  | Joint                | 44            | 68.8           |
| <b><i>Religion</i></b>                                       |                      |               |                |
|  | Hindu                | 62            | 96.9           |
|  | Muslim               | 2             | 3.1            |
| <b><i>Caste</i></b>  |                      |               |                |
|  | Schedules Caste      | 19            | 29.7           |
|  | Scheduled Tribe      | 1             | 1.6            |
|  | Other Backward Caste | 40            | 62.5           |
|  | Other                | 4             | 6.3            |
| <b><i>Below Poverty Line HH</i></b>                          |                      |               |                |
|  | Yes                  | 30            | 46.9           |
|  | No                   | 34            | 53.1           |

**Table 2: Socio-Demographic Profile of PPIUCD Acceptors**

| <b>Age (Years)</b>                       | <b>Number</b> | <b>Percent</b>    |
|--|---------------|-------------------|
| 19 or below                              | 2             | 3.1               |
| 20-24                                    | 35            | 54.7              |
| 25-29                                    | 23            | 35.9              |
| 30 and above                             | 4             | 6.3               |
| <i>Average</i>                           |               | <i>24.2 Years</i> |
| <b>Age at Marriage (Years)</b>           |               |                   |
| 17 or below                              | 13            | 20.3              |
| 18-25                                    | 48            | 75                |
| 26-30                                    | 3             | 4.7               |
| <i>Average</i>                           |               | <i>19.0 Years</i> |
| <b>Education Level</b>                   |               |                   |
| Illiterate                               | 6             | 9.4               |
| Up to 5th                                | 12            | 18.8              |
| 6-8 <sup>th</sup>                        | 19            | 29.7              |
| 9-10 <sup>th</sup>                       | 19            | 29.7              |
| 11-12 <sup>th</sup>                      | 2             | 3.1               |
| Graduate/Technical                       | 6             | 9.4               |
| <b>Occupation</b>                        |               |                   |
| Labourer                                 | 13            | 20.3              |
| Business                                 | 2             | 3.1               |
| Housewife                                | 47            | 73.4              |
| Other                                    | 2             | 3.1               |
| <b>Husband's Age (Years)</b>             |               |                   |
| 19 or below                              | 1             | 1.6               |
| 20-24                                    | 7             | 10.9              |
| 25-29                                    | 32            | 50                |
| 30 and above                             | 24            | 37.5              |
| <i>Average</i>                           |               | <i>24.9 years</i> |
| <b>Husband's Age at Marriage (Years)</b> |               |                   |
| 20 or below                              | 11            | 17.2              |
| 21-25                                    | 43            | 67.2              |
| 26-30                                    | 10            | 15.6              |
| <i>Average</i>                           |               | <i>21.9 years</i> |
| <b>Husband's Education</b>               |               |                   |
| Illiterate                               | 4             | 6.3               |
| Up to 5th                                | 10            | 15.6              |
| Up to 8th                                | 18            | 28.1              |
| Up to 10th                               | 14            | 21.9              |
| Up to 12th                               | 8             | 12.5              |
| Graduate/Technical                       | 10            | 15.6              |
| <b>Husband's Occupation</b>              |               |                   |
| Farmer                                   | 2             | 3.1               |
| Labourer                                 | 34            | 53.1              |
| Business                                 | 7             | 10.9              |
| Service                                  | 7             | 10.9              |
| Other                                    | 14            | 21.9              |

**Table 3: Knowledge of family planning methods among PPIUCD acceptors**

| Family Planning Method | Percentage         |                    |
|------------------------|--------------------|--------------------|
|                        | Responses<br>N=143 | Acceptors*<br>N=58 |
| Female Sterilization   | 21.7               | 53.4               |
| Male Sterilization     | 5.6                | 13.8               |
| Pills                  | 26.6               | 65.5               |
| Regular IUCD           | 21.7               | 53.4               |
| Injectables            | 4.2                | 10.3               |
| Male Condom            | 18.9               | 46.6               |
| Withdrawal             | 0.7                | 1.7                |
| Other                  | 0.7                | 1.7                |
| <b>Total</b>           | <b>100.0</b>       | <b>246.6</b>       |

\* Multiple Responses

**Table 4: Current use of family planning methods among PPIUCD acceptors**

| Family Planning Method | Percentage        |                    |
|------------------------|-------------------|--------------------|
|                        | Responses<br>N=66 | Acceptors*<br>N=63 |
| Female Sterilization   | 10.6              | 11.1               |
| Pills                  | 9.1               | 9.5                |
| IUCD                   | 1.5               | 1.6                |
| PPIUCD                 | 42.4              | 44.4               |
| Male Condom            | 18.2              | 19.0               |
| Traditional            | 18.2              | 19.0               |
| <b>Total</b>           | <b>100.0</b>      | <b>104.8</b>       |

\* Multiple Responses

**Table 5: Quality of care in PPIUCD services**

| Quality of Care                                   | Percentage  |
|---|-------------|
| <b>Feel pain during or after PPIUCD insertion</b> | <b>N=63</b> |
| Only during insertion                             | 25.4        |
| Only after insertion                              | 4.8         |
| Both during and after insertion                   | 25.4        |
| No pain   | 44.4        |
| <b>Severity of pain</b>                           | <b>N=35</b> |
| Less painful                                      | 27.8        |
| Somewhat painful                                  | 30.6        |
| Very painful                                      | 41.7        |
| <b>Treatment taken for pain</b>                   | <b>N=35</b> |
| No treatment                                      | 48.6        |
| Taken medicine from pvt. doctor                   | 11.4        |
| Medicine given by hospital                        | 40.0        |
| <b>Precautions advised after PPIUCD insertion</b> | <b>N=63</b> |
| No  | 19.1        |
| Yes   |             |

**Table 6 : Percentage of acceptors by types of complication faced after PPIUCD insertion**

| <b>Complications</b><br><i>(Multiple responses)</i> | <b>Percent</b><br><b>(N=38)</b> |
|---|---------------------------------|
| Pain  | 65.8                            |
| Bleeding or Irregular Periods                       | 28.9                            |
| Pain while sitting or walking                       | 28.9                            |
| Abdominal pain                                      | 23.7                            |
| Back ache   | 15.8                            |
| Pinching of Cu -T wire inside vagina                | 7.9                             |
| Problem in intercourse                              | 2.6                             |
| Spontaneous removal of Cu-T                         | 2.6                             |

**Table 7 : Percent distribution of acceptors by duration of PPIUCD use**

| <b>Duration (Months)</b> | <b>Ever User (N=35)</b> | <b>Current User (N=28)</b> | <b>Total (N=63)</b> |
|--------------------------|-------------------------|----------------------------|---------------------|
| Less than 6              | 77.1                    | 50.0                       | 65.1                |
| 6 to 12                  | 17.1                    | 42.9                       | 28.6                |
| 12 to 18                 | 0.0                     | 0.0                        | 0.0                 |
| Above 18                 | 5.8                     | 7.1                        | 6.3                 |
| <i>Average</i>           | <i>3.8</i>              | <i>6.0</i>                 | <i>4.8</i>          |

**Table 8: Number of current users by intention to continue and duration of PPIUCD use (in months)**

| <b>PPIUCD use duration</b> | <b>Intension to continue PPIUCD</b> |              |                     |
|----------------------------|-------------------------------------|--------------|---------------------|
|                            | <b>Up to 12</b>                     | <b>13-36</b> | <b>More than 36</b> |
| Less than 12               | 10                                  | 9            | 6                   |
| 12 to 18                   | 1                                   | 0            | 0                   |
| Above 18                   | 1                                   | 1            | 0                   |

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## **Influence of Household Environmental factors on Morbidity: Evidences from BARC household survey in Rural Vishakapatnam areas, AP**

<sup>1</sup>Dr. A. Vinod Kumar, <sup>2</sup>Dr. Ganesh Balasubramaniam, <sup>3</sup>Dr. C.P.Prakasam

### **Introduction:**

The World Health Organization (WHO, 2005) considers “residential environment” as “the physical structure that man uses and the environs of that structure including all necessary services, facilities, equipment and devices needed or desired for the physical and mental health and the social well-being of the family and individual”. It is also defined as “the physical structure where a family lives and provides shelter from the weather”. But in the recent times, a house is simply not a place providing shelter to people or protecting them from heat, light and rain, it is a part of the man's total environment and greatly responsible for the better health, free from diseases of the dwellers. Better cooking facilities, availability of water at house, better sanitation facilities may lead to better living condition and in turn may lead to better health.

It has been observed that household environment greatly influencing the mother and child's health specifically and male members in general. Research studies have shown that large percent deaths of children under the age of five in India and other developing countries have been linked to the household environment. The distinctive physiological nature of children predisposes them to a variety of health hazards within and around the household, including unsafe sources of water and poor sanitary conditions (World Bank, 2001; 2008). Malaria, acute respiratory infections, measles, and diarrhoea which are today major causes of mortality are linked to poor household environment. Study carried out in Bangladesh (Majumder AK; Islam SM 1993, Hoque BA et al., 1999) by using MATLAB data show that household environmental facilities and mother's education affects infant survival. Another research study done in Nepal (Gubhaju et al., 1991) by examining Nepal Fertility Survey data shows that probability of death among infants was 44 percent higher for those drinking lake or river water than those using piped or tube well water. Mishra et al. (1997) by analyzing large survey data of India, NFHS-1 (IIPS,) showed that persons living in households that primarily use biomass for cooking fuel have shown considerably higher prevalence of active tuberculosis than persons living in households that use clean fuels. This effect is reduced depending upon the factors like availability of a separate kitchen, house type, indoor crowding, age, and other variables. Using a hazard model, Van der Klaauw and Wang (2004) found that having a separate kitchen and using clean cooking fuel significantly improves child survival probability during the first month of birth, but not later.

Harza et al., (2007) who has analyzed NFHS-II (IIPS, 1998-1999) data for women aged 15 years and above belong to north-eastern states revealed that the risk of suffering from respiratory morbidities

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1. Scientific Officer "H", Head, Environmental Safety Section (Vizag), Radiation Safety Systems

2. Division, Bhabha Atomic Research Centre, Trombay, Mumbai 400085.

Head, Dept of Medical Records, Biostatistics & Epidemiology, TMC, Mumbai- 400 012,

3. Retired Professor from Department of Public Health and Mortality, Incharge Data Centre, International Institute for Population Sciences (IIPS), Mumbai-400088.



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among women was more among those who were residing in *semi-Pucca & Kaccha* houses in which unclean fuel was used for cooking, did not have a separate kitchen, used kerosene for lighting and low SLI. Sengupta (2010) after examining data from NFHS-III (IIPS, 2005-06) came to a conclusion that women, children of the households using biofuel were 24 per cent and 49 per cent respectively more likely to be asthmatic than those who used clean fuels. A multi-centric population study on asthma prevalence among adults (a total of 73605 respondents) by Gupta et al. (2006) showed that the prevalence of asthma was higher among household members exposed to environmental tobacco smoke (ETS) compared to non-exposed individuals. Study carried out in India, by using large survey data (NFHS-3) for Tamil Nadu, Kerala and Andhra Pradesh (Prakasam, CP) showed that “cooking environment and number of rooms used for sleeping found to be the contributory risk factors in assessing TB prevalence. These factors show significant impact in Tamil Nadu and Andhra Pradesh and Karnataka”. In another study carried out by Prakasam, C.P (2012) for Tamil Nadu and Madhya Pradesh, revealed that risk of child loss in urban areas relatively high (25 percent) due to poor household environment, poor sanitation condition, unsafe drinking water compare to their counterpart. Hence, the present study, hypothesized that variations in household environments in the study area could affect morbidity of household members.

To measure the influence of household environmental factors on Morbidity of household members is a complex phenomenon because the variables, viz., housing condition, water, sanitation, and household goods, household articles etc. differ from different societies, geographical areas which affects morbidity pattern of children, women and men living in those houses. Possessing of household items also varies by income, education and place of living of household. Variables identified as environmental factors by considering household goods and materials act as a latent variable and may have slow and long term influence than immediate on morbidity of household members. However, a broader category of variables, which are derived from the baseline survey, conducted by Bhabha Atomic Research Centre (BARC), Mumbai at Rural Vishakapatnam (Andhra Pradesh) proposed nuclear power plant area (PRC 2015) forms source of data for analysis of this study.

Keeping in view of the above research studies and the data set, this study aims at the following objectives:

1. To examining the socio-economic and household status, environmental, water, sanitation conditions and morbidity of household members in the around proposed plant area of rural Vishakapatnam, A.P.
2. To know the household environmental factors influencing morbidity of household members around the proposed nuclear plant area of Vishakapatnam, AP.

## **Methods and Materials**

### *Data:*

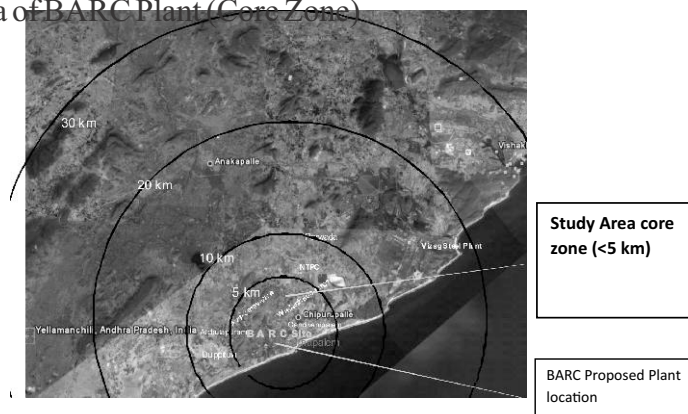
The Bhabha Atomic Research Centre (BARC, Mumbai) organized a Baseline Survey on the Socio-economic, demographic and Health conditions of the population living in and around proposed nuclear plant at Jogannapalem village of Atchutapuram Mandal in Visakhapatnam district. The baseline survey

data were collected from 9867 households from 41 habitations under 14 revenue/census villages in three Mandals (sub-district units in Andhra Pradesh) viz: Atchutapuram, Parawada and Rambilli by Population Research centre, Andhra University, Vishakapatnam, with 30 km radius from the proposed plant.

Form the BARC baseline study; data were collected covering all the households within 5 km radius called core zone (6826 households) and a sample of households called buffer zone with 3041 households with in 5 – 30 km radius. The Fig: 1 shows the core zone and buffer zone of the baseline study. For the present research paper data were derived from the survey conducted by BARC (PRC 2015), from 6826 rural households *with in the radius of 5km from the Nuclear Power Plant, identified as study area.*

The list of variables considered for analysis is given in Table 1. The set of variables considered for the study have been divided in to two categories. First category of household level factors which are *directly influencing* morbidity of household members and secondary category refers to household goods (assets) possessed through economic status of the household. The dependent variable Morbidity was derived from the question “whether any member with current disease/ sickness/handicap suffers with the same for 6 weeks from survey date”. Further probe in to above question about the type of disease and due to the disease anybody who is unable to work during last 30 days has been collected.

Figure 1 : Study area of BARC Plant (Core Zone)



### Methodology:

The selection of sample households according to zone wise, quality of data has been described in the BARC survey report (PRC 2015) and followed according to the baseline survey protocol provided by BARC (2013). For the present study data derived from the baseline survey in the rural areas of Vishakapatnam residing 0 to 5km distance from the proposed power plant.

The set of direct variables in the first category subdivided in to: 1. Household level environmental factors (HHENV), 2. Sanitation factors (SAN), 3. Housing condition (HHCOND), 4. Households Health Insurance (HHIN), 5. Household Habits (HHB). Under each factor, the items collected has been scored in terms of its influence on Morbidity of the household members. As an illustration, source of drinking water, if it is piped water, it is scored as highest (3), dug well water (2) and other sources such as pond, rain water, stream water etc as one. Similarly under fuel used for cooking, if the household using electricity/LPG/Natural gas/Bio gas, the score is given as high (4) and others are given accordingly. The set of scores given for each factor is listed in Table 1. Frequency of the scores according to Household level environmental factors (HHENV), Sanitation factors (SAN), Housing condition (HHCOND), Households Health Insurance (HHIN), Household Habits (HHB) has been calculated and given in Appendix Table-I.

A set 25 items of household goods (assets) possessed in each household such as Fan, chair, table, radio, TV, car, computer etc have been grouped and a composite household wealth index has been computed. This wealth index was developed by using factor analysis method Principal Component Analysis, Varimax rotation. Each household asset stated by the household is assigned a weight (factor score) generated through Principal Component Analysis (PCA), and the resulting scores are standardized in relation to the normal distribution with a mean of 0 and standard deviation of one (Gwatkin et al 2000). Each household is then assigned a score for each asset, and the scores were summed for each household and individuals are ranked according to the score of the household in which they reside. Then the entire rural sample households (6826) are divided in to five quintiles. The percent households according to the wealth quintile are given in Table 2. The wealth quintile refers to economic status of the household. It has been hypothesized that higher wealth index may have negative relation with household morbidity.

| Table 1: List of variables considered for analysis in measuring the influence of household environmental factors on Morbidity in Vishakhapatnam nuclear plant area |                          |  |
|--|--------------------------|--|
| <b>Household Level Environmental Factors (HHENV)</b>   |                          |  |
| 1  | Electricity              | Electricity, solar energy=3, Bio gas=2, Kerosene, other=1  |
| 2  | Source of Drinking Water |  |
| 3  | Drinking Purified water  | Piped water=3, Dug Well=2, Other= 1<br>No=0, Yes=1   |
| 4  | Fuel used for cooking    | Electricity/LPG/Natural gas/Bio gas--4,<br>Kerosene-3<br>Coal/Lignite/charcoal—<br>2, Wood/straw/shrubs/grass/<br>Agricultural crop waste/, Dung cake -1 |

| <b>Sanitation factors (SAN)</b>   |   |   |
|-----------------------------------|---|---|
| 5                                 | Toilet facilities   | Flush Toilet-2,Pit Toilet-1,No toilet-0 |
| 6                                 | Open defecation   | Near-0,Far-1                            |
| <b>Housing Condition (HHCOND)</b> |   |   |
| 7                                 | Type of House   | Kuchha—1,Semi-Pucca—2,Pucca—3           |
| 8                                 | Number of rooms used for                                    | No room -0,One room—1,Two---2           |
| 9                                 | sleeping<br>Separate room for kitchen                       | Yes—1,No--2                             |
| <b>Household Habits (HHB)</b>     |   |   |
| 10                                | Household members smoke                                     | Yes—1,No-0                              |
| 11                                | Household members chew<br>Tobacco / Panparag                | Yes-1,No-0                              |
| 12                                | Household drink alcohol                                     | Yes—1,No—0                              |
| 13                                | Household drink toddy/other local<br>made intoxicant drinks | Yes-1,No--0                             |
| Y1                                | Household Morbidity condition<br>six weeks or more          | Yes—1,No--2                             |

Analysis has been carried out in three stages. Initially Socio-economic and household status has been analysed by using simple frequency tables. At the second stage, percentage of household experiencing morbidity by household environment indices has been analyzed. To know the relation between the factors given in Table 1, wealth index and Morbidity, correlation coefficient has been calculated. To understand the determinants influencing morbidity, multiple regression analysis has been carried out.

## **Results:**

### **Demographic Characteristics of household members**

To achieve the first objective, Socio-Demographic data has been analyzed by simple frequency. Percent Age distribution of household members in the study area (Table 3) shows that half of the study household population (56.5 percent) are in the age group 15-49 years followed by 17.4 percent in the age group 6-14 years. In the study area 8.2 percent elderly population and 10 percent child population (less than 5 years) has been observed. Sex ratio is favourable to male, 984 females per 1000 males.

|                | Frequency | Percent |
|----------------|-----------|---------|
| Lowest         | 1401      | 20.5    |
| Second lowest  | 1329      | 19.5    |
| Middle         | 1366      | 20.0    |
| Second highest | 1365      | 20.0    |
| Highest        | 1365      | 20.0    |

|                        | 0-5 km radius |      |
|------------------------|---------------|------|
|                        | N=27399       | %    |
| <b>Age group</b>       |               |      |
| 0 – 5                  | 2736          | 10.0 |
| 6 - 14                 | 4769          | 17.4 |
| 15 - 49                | 15471         | 56.5 |
| 50 - 59                | 2163          | 7.9  |
| 60+                    | 2260          | 8.2  |
| Mean Age               | 27.92         |      |
| <b>Gender</b>          |               |      |
| Male                   | 13811         | 50.4 |
| Female                 | 13588         | 49.6 |
| Sex Ratio (F/M x 1000) | 984           |      |

Forty three percent of study population are “never married” status and around 49 percent are currently married and 7.19 percent widow/widowers (Table 3). Literate population (50.5 percent) slightly higher than illiterate (49.5 percent) and work status wise non working population was 54.5 percent and working population was 45.5 percent.

### Household characteristics

Religion wise, 98.5 percent household (Table 4) belong to Hindu and 1.3 percent belong to Christian and 0.2 percent Muslims in the study area. Majority of head of household (81.7 percent) belong to Other Backward class followed by “others” cast class (13.1 percent). Scheduled Cast and Tribes are around 5.2 percent.

In the study area majority of households live in Kachcha houses (45.5 percent) followed by 39.2 percent in Pucca houses (Table 4). Electricity is the major source of light in the house (84.5 percent) and 48.7 percent households depends upon Public tap and 28.3 percent use hand pump as source of drinking water. Around nine percent of houses with toilet facilities and 91.1 percent houses in the study area with no toilet facilities (Open defecation). In the study area 94.5 percent households monthly income was less than 10,000 rupees and only 0.2 percent families represent monthly income more than 30,001 and above.

### Morbidity:

The dependent variable Morbidity has been collected by asking question “any member with the current disease/sickness/handicap suffer with the same for 6 weeks or more”. If the respondent says “yes”, confirms that he/she suffered with the existing disease/sickness since six months. The resulting answer proves prevalence of morbidity with duration six months or more. In the study area 78.1 percent of households expressed at least one person in their house suffered from disease or fell sick.

Table 5 shows gender wise percent household members who experienced morbid condition during last six months from the survey data shows 17.3 percent household members suffer from Arthritis and this percentage remains same for both the sex.

|                                |       |        |
|--------------------------------|-------|--------|
| <b>Marital Status</b>          |       |        |
| Currently Married              | 13337 | 48.68  |
| Married but Guan not performed | 43    | 0.15   |
| Widow / Widower                | 1971  | 7.19   |
| Divorced / Separated           | 267   | 0.98   |
| Never Married                  | 11781 | 43.00. |
| <b>Literacy</b>                |       |        |
| Illiterate                     | 12447 | 49.5   |
| Literate                       | 12696 | 50.5   |
| <b>Work Status</b>             |       |        |
| Not Working                    | 14933 | 54.5   |
| Working                        | 12467 | 45.5   |

Excluding the “others”, Respiratory problems (10.4 percent), Blood Pressure (6.2 percent) and cough/cold which is one of the respiratory problems (5.5 percent) are the leading causes. Sex wise Percent of females expressed respiratory problems (6.7 percent) more than male (5.8 percent). Major non communicable diseases such as heart disease (0.8 percent), T.B (0.3 percent), Malaria (.2 percent) and cancer (.1 percent) prevailed in the study area. Sex wise heart disease reposted same and TB prevailed more in male (0.5 percent) than female (0.2 percent). Cancer found only in female (0.1 percent) in study area.

Due to morbid conditions one third of working household members were unable to work at least past one month. Highest number (33.6 percent) of household reported due to Arthritis, they are unable to work, followed by respiratory problem (17.6 percent), Fever (16.8 percent) and Blood Pressure (16.6 percent). Other morbid conditions are less than five percent (Table 5).

| <b>Table :4: Number and Percent distribution of Household characteristics in the study area: Baseline survey data</b> |                      |          |
|---|----------------------|----------|
|   | <b>0-5 km radius</b> |          |
|   | <b>N=6826</b>        | <b>%</b> |
| <b>Religion of head of Household</b>  |                      |          |
| Hindu   | 6722                 | 98.5     |
| Muslim  | 17                   | 0.2      |
| Christian   | 87                   | 1.3      |
| <b>Caste / Tribe of head of Household</b>   |                      |          |
| Scheduled Caste   | 341                  | 5.0      |
| Scheduled Tribe   | 14                   | 0.2      |
| Other Backward Class  | 5573                 | 81.7     |
| Others  | 898                  | 13.1     |
| <b>Type of House</b>  |                      |          |
| Kachcha   | 3109                 | 45.5     |
| Semi-pucca  | 1038                 | 15.2     |
| Pucca   | 2679                 | 39.2     |
| <b>Source of Light in the House</b>   |                      |          |
| Electricity   | 5790                 | 84.8     |
| Kerosene  | 1036                 | 15.2     |



| <b>Source of Drinking Water</b> |      |      |
|---------------------------------|------|------|
| Piped into dwelling             | 116  | 1.7  |
| Piped to Yard/Plot              | 61   | 0.9  |
| Public tap / stand pipe         | 3323 | 48.7 |
| Hand pump                       | 1931 | 28.3 |
| Tube Well / Bore Well           | 275  | 4.0  |
| Protected Well                  | 35   | 0.5  |
| Unprotected Well                | 670  | 9.8  |
| Unprotected Spring              | 415  | 6.1  |
| <b>Toilet Facilities</b>        |      |      |
| Open defecation                 | 6219 | 91.1 |
| Toilet facilities               | 607  | 8.9  |
| <b>Family Monthly Income</b>    |      |      |
| <5000                           | 4203 | 61.6 |
| 5001-10000                      | 2244 | 32.9 |
| 10001-20000                     | 343  | 5.0  |
| 20001-30000                     | 21   | 0.3  |
| 30001+                          | 15   | 0.2  |

To know the relation between the household environment factors (HHENV, SAN, HHCOND, HHIN, and HHB), wealth index and household Morbidity, zero order correlation coefficient has been calculated and the results are given in Table 6. The results shows that the dependent variable Morbidity is negative and significantly correlation with Household habits (HHB) ( $r=-.103$ ,  $P<.001$ ) and positive, and significantly with Wealth index ( $.051$ ,  $P<.001$ ) and no significant relation with HHENV, SAN, HHCOND. Household level factors (HHENV, SAN, and HHCOND) are positive and significantly correlated with wealth index (Table 6).

Correlation analysis brings out the relation between two variables but fails to depict the set of variables influencing dependent variable and its contribution. Hence multiple regression analysis, stepwise method is used by considering Morbidity as dependent variable and HHENV, SAN, HHCOND, HHB and wealth index as independent variables. The results are given in Table7. Stepwise regression analysis show that (Table 7) out of five independent variables only three variables have been entered in

to final model. In the first model only Household Habits has been considered (F=73.744, P<.0001). At second stage along with Household Habits, wealth index entered into regression (F=42.627, P<.0001). At third along with Household Habits (HHB), wealth index, Housing condition (HHCOND) entered into regression (F31.060, P<.0001). Other two variables HHENV and SAN could not enter into regression in determining morbidity.

| Table:5: Male, female and Total Percent household member who experienced morbid condition during last six months from the survey date in the Study area |        |      |        |      |        |      | Percent household member who is unable to work at least for a month due morbidity condition* |
|---|--------|------|--------|------|--------|------|--|
|   | Male   |      | Female |      | Total  |      |  |
| Morbidity*  | Number | %    | Number | %    | Number | %    | %  |
| Arthritis   | 2217   | 16.1 | 2527   | 18.6 | 4744   | 17.3 | 33.6   |
| Others  | 1243   | 9    | 1595   | 11.7 | 2838   | 10.4 | --   |
| Respiratory Problems  | 804    | 5.8  | 908    | 6.7  | 1712   | 6.2  | 17.6   |
| Blood Pressure  | 691    | 5    | 870    | 6.4  | 1561   | 5.7  | 16.6   |
| Cough / Cold  | 846    | 6.1  | 672    | 4.9  | 1518   | 5.5  | 12.6   |
| Fever   | 376    | 2.7  | 308    | 2.3  | 684    | 2.5  | 16.8   |
| Wounds  | 416    | 3    | 222    | 1.6  | 638    | 2.3  | 5.7  |
| Skin related problems   | 303    | 2.2  | 220    | 1.6  | 523    | 1.9  | 3.1  |
| Deaf  | 246    | 1.8  | 220    | 1.6  | 466    | 1.7  | 3.5  |
| Diabetes  | 282    | 2    | 177    | 1.3  | 459    | 1.7  | 5.7  |
| Congenital Malformation   | 145    | 1    | 119    | 0.9  | 264    | 1.0  |  |
| Heart Disease   | 112    | 0.8  | 115    | 0.8  | 227    | 0.8  | 3.9  |
| Polio   | 110    | 0.8  | 75     | 0.6  | 185    | 0.7  | 1.9  |
| Worm Infestation  | 79     | 0.6  | 83     | 0.6  | 162    | 0.6  | 0.5  |
| Fits  | 84     | 0.6  | 56     | 0.4  | 140    | 0.5  | 2.4  |
| Mentally Retarded   | 46     | 0.3  | 60     | 0.4  | 106    | 0.4  | 2.7  |
| TB  | 65     | 0.5  | 27     | 0.2  | 92     | 0.3  | 2.5  |
| Dumb  | 43     | 0.3  | 36     | 0.3  | 79     | 0.3  | 1.3  |
| Thyroaid  | 17     | 0.1  | 47     | 0.3  | 64     | 0.2  | 1.4  |
| Malaria   | 21     | 0.2  | 21     | 0.2  | 42     | 0.2  | 4.2  |
| Jaundice  | 28     | 0.2  | 12     | 0.1  | 40     | 0.1  | 2.4  |
| Cancer  | 4      | 0    | 19     | 0.1  | 23     | 0.1  | 1.0  |
| *multiple response  |        |      |        |      |        |      |  |

Table 6: Zero order correlation matrix among household morbidity and household environmental factors in the study area

|                               | Morbidity | Housing Condition factors | Household Habits | Sanitation condition | Household Environmental factors | Wealth index |
|-------------------------------|-----------|---------------------------|------------------|----------------------|---------------------------------|--------------|
|                               |           | HHCOND                    | HHB              | SAN                  | HHENV                           |              |
| Morbidity                     | 1         | .003                      | -.103**          | .009                 | .023                            | .051**       |
| Housing Condition Index       |           | 1                         | -.116**          | .341**               | .308**                          | .507**       |
| Household Habits Index        |           |                           | 1                | -.163**              | -.214**                         | -.110**      |
| Sanitation Index              |           |                           |                  | 1                    | .342**                          | .287**       |
| Household Environmental Index |           |                           |                  |                      | 1                               | .424**       |
| Wealth index                  |           |                           |                  |                      |                                 | 1            |

**Table 7: Household Variables influencing morbidity :Step wise regression analysis results\***

| Model   | Predictors                       | Un standardized Coefficients |            | Standardized Coefficients | t       | Sig. | Adjusted R square | F-ratio   |
|---------|----------------------------------|------------------------------|------------|---------------------------|---------|------|-------------------|-----------|
|         |                                  | B                            | Std. Error | Beta                      |         |      |                   |           |
| Model1  | (Constant)                       | 1.304                        | .009       |                           | 142.721 | .000 |                   |           |
|         | Household Habits (HHB)           | -.032                        | .004       | -.103                     | -8.587  | .000 | .011              | 73.744*** |
| Model 2 | (Constant)                       | 1.265                        | .015       |                           | 85.082  | .000 |                   |           |
|         | Household Habits (HHB)           | -.031                        | .004       | -.099                     | -8.172  | .000 |                   |           |
|         | Wealth index                     | .012                         | .004       | .041                      | 3.347   | .001 | .012              | 42.527*** |
| Model 3 | (Constant)                       | 1.278                        | .016       |                           | 82.089  | .000 |                   |           |
|         | Household Habits (HHB)           | -.032                        | .004       | -.101                     | -8.355  | .000 |                   |           |
|         | Wealth index                     | .018                         | .004       | .060                      | 4.318   | .000 | .013              | 31.060*** |
|         | Housing Condition Index (HHCOND) | -.010                        | .003       | -.040                     | -2.835  | .005 |                   |           |

\*Dependent Variable: Morbidity condition, \*\*\*P<.0001

## Summary Conclusions

Environmental health hazard which is largely defined as the circumstances or conditions surrounded by the human beings encompass two broader categories. The first is the traditional health hazard related to household poverty and lack of development, such as waste disposal, vector borne diseases, inadequate sanitation, indoor air pollution and lack of safe water while the second, emanated from the modern hazards such as rural/urban air pollution and exposure to agro industrial chemical and wastes, caused by development that lacks environmental safeguards (Shyamsundar, 2002). Considering first category of environmental health hazard this research paper examines household environmental

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factors influencing morbidity by collecting the data from a large survey conducted by BARC (PRC 2015) in the rural areas of Vishakapattanam, AP.

Statistical analysis revealed that 78 percent of household experiencing morbid condition more than six months and among them around 17 percent with arthritis, which is due to unsafe drinking water and 6 percent with respiratory problems may be due to indoor pollution. Around 0.3 percent of household members are experiencing TB, Malaria (0.2 percent) and cancer (0.1 percent) (Table 5).

Correlation analysis it was evident only wealth index, which has been derived from the household goods possessed and household habits (smoking, drinking etc), showed significant relation with household morbidity. It was evident that the direct variables such as HHENV, SAN could not influence household morbidity condition. This is because most of the rural population is practicing open defecation (Appendix Table 1) and majority of the houses are provided with electricity and using LPG as cooking fuel.

Multiple regression analysis by stepwise method reveals that household morbidity condition is influenced by household habits, Wealth index and Housing conditions prevailed during survey time in the study area. It was evident that the latent variable (Wealth index) and unhealthy household members habits determines the variation in morbidity condition in the household. From this analysis it can be concluded household environmental factors, sanitation factors will influence the morbidity only when these factors are not at threshold level. Examining the data on sanitation (SANI) condition in the study area, it shows “wounds”, “Worm Infestation” is prevalent in the study area caused by open defecation and “TB”, “Cancer” due to housing congestion.

In order to improve the health conditions of household members, necessary policies and programs should be strengthen by providing better sanitation facilities, better housing condition. Towards this Government of India initiated “*Swacha Bharat*” and providing low cost better housing to the rural population. Plans have to evolve to provide education and information to the household on healthy habits and life style and its consequences on household morbidity and mortality.

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APPENDIX \_I: TABLE:

| Table 1: Percent Households according to score value for each factor in the Study area |           |         |
|--|-----------|---------|
| <b>Household Environmental Index</b>   |           |         |
| Score  | Frequency | Percent |
| 4.00   | 47        | .7      |
| 5.00   | 282       | 4.1     |
| 6.00   | 1345      | 19.7    |
| 7.00   | 4451      | 65.2    |
| 8.00   | 253       | 3.7     |
| 9.00   | 42        | .6      |
| 10.00  | 328       | 4.8     |
| 11.00  | 78        | 1.1     |
| Total  | 6826      | 100.0   |
| <b>Sanitation Index</b>  |           |         |
| .00  | 6225      | 91.2    |
| 1.00   | 22        | .3      |
| 2.00   | 579       | 8.5     |
| Total  | 6826      | 100.0   |
| <b>Housing Condition Index</b>   |           |         |
| 1.00   | 2074      | 30.4    |
| 2.00   | 920       | 13.5    |
| 3.00   | 1219      | 17.9    |
| 4.00   | 917       | 13.4    |
| 5.00   | 1109      | 16.2    |
| 6.00   | 587       | 8.6     |
| Total  | 6826      | 100.0   |
| <b>Household Habits Index</b>  |           |         |
| .00  | 1387      | 20.3    |
| 1.00   | 1188      | 17.4    |
| 2.00   | 1203      | 17.6    |
| 3.00   | 2056      | 30.1    |
| 4.00   | 992       | 14.5    |
| Total  | 6826      | 100.0   |

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## A Study on Subjective Well-Being of Elderly in Kerala

Suresh Kumar\*

### Summary

Kerala has the highest proportion of the elderly and the highest life expectancy in the country. The present study tries to analyse the Subjective Well being of elderly in Kerala, based on their self perception. Objective of this study is to study the Subjective Well being of elderly in Kerala, based on their self perception. Secondary data used for the study were taken from survey conducted in Kerala in connection with the 'Building Knowledge base on Population Ageing in India' (BKPAI) in 2011. The survey covered a total of 1,214 households across the 14 districts of Kerala. The survey interviewed 1365 elderly of which 567 are males and 798 are females. Chi Square analysis and Logistic Regression analysis were performed in the study. Respondents were asked nine questions on various aspects of life satisfaction for assessing their subjective wellbeing. Answers to all the nine questions were recorded in three point scale. For constructing an Index of subjective well-being, the scores obtained for the questions are added and classified in to three categories namely Poor index, Moderate Index and Good Index. Only a quarter of the respondents were of the view that they have very much achieved success in life. Similarly only about 26 percent of the respondents felt that they are very much able to accomplish the desired works and 12.4 percent felt that they were not able to accomplish the desired work. About 27 percent of the elderly respondents felt that they were able to manage the unexpected situation and about 15 percent felt that they were not much able to manage the unexpected situation. At the same time about 40 percent of the respondents were very much confident in coping with the future. Logistic Regression analysis of the Subjective Wellbeing Index showed that compared to male respondents their female counter parts have 17 percent lesser chance for having better Subjective Wellbeing. The chance for having a higher Subjective Wellbeing decreases with age. Level of education also has association with the wellbeing of the elderly. Compared to Rural respondents, those in the urban areas have 15 percent higher chance for better Wellbeing. Level of income is found to have very significant relation with the Subjective Wellbeing.

### Introduction

Like many other developing countries in the world, India is also presently witnessing rapid ageing of its population. The older population has been increasing steadily in number and proportion in India. (Daliya Sebastian & T.V Sekher). Population ageing is an important emerging demographic phenomenon in India, warranting a strong multi-sectoral policy and programme response to deal with many significant implications for the elderly in particular and society at large (BKAI, 2011). Kerala has the highest proportion of the elderly (12.5 per cent, 2011 Census) and the highest life expectancy in the country. The projected figures indicate that the aged population of the state would become 18 percent in 2021 and about 35 percent in 2051(Rajan et. al, 1994).

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\* Documentalist, PRC Kerala



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The aged were found to suffer from anxiety, alienation, maladjustment, fear, tension, feeling of insecurity, worthlessness, dependency, loss of memory, vision, hearing, giddiness and body pain (Selvi,2001). A study on the psycho-social problems of retired persons shows that age had a significant positive relationship with psychological distress and significant negative relationship with attitude towards physical changes (Prema D. Patil, 2000). Psychological problems such as loss of job, anxiety, depression, loneliness, loss of social support, neglect, abuse and exploitation were faced by the elderly (Hema Nalini et al., 2002). This highlights the need to study the wellbeing of elderly in Kerala. The present study tries to analyse the Subjective Well being of elderly in Kerala, based on their self perception.

### **Objective**

Objective of this study is to study the Subjective Well being of elderly in Kerala, based on their self perception.

### **Data**

Secondary data used for the study were taken from survey conducted in Kerala in connection with the 'Building Knowledge base on Population Ageing in India' (BKPAI) conducted by United Nations Population Fund and its collaborating institutions - Institute for Social and Economic Change, ISEC (Bangalore), Institute of Economic Growth, IEG (New Delhi) and Tata Institute of Social Sciences (Mumbai). After reviewing the data and studies on the elderly, a national survey was launched in seven states of India in 2011. The survey covered a total of 1,214 households across the 14 districts of Kerala. The survey interviewed 1365 elderly of which 567 are males and 798 are females. The fifth section of the individual questionnaire of BKPAI dealt with subjective health and health-seeking behaviour of the elderly.

### **Methodology**

Chi Square analysis and Logistic Regression analysis were performed in the study. Respondents are asked nine questions on various aspects of life satisfaction for assessing their subjective wellbeing. Answers to all the nine questions are recorded in three point scale. For constructing an Index of subjective well-being, the scores obtained for the questions are added, the variability of which is from 9 to 27. Responses to all the nine questions on various aspects of life satisfaction recorded in three point scale are coded with values 1, 2 and 3. Positive answers are given the value 1, moderate are given the value 2 and negative answers are given the value of 3. The scores obtained for the questions are added to get an index called Subjective Wellbeing Index, the value of which varies from 9 to 27. The score 9 means all the responses are positive and so a perfect well-being. At the same time the score of 27 means all the responses are negative and so a very poor well-being. The scores obtained are classified in to three category namely poor index, Moderate Index and Good Index. The total scores from lowest (9) to mean- median are classified as Good Index, scores from Mean-Median to Mean+Median are classified as Moderate Index and scores from Mean+Median to highest (27) are classified as Poor Index.

## Analysis and Findings

### Health Status of the Elderly Persons

Table 1: Self Rated Health of the Elderly Persons

| Characteristics                     | % ( N)      |
|-------------------------------------|-------------|
| <b>Self rated Health</b>            |             |
| Poor                                | 33.7(457)   |
| Moderate                            | 52.8(716)   |
| Good                                | 13.6(184)   |
| <b>Proper sleep at night</b>        |             |
| Yes                                 | 67.1(911)   |
| No                                  | 32.9(446)   |
| <b>Feeling unhappy or depressed</b> |             |
| Yes                                 | 34.1(463)   |
| No                                  | 65.9(894)   |
| <b>Total</b>                        | 100.0(1357) |

Self rated current health status of the respondents show that only 13.6 percent of the elderly rated their health status as good. At the same time one third of the aged rated their health status as poor and the remaining elderly (52.8 percent) rated their current health as moderate. About one third of the aged (32.9 percent) reported that they were not getting proper sleep at night and about 34 percent of the respondents were feeling unhappy or depressed.

### Subjective Wellbeing of the Elderly Persons

Table 2: Responses of the elderly persons to the questions on various aspects of life satisfaction

| No | Questions on various aspects of life satisfaction                 | Very much | To some extent | Not so much |
|----|---|-----------|----------------|-------------|
| 1  | Felt that life is interesting                                     | 31.7      | 54.4           | 14.0        |
| 2  | Felt present life is happy compared to past                       | 30.5      | 52.0           | 17.6        |
| 3  | Extent of happiness with the work done in recent years            | 28.2      | 60.2           | 11.7        |
| 4  | Think that achieved the expected standard of living/social status | 31.1      | 49.1           | 19.8        |
| 5  | Extent to which have achieved success and are getting ahead       | 25.3      | 59.3           | 15.4        |
| 6  | Normally able to accomplish the desired work                      | 26.4      | 62.3           | 12.4        |
| 7  | Feel that able to manage the unexpected situation                 | 26.9      | 58.2           | 14.9        |
| 8  | Felt confident in case of crisis                                  | 28.6      | 52.5           | 18.9        |
| 9  | Felt confident in coping with the future                          | 40.1      | 52.2           | 7.8         |

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About 32 percent of the respondents felt that their life is very interesting. About 54 percent are of the view that life is interesting to some extent and remaining 14 percent were of the view that life is not so much interesting. Their present life was felt happier for 30.5 percent of the respondents, and 17.6 percent of the respondents were of the view that their present life is not so much happy, compared to their life in the past. About 28 percent of the respondents reported that they were very much happy with the work done in recent years and about 60 percent were happy to some extent. About 12 percent of the respondents were not so much happy with the work done in recent years. About 31 percent of the respondents thought that they have achieved the expected standard of living/social status and 20 percent were of the view that they have not achieved the expected standard of living/social status. Only a quarter of the respondents felt that they have achieved success and are getting ahead. About 59 percent felt that they have achieved success only to a certain extent and the remaining 15.4 percent felt that they have not achieved success. Similarly only about 26 percent of the respondents felt that they are very much able to accomplish the desired works. About 62 percent of the respondents felt that they were able to accomplish the desired work only to some extent and 12.4 percent felt that they were not able to accomplish the desired work. About 27 percent of the elderly respondents felt that they were able to manage the unexpected situation and about 15 percent felt that they were not much able to manage the unexpected situation. 28.6 percent of the respondents felt very much confident in case of crisis and the 18.9 percent were not much confident in case of crisis. At the same time the respondents were optimistic and 40.1 percent felt very much confident in coping with the future. About 52 percent felt confident only to some extent and the remaining 7.8 percent of the respondents felt not much confident in coping with the future.

### **Analysis of Selected questions by background characteristics of respondents**

In the following sections responses of the elderly to some of the selected questions are analysed by their background characteristics.

#### **1. *Feeling that life is interesting***

*Table 3: Percentage Distribution of the respondents by Background Characteristics and their feeling that life is interesting*

| Sex of Respondent  | Felt that life is interesting |                |             | Total      |
|--------------------|-------------------------------|----------------|-------------|------------|
|                    | Very much                     | To some extent | Not so much |            |
| Male               | 35.3                          | 54.2           | 10.5        | 100.0(563) |
| Female             | 29.0                          | 54.5           | 16.5        | 100.0(776) |
| Pearson Chi-Square | 12.617**                      |                |             |            |
| Age                |                               |                |             |            |
| 60-69              | 34.0                          | 54.5           | 11.5        | 100.0(807) |
| 70-79              | 30.4                          | 56.6           | 13.0        | 100.0(369) |
| 80+                | 23.3                          | 48.5           | 28.2        | 100.0(163) |
| Pearson Chi-Square | 33.928***                     |                |             |            |
| Religion           |                               |                |             |            |
| Hindu              | 32.8                          | 53.4           | 13.8        | 100.0(781) |
| Muslim             | 26.8                          | 57.0           | 16.2        | 100.0(302) |
| Christian          | 33.5                          | 54.7           | 11.8        | 100.0(254) |
| Pearson Chi-Square | 9.592                         |                |             |            |
| Caste Group        |                               |                |             |            |
| SC                 | 23.0                          | 59.8           | 17.2        | 100.0(87)  |
| ST                 | 16.7                          | 75.0           | 8.3         | 100.0(24)  |
| OBC                | 28.5                          | 55.1           | 16.4        | 100.0(751) |
| Others             | 39.0                          | 51.2           | 9.9         | 100.0(477) |
| Pearson Chi-Square | 27.699***                     |                |             |            |
| Locality           |                               |                |             |            |
| Rural              | 29.4                          | 55.7           | 14.9        | 100.0(680) |
| Urban              | 34.0                          | 53.0           | 13.1        | 100.0(659) |
| Pearson Chi-Square | 3.469                         |                |             |            |
| Marital Status     |                               |                |             |            |
| Currently Married  | 37.5                          | 52.7           | 9.8         | 100.0(757) |
| Others             | 24.1                          | 56.5           | 19.4        | 100.0(582) |
| Pearson Chi-Square | 41.609***                     |                |             |            |
| Education          |                               |                |             |            |
| Lower Primary      | 25.0                          | 58.4           | 16.6        | 100.0(332) |
| Upper Primary      | 26.8                          | 56.3           | 16.9        | 100.0(261) |
| High school        | 42.9                          | 46.6           | 10.6        | 100.0(332) |
| Higher Secondary   | 40.0                          | 52.7           | 7.3         | 100.0(55)  |
| College            | 61.5                          | 37.5           | 1.0         | 100.0(104) |
| Pearson Chi-Square | 71.867***                     |                |             |            |

It can be seen from Table 3 that there is a significant male-female difference in the feeling of the respondents that their life is interesting (chi-square 12.617,  $p < 0.01$ ). About 35 percent of the male respondents felt very much that their life is interesting, compared to 29 percent of their female counterparts. Similarly, 10.5 percent of the male respondents felt that life is not so much interesting, compared to 16.5 percent of the females. Age wise difference in the perception of the elderly regarding the feeling that their life is interesting is also significant in the chi square analysis. As age increases the proportion of elderly who consider life is interesting gradually decreases. Those who think that life is not much interesting is more than double in the age above 80 years compared to elderly in the age group 60-69. Among different religious groups proportion of elderly who think life is very interesting is highest among Christians (33.5 percent) and lowest among Muslims (26.8 percent). But Religion wise difference is not statistically significant. There is a significant caste wise difference in the feeling of the respondents that their life is interesting (chi-square 27.699,  $p < 0.001$ ). Among different caste groups proportion of elderly who think life is very interesting is highest among other forward castes (39.0 percent), followed by OBC (28.5 percent) and lowest among ST (16.7 percent), followed by SC (23.0 percent). Higher proportion of the elderly belonging to urban area (34.0 percent) feel that their life is interesting, compared to their rural counterparts (29.4 percent). At the same time the difference by the marital status of the respondents is highly significant (Chi-Square 41.609,  $P < 0.001$ ). Among the currently married elderly persons, about 38 percent feel that life is very much interesting, compared to only about 24 percent of the other elderly persons. Educational status is also found to have significant influence on the feeling of the elderly that the life is interesting. The percent of elderly who feel life is interesting is lowest among the respondents with an education of lower primary level (25.0 percent). Percentage of respondents who feel life is interesting increases with the increase in their education and the highest proportion of respondents who feel life is interesting is among the college educated persons (61.5 percent). The education wise difference is highly significant in the chi-square analysis (chi-square 71.867,  $P < 0.001$ ).

### 1. Think that 'achieved the expected standard of living/social status'

Table 4: Percentage Distribution of the respondents by Background Characteristics and their feeling that they achieved the expected standard of living/social status

| Sex of Respondent  | Think that achieved the expected standard of living/social status |                |             | Total      |
|--------------------|---|----------------|-------------|------------|
|                    | Very much   | To some extent | Not so much |            |
| Male               | 32.9  | 49.6           | 17.4        | 100.0(563) |
| Female             | 29.8  | 48.7           | 21.5        | 100.0(776) |
| Pearson Chi-Square | 3.841   |                |             |            |
| Age                |   |                |             |            |
| 60-69              | 32.6  | 48.3           | 19.1        | 100.0(807) |
| 70-79              | 30.1  | 51.2           | 18.7        | 100.0(369) |
| 80+                | 25.9  | 48.1           | 25.9        | 100.0(163) |
| Pearson Chi-Square | 6.065   |                |             |            |

|                    |           |      |      |            |
|--------------------|-----------|------|------|------------|
| Religion           |           |      |      |            |
| Hindu              | 29.5      | 49.2 | 21.3 | 100.0(781) |
| Muslim             | 28.5      | 52.3 | 19.2 | 100.0(302) |
| Christian          | 38.6      | 45.3 | 16.1 | 100.0(254) |
| Pearson Chi-Square | 14.358*   |      |      |            |
| Caste Group        |           |      |      |            |
| SC                 | 19.5      | 42.5 | 37.9 | 100.0(87)  |
| ST                 | 16.7      | 66.7 | 16.7 | 100.0(24)  |
| OBC                | 27.0      | 51.9 | 21.0 | 100.0(751) |
| Others             | 40.3      | 45.0 | 14.7 | 100.0(477) |
| Pearson Chi-Square | 48.947*** |      |      |            |
| Locality           |           |      |      |            |
| Rural              | 30.3      | 49.6 | 20.1 | 100.0(680) |
| Urban              | 31.9      | 48.6 | 19.5 | 100.0(659) |
| Pearson Chi-Square | 0.422     |      |      |            |
| Marital Status     |           |      |      |            |
| Currently Married  | 36.0      | 47.4 | 16.7 | 100.0(757) |
| Others             | 24.7      | 51.6 | 23.9 | 100.0(582) |
| Pearson Chi-Square | 23.083*** |      |      |            |
| Education          |           |      |      |            |
| Lower Primary      | 22.3      | 54.5 | 23.2 | 100.0(332) |
| Upper Primary      | 25.0      | 52.3 | 22.7 | 100.0(261) |
| High school        | 41.6      | 43.8 | 14.6 | 100.0(332) |
| Higher Secondary   | 54.5      | 36.4 | 9.1  | 100.0(55)  |
| College            | 65.4      | 29.8 | 4.8  | 100.0(104) |
| Pearson Chi-Square | 97.57***  |      |      |            |

Among the male respondents about 33 percent thought that they achieved very much the expected standard of living, compared to 30 percent of their female counterpart. At the same time 17.4 percent of the male respondents and 21.5 percent of the female respondents thought that they not much achieved their expected standard of life. As age increases the proportion of elderly who think they have achieved the expected standard of living gradually reduces and the proportion of those who think that they achieved the expected standard of living gradually increases. Proportion of elderly who think that they achieved the expected standard of living is highest among Christians (38.6 percent), followed by Hindus (29.5 percent) and lowest among Muslims (28.5 percent) ( $P < 0.05$ ). Among different caste groups proportion of elderly who think that they achieved the expected standard of living is highest among other forward castes (40.3 percent), followed by OBC (27 percent) and lowest among ST (16.7 percent), followed by SC (19.5 percent) ( $p < 0.001$ ). Higher proportion of the elderly belonging to urban area (34.0 percent) felt that that they achieved the expected standard of living, compared to their rural counterparts (29.4 percent). The difference is not statistically significant. At the same time the difference by the marital status of the respondents is highly significant (Chi-Square 23.083,  $P < 0.001$ ). Among the currently married respondents, about 36 percent felt that that they achieved the expected

standard of living, compared to only about 25 percent of the other elderly persons. Educational qualification of the elderly persons is also found to have significant influence on their feeling that that they achieved the expected standard of living. The percent of elderly who feel that they achieved the expected standard of living is lowest among the respondents with an education of lower primary level (22.3 percent). Percentage of respondents who felt that they achieved the expected standard of living increases with the increase in their education and the highest proportion of respondents who felt that they achieved the expected standard of living is the college educated respondents (65.4 percent) ( $P < 0.001$ ).

### 1. Normally able to accomplish the desired work

*Table 5: Percentage Distribution of the respondents by Background Characteristics and their feeling that they are normally able to accomplish the desired work*

| Sex of Respondent  | Normally able to accomplish the desired work |           |             | Total      |
|--------------------|--|-----------|-------------|------------|
|                    | Many of the times                            | Sometimes | Hardly ever |            |
| Male               | 32.4   | 58.5      | 9.1         | 100.0(563) |
| Female             | 22.0   | 64.9      | 13.0        | 100.0(776) |
| Pearson Chi-Square | 19.835***                                    |           |             |            |
| Age                |  |           |             |            |
| 60-69              | 26.8   | 63.1      | 10.2        | 100.0(807) |
| 70-79              | 27.6   | 60.2      | 12.2        | 100.0(369) |
| 80+                | 21.6   | 63.0      | 15.4        | 100.0(163) |
| Pearson Chi-Square | 5.64   |           |             |            |
| Religion           |  |           |             |            |
| Hindu              | 26.3   | 62.6      | 11.2        | 100.0(781) |
| Muslim             | 23.2   | 62.3      | 14.6        | 100.0(302) |
| Christian          | 30.3   | 61.4      | 8.3         | 100.0(254) |
| Pearson Chi-Square | 8.311  | 0.216     |             |            |
| Caste Group        |  |           |             |            |
| SC                 | 13.6   | 71.3      | 14.9        | 100.0(87)  |
| ST                 | 12.5   | 70.8      | 16.7        | 100.0(24)  |
| OBC                | 24.4   | 62.1      | 13.6        | 100.0(751) |
| Others             | 32.6   | 60.5      | 6.9         | 100.0(477) |
| Pearson Chi-Square | 29.739***                                    |           |             |            |
| Locality           |  |           |             |            |
| Rural              | 25.7   | 62.5      | 11.8        | 100.0(680) |
| Urban              | 27.1   | 62.0      | 10.9        | 100.0(659) |
| Pearson Chi-Square | 0.432  |           |             |            |
| Marital Status     |  |           |             |            |



|                    |           |      |      |            |
|--------------------|-----------|------|------|------------|
| Currently Married  | 32.1      | 59.5 | 8.3  | 100.0(757) |
| Others             | 18.9      | 65.8 | 15.3 | 100.0(582) |
| Pearson Chi-Square | 37.961*** |      |      |            |
| Education          |           |      |      |            |
| Lower Primary      | 17.5      | 69.9 | 12.7 | 100.0(332) |
| Upper Primary      | 22.3      | 67.7 | 10.0 | 100.0(261) |
| High school        | 37.3      | 54.7 | 8.1  | 100.0(332) |
| Higher Secondary   | 47.3      | 45.5 | 7.3  | 100.0(55)  |
| College            | 52.9      | 46.2 | 1.0  | 100.0(104) |
| Pearson Chi-Square | 79.496*** |      |      |            |

About 32 percent of the male respondents felt very much that they are able to accomplish the desired work, compared to 22 percent of the female respondents. ( $p < 0.001$ ). Proportion of those who think that they are very much able to accomplish the desired work is highest among the respondents in the age group 70-79 (27.6 percent) and lowest in the age group above 80 years (21.6 percent). Among different religious groups proportion of elderly who think that they are able to accomplish the desired work is highest among Christians and lowest among Muslims. Among different caste groups proportion of elderly who think that they are very much able to accomplish the desired work is highest among their forward castes (32.6 percent), followed by OBC (24.4 percent) and lowest among ST (12.5 percent), followed by SC (13.6 percent). There is not much rural-urban difference in the proportion of elderly who think that they are able to accomplish the desired work (25.7 percent against 27.1 percent). Among the currently married elderly persons, about 32 percent felt that they are able to accomplish the desired work, compared to only 18.9 percent of the other elderly persons ( $P < 0.001$ ). Educational qualification of the elderly persons is also found to have significant influence on their feeling that they are able to accomplish the desired work. The percent of elderly who feel they are able to accomplish the desired work is lowest among the respondents with an education up to lower primary level (17.5 percent) and the highest among the college educated respondents (52.9 percent) ( $P < 0.001$ ).

### 1. Feel Confident in Case of Crisis

Table 6: Percentage Distribution of the respondents by Background Characteristics and their feeling that they are confident in case of crisis

| Sex of Respondent  | Feel confident in case of crisis |                |             | Total      |
|--------------------|----------------------------------|----------------|-------------|------------|
|                    | Very much                        | To some extent | Not so much |            |
| Male               | 39.3                             | 48.8           | 11.9        | 100.0(563) |
| Female             | 20.7                             | 55.3           | 24.0        | 100.0(776) |
| Pearson Chi-Square | 67.060***                        |                |             |            |
| Age                |                                  |                |             |            |
| 60-69              | 31.8                             | 52.5           | 15.6        | 100.0(807) |
| 70-79              | 27.6                             | 51.5           | 20.9        | 100.0(369) |
| 80+                | 14.2                             | 54.9           | 30.9        | 100.0(163) |
| Pearson Chi-Square | 32.750***                        |                |             |            |

|                    |           |      |      |            |
|--------------------|-----------|------|------|------------|
| Religion           |           |      |      |            |
| Hindu              | 29.2      | 51.8 | 19.0 | 100.0(781) |
| Muslim             | 19.5      | 54.6 | 25.8 | 100.0(302) |
| Christian          | 37.4      | 52.0 | 10.6 | 100.0(254) |
| Others             |           |      |      |            |
| Pearson Chi-Square | 34.703*** |      |      |            |
| Caste Group        |           |      |      | 100.0(87)  |
| SC                 | 17.2      | 57.5 | 25.3 | 100.0(24)  |
| ST                 | 16.7      | 66.7 | 16.7 | 100.0(751) |
| OBC                | 22.6      | 53.7 | 23.7 | 100.0(477) |
| Others             | 40.5      | 49.2 | 10.3 |            |
| Pearson Chi-Square | 70.547*** |      |      |            |
| Locality           |           |      |      | 100.0(680) |
| Rural              | 26.2      | 52.9 | 20.9 | 100.0(659) |
| Urban              | 31.0      | 52.1 | 16.9 |            |
| Pearson Chi-Square | 5.619     |      |      |            |
| Marital Status     |           |      |      | 100.0(757) |
| Currently Married  | 36.8      | 50.4 | 12.8 | 100.0(582) |
| Others             | 17.9      | 55.3 | 26.8 |            |
| Pearson Chi-Square | 76.635*** |      |      |            |
| Education          |           |      |      | 100.0(332) |
| Lower Primary      | 16.9      | 56.6 | 26.5 | 100.0(261) |
| Upper Primary      | 30.4      | 51.5 | 18.1 | 100.0(332) |
| High school        | 39.4      | 52.5 | 8.1  | 100.0(55)  |
| Higher Secondary   | 47.3      | 45.5 | 7.3  | 100.0(104) |
| College            | 54.8      | 42.3 | 2.9  |            |
| Pearson Chi-Square | 105.00*** |      |      |            |

About 39 percent of the male respondents are very much confident in case of crisis, compared to 20.7 percent of the female respondents. Similarly only about half (11.9 percent) of the males are not so much confident in case of crisis, compared to the females (24.0 percent) ( $p < 0.01$ ). As age of the elderly increases the proportion of those who feel very much confident in case of crisis gradually decreases. Percentage of those who are not much confident in case of crisis is more than double in the age above 80 years compared to elderly in the age group 60-69. Among different religious groups proportion of elderly who feel very much confident in case of crisis is highest among Christians (37.4 percent) and lowest among Muslims (19.5 percent) ( $p < 0.01$ ). Among different caste groups proportion of elderly who think life is very interesting is highest among other forward castes (40.5 percent) and lowest among ST (16.7 percent) ( $p < 0.01$ ). Higher proportion of the elderly belonging to urban area (31.0 percent) feels confident in case of crisis, compared to their rural counterparts (26.2 percent). The difference is not statistically significant. Among the currently married elderly persons, about 37 percent feel very much confident in case of crisis, compared to only about 18 percent of the other elderly persons. Educational qualification of the elderly persons is also found to have significant influence on their feeling confident in case of crisis. The percent of elderly who feel very much

confident in case of crisis is lowest among the respondents with an education up to lower primary level (16.9 percent). Percentage of respondents increase with the increase in their education and the highest is among the college educated respondents (54.8 percent) ( $P < 0.001$ ).

### 1. Feel confident in coping with the future

Table 7 : Percentage Distribution of the respondents by Background Characteristics and their feeling that they are confident in coping with the future

|                          | Feel confident in coping with the future |                |             |
|--------------------------|--|----------------|-------------|
|                          | Very much                                | To some extent | Not so much |
| <b>Sex of Respondent</b> |  |                |             |
| Male                     | 48.4                                     | 46.1           | 5.5         |
| Female                   | 34.0                                     | 56.6           | 9.4         |
| Pearson Chi-Square       | 30.041***                                |                |             |
| <b>Age</b>               |  |                |             |
| 60-69                    | 44.2                                     | 50.6           | 5.2         |
| 70-79                    | 37.1                                     | 51.5           | 11.4        |
| 80+                      | 25.9                                     | 61.7           | 12.3        |
| Pearson Chi-Square       | 33.050***                                |                |             |
| <b>Religion</b>          |  |                |             |
| Hindu                    | 38.6                                     | 53.5           | 7.9         |
| Muslim                   | 35.1                                     | 54.6           | 10.3        |
| Christian                | 50.8                                     | 44.9           | 4.3         |
| Pearson Chi-Square       | 20.910**                                 |                |             |
| <b>Caste Group</b>       |  |                |             |
| SC                       | 28.7                                     | 57.5           | 13.8        |
| ST                       | 25.0                                     | 66.7           | 8.3         |
| OBC                      | 34.6                                     | 56.2           | 9.2         |
| Others                   | 51.5                                     | 44.1           | 4.4         |
| Pearson Chi-Square       | 47.761***                                |                |             |
| <b>Locality</b>          |  |                |             |
| Rural                    | 38.1                                     | 53.1           | 8.8         |
| Urban                    | 42.1                                     | 51.2           | 6.7         |
| Pearson Chi-Square       | 3.530*                                   |                |             |
| <b>Marital Status</b>    |  |                |             |
| Currently Married        | 48.1                                     | 46.7           | 5.2         |
| Others                   | 29.6                                     | 59.3           | 11.2        |
| Pearson Chi-Square       | 53.647***                                |                |             |
| <b>Education</b>         |  |                |             |
| Lower Primary            | 36.5                                     | 54.6           | 8.8         |
| Upper Primary            | 53.4                                     | 43.8           | 2.8         |
| High school              | 61.8                                     | 36.4           | 1.8         |
| Higher Secondary         | 70.2                                     | 29.8           | 0.0         |
| College                  |  |                |             |
| Pearson Chi-Square       | 87.198***                                |                |             |

About 48 percentage of the male respondents felt that they are very much confident in coping with the future, compared to 34 percent of their female counterparts ( $p < 0.001$ ). As age increases the proportion of elderly who are confident in coping with the future reduces (44.2 percent to 25.9 percent) and the proportion of those who think that they are not much confident in coping with the future increases (5.2 percent to 12.3 percent) ( $p < 0.001$ ). Among different religious groups, about half of the elderly Christians (50.8 percent) think that they are confident in coping with the future, compared to 35.1 percent of Muslims and 38.6 percent of Hindus ( $p < 0.01$ ). Among different caste groups proportion of elderly who are very much confident in coping with the future is highest among other forward castes (51.5 percent) and lowest is among ST (25.0 percent), followed by SC (28.7 percent) ( $p < 0.001$ ). It is seen from the table that higher proportion of the elderly belonging to urban area (42.1 percent) are very much confident in coping with the future, compared to their rural counterparts (38.1 percent) ( $p < 0.05$ ). Among the currently married elderly persons, about 48 percent are confident in coping with the future, compared to only 29.6 percent of the other elderly persons ( $p < 0.001$ ). Educational qualifications of the elderly persons also have significant influence on their confidence in coping with the future. The percent of elderly who are very much confident in coping with the future is lowest among the respondents with an education of lower primary level (31.0 percent) and the highest is among the college educated elderly (70.2 percent) ( $p < 0.001$ ).

### Subjective Wellbeing Index

Responses to all the nine questions on various aspects of life satisfaction recorded in three point scale are coded with values 1, 2 and 3. Positive answers are given the value 1, moderate are given the value 2 and negative answers are given the value of 3. The scores obtained for the questions are added to get an index called Subjective Wellbeing Index, the value of which varies from 9 to 27. The score 9 means all the responses are positive and so a perfect well-being. At the same time the score of 27 means all the responses are negative and so a very poor well-being. The scores obtained are classified in to three categories namely Poor Index, Moderate Index and Good Index. The total scores from lowest (9) to mean- median are classified as Good Index, scores from Mean-Median to Mean+Median are classified as Moderate Index and scores from Mean+Median to highest (27) are classified as poor Index.

*Table 8: Percentage distribution of the respondents by Subjective wellbeing Index*

| Index    | Number of Respondents | Percentage |
|----------|-----------------------|------------|
| Poor     | 174                   | 13.0       |
| Moderate | 823                   | 61.5       |
| Good     | 341                   | 25.5       |

Table 8 gives the percentage distribution of the respondents by Subjective wellbeing Index. It can be seen that for 13 percent of the respondents the Index is poor. At the same time a little less than two third

(61.5 percent) of the respondents have moderate index and the remaining one fourth (25.5 percent) have good Index.

*Table 9 : Mean Scores of Subjective Wellbeing Index of the Elderly by Age, Sex and Place of Residence*

| Characteristics |       | Mean Score of Index | Number of Elderly |
|-----------------|-------|---------------------|-------------------|
| Age 60-69       | Men   | 15.4                | 339               |
|                 | Women | 16.9                | 469               |
|                 | Total | 16.3                | 808               |
| Age 70-79       | Men   | 15.9                | 166               |
|                 | Women | 17.7                | 205               |
|                 | Total | 16.9                | 371               |
| Age 80 +        | Men   | 17.4                | 59                |
|                 | Women | 18.9                | 105               |
|                 | Total | 18.4                | 164               |

The mean values of the Index for the respondents in the different age groups by sex show that the wellbeing of the elderly is more in the age group 60-69 years and declines with the advancement of age. Wellbeing is also more among the males than their female counterparts.

Logistic Regression analysis of the Subjective Wellbeing Index is done against the background characteristics of the respondents (Table 10). In the analysis the Subjective Wellbeing Index was coded as poor and good. Poor Index is taken as reference category. The analysis shows that compared to male respondents their female counterparts have 17 percent lesser chance for having good Subjective Wellbeing Index. Similarly the chance for a good Subjective Wellbeing Index decreases with age. Compared to the respondents in the age group 60-69 years, those in the age group 70-79 have 31 percent lesser chance and those in the age group 80+ have 46 percent lesser chance for a good Index ( $P < 0.1$ ). Level education is also having association with the Index. It can be seen that compared to primary educated respondents those with secondary or +2 education have 3.6 times higher chance for having good Index ( $P < .01$ ) and those having college education have about 63 percent higher chance for having good Index. Caste wise analysis shows that compared to SC/ST respondents, OBC respondents have 17 percent higher and respondents in the general category have 40 percent higher chance for having a better Index ( $P < 0.1$ ). Compared to Rural areas respondents in the urban areas have 15 percent higher chance for good Index. Level of income is found to have very significant relation with the Subjective Wellbeing Index. Compared to respondents with low income, respondents in the middle income group have 2.6 times higher chance for having good Index ( $P < .05$ ). Similarly respondents in the high income category have twice the chance to have good Index compared to respondents in the low

income group (P<.05).

Table 10 Binary Logistic Regression estimates of the background variables on the Subjective Wellbeing Index

| Variables          |                   | B     | Exp(B) | 95% Confidence Interval |       |
|--------------------|-------------------|-------|--------|-------------------------|-------|
|                    |                   |       |        | Lower                   | Upper |
| Sex                | Female            | -.184 | 0.832  | 0.561                   | 1.223 |
|                    | 60-69®            |       |        |                         |       |
| Age                | 70-79             | -.376 | .687   | .371                    | 1.270 |
|                    | 80+ *             | -.622 | .537   | .286                    | 1.007 |
|                    | Up to Primary ®   |       |        |                         |       |
| Education          | Secondary & +2*** | 1.286 | 3.619  | 1.923                   | 6.811 |
|                    | College           | .486  | 1.625  | .887                    | 2.978 |
|                    | SC/ST®            |       |        |                         |       |
| Caste              | OBC               | .160  | 1.174  | 0.527                   | 2.615 |
|                    | General*          | .337  | 1.401  | 0.998                   | 1.966 |
|                    | Rural®            |       |        |                         |       |
| Place of Residence | Urban             | .143  | 1.154  | 0.846                   | 1.572 |
|                    | Low Income®       |       |        |                         |       |
| Income Index       | Middle**          | .971  | 2.641  | 1.042                   | 6.695 |
|                    | High Income**     | .736  | 2.088  | 1.061                   | 4.110 |
|                    | Constant          | .965  | 2.624  |                         |       |

\*\*\* Significant at 1% level; \*\* Significant at 5% level; \* Significant at 10% level

## Summary and conclusions

The present study tries to analyse the Subjective Well being of elderly in Kerala, based on their self perception. Secondary data used for the study were taken from survey conducted in Kerala in connection with the 'Building Knowledge base on Population Ageing in India' (BKPAI). Respondents are asked nine questions on various aspects of life satisfaction for assessing their subjective wellbeing. Answers to the questions are recorded in three point scale as negative, moderate and positive. For constructing an Index of subjective well-being, the scores obtained for the questions are added and classified in to three categories namely Poor index, Moderate Index and Good Index.

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For all the questions except the one regarding confidence in coping with the future, less than one third of the respondents had positive responses. Only a quarter of the respondents were of the view that they have very much achieved success in life. Similarly only about 26 percent of the respondents felt that they are very much able to accomplish the desired works and 12.4 percent felt that they were not able to accomplish the desired work. About 27 percent of the elderly respondents felt that they were able to manage the unexpected situation and about 15 percent felt that they were not much able to manage the unexpected situation. At the same time about 40 percent of the respondents were very much confident in coping with the future.

The scores obtained by the respondents for all the nine questions are added to get an index called Subjective Wellbeing Index, the value of which varies from 9 to 27. The score 9 means all the responses are positive and so a perfect well-being. The Index scores are classified in to three categories namely Poor, Moderate and Good. For 13 percent of the respondents the Index is poor. At the same time a little less than two third (61.5 percent) of the respondents have moderate index and the remaining one fourth (25.5 percent) have good Index. Logistic Regression analysis of the Subjective Wellbeing Index is done against the background characteristics of the respondents. In the analysis the Subjective Wellbeing Index was coded as poor and good. Poor Index is taken as reference category. The analysis shows that compared to male respondents their female counter parts have 17 percent lesser chance for having better Subjective Wellbeing Index. Similarly the chance for having a higher Subjective Wellbeing Index decreases with age. Compared to the respondents in the age group 60-69 years, those in the age group 70-79 have 31 percent lesser chance and those in the age group 80+ have 46 percent lesser chance for a better wellbeing. Level education is also having association with the Index. Respondents with higher level of education have chance for having good wellbeing Index. Compared to Rural respondents, those in the urban areas have higher chance for better Wellbeing. Compared to respondents in low income category, respondents in the high income category have twice the chance to have a better Index. It is clear from the analysis that the background characteristics of the elderly persons affect their subjective well being.

### **Reference:**

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## Determinants of Intimate Partner Violence (IPV) among poorest and socially excluded rural women in Bihar, India - Experiences from District Level SWASTH Survey (DLSS 2015-16)

Jayanta Kumar Basu\*

***Abstract:** This paper sought to identify the strongest determinants of Spousal Violence (any physical or sexual violence by husband in the last 12 months) among poorest and socially excluded rural women. A conceptual framework was developed to identify potential predictors of intimate partner violence amongst ever married women. The analyses reveal a high prevalence of IPV in Bihar (35%), and multiple IPV risk and protective factors. The strongest risk factors appear to be experience of violence since the age of 15 years, and this was not restricted to violence by husband – other members of a woman's family, particularly mothers, were implicated.*

### **Introduction:**

The Bihar Sector Wide Approach to Strengthening Health (SWASTH) programme(2010-2016) is a multi-sectoral initiative led by the Government of Bihar (GoB), and is supported by financial and technical assistance from the UK Department for International Development (DFID). The three departments engaged by SWASTH are: Health, Social Welfare (DoSW), and Public Health Engineering (PHED). In addition to SWASTH interventions, BTAST had overseen surveys to monitor health, nutrition, water and sanitation services and population outcomes in Bihar. In 2015 BTAST conducted the District-Level SWASTH survey (DLSS). The survey included data collection at household, facility and service provider levels.

The paper presents findings from an analysis of the determinants of Spousal violence (SV) among poorest and socially excluded rural women of Bihar using DLSS data.

### **Objectives:**

- 1) To develop a conceptual framework and identify potential predictors of spousal violence experienced by rural women in Bihar using DLSS 2015-16 State-level data.
- 2) To test the strength of univariable associations of each candidate SV predictor with SV, and to identify the strongest SV determinants using backwards stepwise multi-variable logistic regression modelling
- 3) To offer policy-relevant findings about the prevention of violence against women with a specific focus on reducing spousal violence (SV).

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\* PhD (Population Studies), Ex- Director of Monitoring, Learning and Evaluation (MLE), B-TAST/DFID  
[jyantakumar.basu@gmail.com](mailto:jyantakumar.basu@gmail.com); Mobile: +91 7070 999 440/ +91 99109 77689

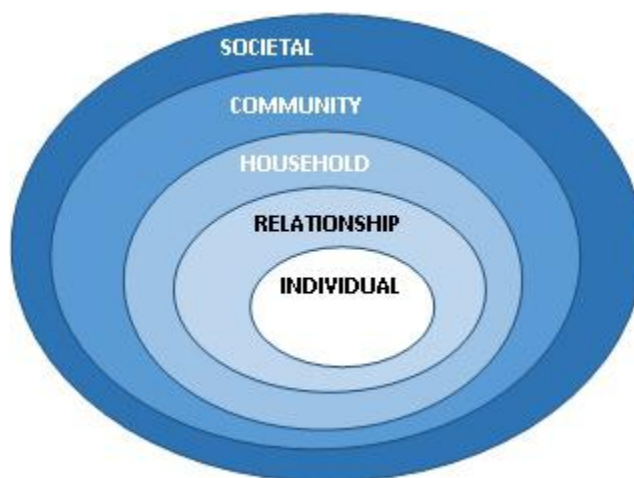
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### Conceptual Framework:

In this paper the conceptual framework originally developed by the WHO as part of their Violence Prevention Approach is adapted, and which has since been applied by other researchers in the field of IPV. Ecological models of spousal violence take into account different levels: societal, community, relationship, individual –household as an additional level in the ecological framework is included (see Figure below).

### An ecological framework for understanding SV (adapted from WHO)



- At the **individual level**, experience of abuse in childhood or adolescence may increase the chances of SV in adulthood.
- The types of **relationships** that women have, including peer groups, family and intimate partners, may increase or decrease their SV risk; e.g. if a woman's peers exhibit violent tendencies, she may be more likely to become a victim or perpetrator of violence in later relationships. In this analysis we include focus on relationship characteristics between women and their husbands (e.g. their relative education and occupation status) in line with what has been measured in the DLSS 2015-16.
- At the **household level**, socio-demographic aspects such as wealth, financial autonomy can influence the risk of SV.
- The **community level** provides the wider context in which relationships operate. There may be various risk and protective factors in place, where one potentially protective characteristic could be the presence of a prevention of VAW strategy that is being well implemented, and is well received within the community.
- At the **broader societal level**, there may be policies that increase or decrease wealth inequalities between people, or that a punitive towards particular groups.

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## **Recent evidence on predictors of SV:**

To help guide the selection of predictors for the SV model using the DLSS dataset, recent SV research findings were drawn upon.

The relationship aspects of the ecological model to identify common risk and protective factors for spousal violence across 10 countries in the WHO multi-country Study on Women's Health and Domestic Violence was developed (Abramsky et al, 2011). Their relationship model included potential predictors of women experiencing any violence in the last 12 months. They divided potential predictors temporally to reflect 'prior to the relationship' and 'current situation'. The author emphasised there is no one size fits all model; India was also not one of their study countries so their findings cannot be generalized to Bihar. However, their predictors provide a useful starting point from which to identify candidate predictors of SV in the DLSS. Recent Violence against Women (VAW) studies from India have also focused on Spousal Violence (SV), rather than general violence. A study of SV during and after pregnancy in Mumbai urban slums identified the following risk factors: poorer families and where alcohol was used by the husband were more likely to experience SV (Das et al, 2013). Women experiencing SV in the last 12 months were also more likely to report illness during pregnancy, more likely to be on a modern method of family planning, and more likely to say a husband may be justified in hitting his wife. In a qualitative study from Bihar (Speizer et al., 2010) married women identified four areas they felt caused SV: husbands' alcohol use, actions that displease the husband, infertility, and sex-related demands. A further study from rural areas of Nepal (Puri et al, 2012) with married women found reduced risk of sexual violence by husbands in the last 12 months if men were well educated, and additional protection if women were autonomous. Women's own education did not offer protection against sexual violence perpetrated by husbands.

## **Materials and Methods**

### **Design:** Determinants of Spousal violence

The SV determinants analysis uses cross-sectional DLSS data at state-level.

### **Data source:** The District Level SWASTH Survey (DLSS 2015-16)

The sampling for the DLSS and nesting surveys had not been designed to assess the effectiveness of the VAW prevention and redressal strategies. However, the DLSS provided a rich dataset from which key determinants of SV can be identified, and where CBA-exposure could be included as a potential protective factor.

DLSS respondent groups included in this paper are 57,841 ever married rural women 15-49

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years (particularly from poorest and socially excluded section of the society) with data for the main outcome indicator for these analyses: i.e. women responding to the questions about whether they had experienced physical or sexual violence from their husbands in the last 12 months.

The overall sample size was calculated to enable estimates of key health, nutrition, water and sanitation outcomes at district level (excluding mortality). 2046 households from 62 villages were sampled per district, where each village contributed 33 households to the dataset. The sampling approach enabled representative district and state level estimates for Bihar's population in 2015 when the data was used in conjunction with appropriate weights (described below) and clustering was adjusted for. Here clustering refers to outcomes being more similar within villages than between villages and was adjusted for using complex surveys analysis. Selected villages were representative of their district and household weighting was applied during data analysis to allow for the effect of different village sizes and any clustering.

### **Measures**

All of the indicators that were considered for the SV determinants analysis are detailed in Annex 1; the selection of indicators was guided by the WHO paper.

#### **Main outcome: Spousal Violence (SV)**

SV is defined as any physical or sexual violence in the last 12 months (ever married women). Any violence includes any of the DLSS questionnaire items (often or sometimes) given in the list below.

DLSS survey question: (Does/did) your husband ever do any of the following things to you during the last 12 months: often, sometimes, or not at all?

- Push you, shake you, or throw something at you?
- Twist your arm or pull your hair?
- Slap you?
- Punch you with his fist or with something that could hurt you?
- Kick you, drag you or beat you up?
- Try to choke you or burn you on purpose?
- Threaten or attack you with a knife, gun, or any other weapon?
- Physically force you to have sexual intercourse with him even when you did not want to?
- Physically force you to perform any other sexual acts you did not want to?
- Force you with threats or in any other way to perform sexual acts you did not want to?

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## RESULTS & DISCUSSION

### Key findings:

- 35% of women had experienced IPV in the last 12 months.

### Individual level predictors of IPV:

- **The strongest IPV risk factor at the individual level was women's experience of violence by any perpetrator since the age of 15. These women were 9.2 times more likely to have experienced IPV.**
- Women with permissive attitudes to violence were 3.2 times more likely to have experienced IPV compared to women who felt violence of a husband towards his wife was unacceptable.
- Women 15-19 years were 9% more likely to have experienced IPV than women 35-49 years.
- Women working outside the home were also at a greater risk of IPV compared to housewives.
- Women's education was strongly protective against IPV – more education equated to greater protection where women with 12 or more years had a 38% lower IPV risk than women with no education.

### Relationship-level predictors of IPV:

- Women whose husbands got drunk were up to 6.8 times more likely to have experienced IPV compared to women whose husbands never got drunk or were teetotalers.
- Women with a higher level of education than their husband were at a 17% greater risk of IPV than those with lower education than their husband.
- The longer a woman had been living with her husband, the greater her risk of IPV. Women living with their husbands for 5 or more years were 69% more likely to have experienced IPV in the last 12 months compared to women living with their husband for 0-1 years.

### Household-level predictors of IPV:

- Women from the middle and highest wealth groups were at a greater risk of IPV compared to the least wealthy (18%-20% increased risk).
- Lack of involvement in household decisions was also associated with increased risk of IPV.
- Conversely, households where the main occupation was salaried employment, or trading/small business/other were at a 27%-28% lower risk of IPV than farming/agriculture households.
- Women with some financial autonomy also had a 25% lower risk of IPV than women without financial autonomy.

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### **Community and society-level predictors of IPV:**

- Women belonging to OBC groups were at a 13% increased risk of IPV in the last year compared to women from general/other groups.
- Women from CBA districts had a 14% reduced risk of IPV in the last year compared to women from other districts.

### **Final model: Determinants of spousal violence**

The following 16 variables were included in the backwards stepwise regression modelling process: 1) Women's education, 2) women's age group, 3) women's employment, 4) women's experience of violence since the age of 15, 5) women's attitudes about SV, 6) relative education of women and their husbands, 7) duration of relationship (time since first started living together), 8) husband's alcohol consumption/frequency of getting drunk 9) wealth group, 10) main household occupation, 11) women's involvement in decisions about healthcare 12) women's involvement in decisions about visiting friends or relatives, 13) women allowed to have access to their own money to use as they wish 14) women living in CBA district (yes/no), 15) social group/caste 16) Husband's age group.

All except for two of the above variables were strongly associated with SV after adjusting for the effect of all other predictors: husband's age (which was removed from the final model) and woman's age (which was retained in the final model because it was listed as a forced variable i.e. it was going to be included as a basic socio-demographic adjustment variable, regardless of its association with SV).

The full final adjusted model is shown in Table 1. A summary interpretation of the model is presented below, again organised by the different levels of the ecological framework.

### **Individual-level variables**

#### Risk factors:

- Women experiencing violence since the age of 15: The strongest individual risk factor, and overall, was women experiencing violence from any perpetrator(s) since the age of 15. **These women were 9.2 times more likely to have been physically or sexually assaulted by their husband in the last year compared to women not reporting violence since the age of 15.** The population risk lies between a 7.1 and 12 fold increase at 95% level of confidence (Table 1). Amongst this group are women who have experienced violence from family members since the age of 15, who then appear to be at greater risk of experiencing violence from their husband in their marriage. Also included are women whose experience of violence since age 15 is solely at the hands of their husband, and where the findings suggest early violence in the relationship

predicts later violence (i.e. violence within the relationship is unlikely to be a one-off).

- Permissive attitudes to SV: The second strongest individual SV risk factor was women who believed that a man was sometimes justified in beating his wife. These women were 3.2 times more likely to have been physically or sexually assaulted by their husband in the last year compared to women who felt wife beating was never justified. The increased population risk lies between a 2.9 and 3.4 fold increase at 95% level of confidence (Table 1)
- Women's employment type: Women employed as daily labourers were 60% more likely to have experienced SV in the last year compared to housewives (the likely increased population risk was 38% -75%). Similarly, women with occupations other than daily wage labourers were 26% more likely to have experienced SV compared to housewives (the likely increased population risk was 8%-46%).
- Women's age: Women 15-19 years were 9% more likely to have experienced SV in the last year compared to women 35-49 years (the likely increased population risk was 1%-18%).

### **Protective factors:**

Women's education: As women's education level increased, their risk of SV in the last 12 months decreased. Compared to women with no education, women with 1-9 years of education had a 14% lower SV risk (likely lowered population risk between 5% and 21%). Women with 10-11 years of education had a 16% lower SV risk (likely lowered population risk between 7% and 28%). Women with 12 or more years of education had a 38% lower SV risk (likely lowered population risk between 28% and 47%).

| <b>Table 1: Determinants of Spousal violence in Bihar</b> |             |                                    |                                  |   |   |
|---|-------------|------------------------------------|----------------------------------|---|---|
| <b>SV Predictor</b>                                       | <b>AOR*</b> | <b>95%CI**<br/>lower<br/>bound</b> | <b>95%CI<br/>upper<br/>bound</b> | <b>P-value per<br/>predictor<br/>category</b> | <b>Overall P-<br/>value for<br/>predictor</b> |
| <b>INDIVIDUAL LEVEL</b>                                   |             |                                    |                                  |   |   |
| <b>Women's education</b>                                  |             |                                    |                                  |   | 0.000   |
| Never attended school                                     | 1.00        |                                    |                                  |   |   |
| Up to 9 years completed                                   | 0.86        | 0.79                               | 0.95                             | 0.003   |   |
| 10-11 years completed                                     | 0.82        | 0.72                               | 0.93                             | 0.002   |   |
| 12+ years completed                                       | 0.62        | 0.53                               | 0.72                             | 0.000   |   |
| <b>Women's age group</b>                                  |             |                                    |                                  |   | 0.071   |
| 35-49 years   | 1.00        |                                    |                                  |   |   |
| 20-34 years   | 0.99        | 0.81                               | 1.20                             | 0.895   |   |
| 15-19 years   | 1.09        | 1.01                               | 1.18                             | 0.033   |   |



|   |      |      |       |       |       |
|---|------|------|-------|-------|-------|
| <b>Women's age group</b>  |      |      |       |       | 0.071 |
| 35-49 years   | 1.00 |      |       |       |       |
| 20-34 years   | 0.99 | 0.81 | 1.20  | 0.895 |       |
| 15-19 years   | 1.09 | 1.01 | 1.18  | 0.033 |       |
| <b>Women's employment</b>   |      |      |       |       | 0.000 |
| Housewife   | 1.00 |      |       |       |       |
| Daily labourer  | 1.55 | 1.38 | 1.75  | 0.000 |       |
| Other   | 1.26 | 1.08 | 1.46  | 0.004 |       |
| <b>Women who have been beaten by any person since the age of 15</b>                       |      |      |       |       | 0.000 |
| No  | 1.00 |      |       |       |       |
| Yes   | 9.22 | 7.08 | 12.00 | 0.000 |       |
| <b>Women who think a husband is sometimes justified in being violent towards his wife</b> |      |      |       |       | 0.000 |
| No/don't know   | 1.00 |      |       |       |       |
| Yes   | 3.15 | 2.89 | 3.44  | 0.000 |       |
| <b>RELATIONSHIP-LEVEL</b>   |      |      |       |       |       |
| <b>Relative education of partner</b>  |      |      |       |       | 0.038 |
| Man has more education  | 1.00 |      |       |       |       |
| same level  | 1.07 | 0.99 | 1.15  | 0.111 |       |
| Woman has more education  | 1.17 | 1.03 | 1.32  | 0.016 |       |
| <b>Duration of relationship</b>   |      |      |       |       | 0.000 |
| 0-1 years   | 1.00 |      |       |       |       |
| 2-5 years   | 1.53 | 1.26 | 1.86  | 0.000 |       |
| >5 years  | 1.69 | 1.40 | 2.05  | 0.000 |       |
| <b>Husband's alcohol consumption</b>  |      |      |       |       | 0.000 |
| Never gets drunk/<br>doesn't drink alcohol  | 1.00 |      |       |       |       |
| Sometimes gets drunk  | 4.56 | 4.18 | 4.98  | 0.000 |       |
| Often gets drunk  | 6.76 | 5.81 | 7.86  | 0.000 |       |
| <b>HOUSEHOLD LEVEL</b>  |      |      |       |       |       |
| <b>Wealth index</b>   |      |      |       |       | 0.016 |
| Lowest  | 1.00 |      |       |       |       |
| Second lowest   | 1.10 | 0.97 | 1.24  | 0.149 |       |
| Middle  | 1.18 | 1.06 | 1.32  | 0.002 |       |
| Second highest  | 1.10 | 0.97 | 1.25  | 0.130 |       |
| Highest   | 1.20 | 1.04 | 1.37  | 0.010 |       |
| <b>Main household occupation</b>  |      |      |       |       | 0.000 |
| Farming/agriculture   | 1.00 |      |       |       |       |
| Wage labourer   | 0.95 | 0.86 | 1.05  | 0.316 |       |
| Salaried employment   | 0.72 | 0.63 | 0.82  | 0.000 |       |
| Trading/Small<br>business/Retired/Others  | 0.73 | 0.64 | 0.83  | 0.000 |       |

|   |      |      |      |       |       |
|---|------|------|------|-------|-------|
| <b>Decision making about women's health care seeking</b>  |      |      |      |       | 0.028 |
| Woman involved in decisions   | 1.00 |      |      |       |       |
| Woman not involved in decisions   | 1.11 | 1.01 | 1.22 | 0.028 |       |
| <b>Decision making about women staying with friends or relatives</b>  |      |      |      |       | 0.018 |
| Woman involved in decisions   | 1.00 |      |      |       |       |
| Woman not involved in decisions   | 1.14 | 1.02 | 1.27 | 0.018 |       |
| <b>Women allowed to have money set aside to use as they wish</b>  |      |      |      |       | 0.000 |
| No  | 1.00 |      |      |       |       |
| Yes   | 0.85 | 0.78 | 0.92 | 0.000 |       |
| <b>COMMUNITY AND SOCIETY LEVEL</b>  |      |      |      |       |       |
| <b>CBA district</b>   |      |      |      |       | 0.008 |
| No  | 1.00 |      |      |       |       |
| Yes   | 0.86 | 0.77 | 0.96 | 0.008 |       |
| <b>Social group/caste</b>   |      |      |      |       | 0.012 |
| General/others  | 1.00 |      |      |       |       |
| OBC   | 1.13 | 1.01 | 1.26 | 0.031 |       |
| Mahadalit/SC/ST   | 1.01 | 0.89 | 1.15 | 0.900 |       |
| <p>*AOR = Adjusted Odds Ratio. We define p-values of &lt;0.05 as statistically significant. Where p is &lt;0.05 if the corresponding AOR is &lt;1 it signals reduced odds of the outcome relative to the baseline category, after adjusting for the effects of all other variables in the model. E.g. CBA district has an AOR of 0.86, equivalent to 14% reduced odds of SV compared to non-CBA districts. If the AOR is &gt;1 it shows increased odds of the outcome relative to baseline e.g. women whose husbands often get drunk have an 6.76 greater odds of SV compared to women whose husbands are teetotal or who never get drunk.</p> <p>**95%CI=95% confidence interval: show the lower and upper limits that we are 95% confident the true population AOR lies between.</p> <p>Very wide 95%CIs indicate that our AOR has low precision. 95%CIs that cross over the value of 1 are often classed as non-significant.</p> |      |      |      |       |       |

## CONCLUSIONS

- The analyses reveal a high prevalence of spousal violence in Bihar (35%) among rural women, and multiple SV risk and protective factors.
- The strongest risk factors appear to be experience of violence since the age of 15 years, and this was not restricted to violence by the husband – other members of a woman's family, particularly mothers, were implicated. This suggests the need to ensure that efforts to reduce SV do not concentrate solely on men as perpetrators of violence, and that a longer term outlook beginning with secure and violence-free childhoods and adolescence will minimise future SV.
- Another strong risk factor for SV was the frequency with which a woman's husband got drunk; the more frequent a husband's drunkenness, the more likely a wife was to have experienced

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violence from him. It will be important to monitor the effect of the policy to restrict alcohol in Bihar (already in effect) on SV, but also to continue to raise awareness of the dangers of excess alcohol consumption for those who are able to circumvent the policy.

- Many of the other SV risk factors identified reflect strict gender norms about the freedom and autonomy of women, and permissive attitudes to violence.
- Very few protective factors against SV were identified, although women's education was strongly protective against SV. This reiterates the continued need to ensure girls have access to and gain a decent level of education.

### **Research and Policy implications:**

#### **Violence from age 15:**

- The more than 9-fold increased risk of SV for women who had experienced violence from any source since age 15 was striking, and the strongest of all predictors in the model. Initial exploration of who had inflicted the violence revealed that aside from husband's themselves, the next most common perpetrator was the woman's mother, followed by her father, and then her mother-in-law. Focus of research and interventions should thus not just focus on women as victims and men as perpetrators, but the wider family context.
- The findings of this paper about perpetrators of violence is similar to a recent UNICEF report, that also identifies husbands and mothers, and fathers as common perpetrators of physical violence against women and children (Unicef Fact Sheets).
- Further research could collect information on earlier childhood experience of violence (before age 15). If early childhood experiences of violence are strongly linked to later SV in Bihar this suggests early parenting interventions could minimise early harm, and have a long term protective effect against violence through life.

#### **Permissive attitudes towards SV:**

- The fact that permissive attitudes towards violence were associated with actual experience of violence is interesting. Given that using cross-sectional data was used, it is not possible to be certain about the direction of cause and effect between attitudes and experience. It could be that women who experience SV are trying to rationalise and justify why it is happening.
- Equally, the findings could reflect a more broadly held societal attitude or gender norm that violence against women is acceptable under certain circumstances, and within the boundaries of marriage.
- The finding is consistent with an SV study from Mumbai (Das et al, 2013) that identified

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women experiencing SV in the last 12 months as more likely say a husband may be justified in hitting his wife.

**Women's employment:**

- Housewives appear to be at lower risk of SV compared to women working outside of the home. It could be that these women are also wealthier and do not have to work. Although we adjusted for wealth in our model, our wealth variable is arguably more focused on assets rather than disposable income or other facets of wealth. The fact women who were daily wage labourers were at greater risk of SV compared to women with more lucrative and financially reliable occupations suggests that poverty may be playing a role.
- In the context of other indicators in the dataset, it appears that women's freedom of movement is severely restricted, and permission is usually needed for a range of activities if women are even allowed to perform them at all. Although working outside of the home may in some cases be a financial necessity, it may also be seen as a transgression of traditional gender roles, which could create conflict and trigger IPV. In other cases, women working outside of the home could elicit jealousy and mistrust, which has been also shown to increase the risk of SV (ibid).
- There is no suggestion here that women should be encouraged to stay at home to reduce their risk of SV— conversely there could be opportunities for employment schemes such as MNREGA or other work places to offer support and education to men and women about SV— multiple platforms are probably needed given the high prevalence of SV in this sample.

**Women's age:**

- Younger women were at a higher risk of SV is consistent with research on SV in India, and other countries. Adolescent marriage is prone to multiple other risks to health and nutrition, as well as SV, and should continue to be discouraged through community mobilisation, campaigning, and enforced legislation.

**Women's education:**

- Women's education was strongly protective against SV in our sample – the higher the education, the stronger the protection. This is consistent with NFHS-3 data, and a 2009 population-based survey of four states in Eastern India (Bontha V Babu, et.al), and numerous other studies.
- The finding reiterates the need to invest in women's education for multiple benefits for physical and mental health. There were strikingly low levels of education in this sample where more than half of respondents (55.4%) had never been to school.

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## Annexure

### ANNEX 1: Candidate predictors for SV model

| Position in ecological model                                      | Survey question(s)   | Potential predictor of SV(risk and protective factors) and calculation details  |
|---|--|---|
| <b>Individual</b>   |  |   |
| Education level   | What is the highest standard you have completed?   |   |
| Woman's age   | How old are you? (age in completed years)  | Women's age in categories: 15 -19, 20-34, 35-49 (as per WHO SV study)   |
| Man's age   |  | Look at distribution, but aim for the same categories as for women's age if possible. After looking at distribution, <5% were in the 15-19 category, so I will go for <25 years, 25-34, 35+   |
| Beaten or mistreated by any person since the age of 15            | Since you completed 15 years of age, have you been beaten or mistreated physically by any person?  | Women who have been beaten of physically mistreated by anyone since the age of 15   |
| Attitudes: believes man justified in hitting partner (any reason) | Sometimes a wife can do things that bother her husband. Please tell me if you think that a husband is justified in beating his wife in each of the following (various reasons given)   | Women who believe it can be justifiable for a husband to beat his wife (as per WHO SV study)  |
| Woman's employment type   | What is your occupation? 01 Cultivator, Agricultural wage labourer/ 02 Non-agriculture wage labourer 03 Allied to agriculture activities (Poultry, pisciculture, goatery, Dairy etc)/ 04 Household/Cottage industries/ 05 Government service.06 Private Service/ 07 Self Employed / trade/ 08 Housewife 09 Self Professional/ 10 Others (specify) 77 | Reduce to a smaller number of categories  |
| Woman's employment status   | What is your occupation?   | Woman works at home vs outside of the home (defined as housewife vs all other occupation types)   |
| <b>Relationship(s)</b>  |  |   |
| Relative educational level to partner                             | What is the highest standard you have completed?<br>What is the highest standard your husband has completed?   | Relative educational level to partner: calculate women's highest standard minus man's; Positive = women has higher ed, 0=same, negative=man has higher ed level; this variable will be grouped into 3 categories (same, woman higher, man higher) as per WHO SV paper |
| Partnership type  | What is your current marital status? (Currently Married, Currently Married but guana not performed, separated, divorced, widowed)  | Partnership type: Currently Married, Currently Married but guana not performed, separated, divorced, widowed (depending on cases per level, we may have to combine some categories)<br>-report as descriptive only  |
| Duration of partnership   | How old are you? (age in completed years)<br>a. What was the age when you got first time married? (age in completed years) (nesting survey)<br>b. How old were you when you started living with your husband? (DLSS survey)  | Subtract age at marriage from current age, and group into <1yr, 1-5yrs, >5yrs as per WHO SV paper<br>Had to modify the above codes slightly, as there was <5% of cases in the <1 yr cat. So I made it <=1 year, 2-5, >5   |

|  |   |  |
|--|---|--|
| Violence of woman towards her husband            | Have you ever hit, slapped, kicked, or done anything else to physically hurt your husband at times when he was not already beating or physically hurting you? | Any physical violence perpetrated by the woman towards her husband (not in self-defence)<br>-too few responses in the yes category – report in descriptives only   |
| Age relative to partner                          | How old are you? (age in completed years)<br>How old is your husband?   | Calculate age difference and make into categories (no gap, him older, her older) as per WHO SV paper<br>There weren't enough cases in the 'her older' group, or 'no gap' so I combined the two, leaving 'her older/no gap' and 'him older' |
| Living situation                                 | Are you living with your husband now, or is he staying elsewhere?   | Women living with their husbands (vs him staying elsewhere)  |
| Husband's use of alcohol                         | Does your husband drink alcohol?  | Women whose husband's drink alcohol  |
| Husband's use of alcohol                         | How often does he get drunk: often, only sometimes, or never?   | Women whose husbands often or sometimes get drunk (vs those who never get drunk or don't drink alcohol at all)   |
| <b>Household</b>                                 |   |  |
| SES  | Wealth index  | Make wealth index (use agency's syntax for consistency)  |
| Main occupation in household                     | What is the main occupation of the household? Farming/Agriculture; casual labour (farm/non farm); Salaried employment; trading/small business; retired; other | Household occupation type (depending on the number of cases per category we may have to combine some sub-groups e.g. other and retired)  |
| Autonomy/freedom of movement                     | Do you need permission to go to the market?   | Women who need permission to go to the market  |
| Autonomy/freedom of movement                     | Do you need permission to go and visit relatives or friends?  | Women who need permission to go and visit relatives or friends   |
| Autonomy/freedom of movement                     | Do you need permission to visit health facility for herself or child's health?  | Women who need permission to visit a health facility for herself or child's health   |
| Financial autonomy                               | Are you allowed to have some money set aside that you can use as you wish?  | Women who have money set aside to use how they wish  |
| Decision making in HH                            | Who makes the following decisions in your household: What items to cook?  | Women who have a say in what items to cook (y/n)   |
| Decision making in HH                            | Who makes the following decisions in your household: Obtaining healthcare for yourself?   | Women who have a say in obtaining healthcare for themselves (y/n)  |
| <b>Community</b>                                 |   |  |
| Presence of Gram Varta and Udeepan interventions | Use variable that signifies intervention group vs comparison (nesting survey) or District (CBA district/non CBA district if using DLSS)                       | Intervention or comparison / CBA exposed or non-exposed  |
| <b>Societal</b>                                  |   |  |
| Social group/caste                               | What social group/caste does the head of the household belong to? (General, OBC, Mahadalit (SC, SC (others), ST, others, DK                                   | Group into smaller no of meaningful categories: ST, SC, OBC, Others.   |



## ANNEX 2: WEIGHTED ESTIMATES FOR CANDIDATE PREDICTORS

**Table 3: Weighted estimates, 95% confidence intervals, and the unweighted number of cases upon which each estimate is based**

| <b>Candidate SV predictors</b>  | <b>WEIGHTED %</b> | <b>95%CI LOWER</b> | <b>95%CI UPPER</b> | <b>UNWEIGHTED N</b> |
|---|-------------------|--------------------|--------------------|---------------------|
| <b>Women's education</b>  |                   |                    |                    |                     |
| Never attended school   | 55.4              | 54.2               | 56.6               | 32,344              |
| Up to 9 years completed   | 24.3              | 23.5               | 25.1               | 13,493              |
| 10-11 years completed   | 10.0              | 9.5                | 10.5               | 5,439               |
| 12+ years completed   | 10.3              | 9.7                | 11.0               | 5,405               |
| <b>Women's age group</b>  |                   |                    |                    |                     |
| 15-19 years   | 5.2               | 4.9                | 5.5                | 3,250               |
| 20-34 years   | 61.2              | 60.6               | 61.9               | 35,397              |
| 35-49 years   | 33.6              | 32.9               | 34.3               | 19,194              |
| <b>Husband's age group</b>  |                   |                    |                    |                     |
| <25 years   | 10.6              | 10.0               | 11.2               | 6,460               |
| 25-34 years   | 37.0              | 36.4               | 37.7               | 20,716              |
| 35 years and older  | 52.4              | 51.6               | 53.1               | 28,936              |
| <b>Women's employment type</b>  |                   |                    |                    |                     |
| Housewife   | 86.0              | 85.4               | 86.6               | 47,724              |
| Daily labourer  | 7.9               | 7.4                | 8.4                | 5,411               |
| Other   | 6.1               | 5.7                | 6.5                | 3,546               |
| <b>Women's employment location</b>  |                   |                    |                    |                     |
| Inside the home   | 86.0              | 85.4               | 86.6               | 47,724              |
| Outside of the home   | 14.0              | 13.4               | 14.6               | 8,957               |
| <b>Women who have been beaten by any person since the age of 15</b>                           |                   |                    |                    |                     |
| No  | 94.2              | 93.7               | 94.7               | 54,815              |
| Yes   | 5.8               | 5.3                | 6.3                | 3,026               |
| <b>Women who feel that a husband is sometimes justified in being violent towards his wife</b> |                   |                    |                    |                     |
| No/don't know   | 58.5              | 57.2               | 59.8               | 31,875              |
| Yes   | 41.5              | 40.2               | 42.8               | 25,966              |
| <b>Relative education of partner</b>  |                   |                    |                    |                     |
| Same level  | 42.3              | 41.3               | 43.2               | 23,755              |
| Woman has more education  | 11.5              | 10.9               | 12.2               | 6,142               |
| Man has more education  | 46.2              | 45.2               | 47.2               | 26,784              |

|   |      |      |      |        |
|---|------|------|------|--------|
| <b>Marital status</b>   |      |      |      |        |
| Currently married   | 97.1 | 96.8 | 97.3 | 56,112 |
| Married but gauna not performed   | 0.8  | 0.7  | 0.9  | 569    |
| Separated   | 0.2  | 0.1  | 0.4  | 90     |
| Divorced  | 0.1  | 0.1  | 0.2  | 56     |
| Widowed   | 1.8  | 1.6  | 2.0  | 1,014  |
| <b>Duration of the relationship (when the couple started living together)</b> |      |      |      |        |
| 0-1 years   | 5.5  | 5.2  | 5.8  | 3,168  |
| 2-5 years   | 16.6 | 16.1 | 17.1 | 9,058  |
| >5 years  | 77.9 | 77.3 | 78.5 | 43,721 |
| <b>Women who have ever been violent towards their husbands</b>                |      |      |      |        |
| No  | 98.3 | 98.0 | 98.5 | 56,700 |
| Yes   | 1.7  | 1.5  | 2.0  | 1,141  |
| <b>Age relative to partner</b>  |      |      |      |        |
| Same age or woman is older  | 5.1  | 4.6  | 5.7  | 3,125  |
| Man is older  | 94.9 | 94.3 | 95.4 | 52,987 |
| <b>Living with husband</b>  |      |      |      |        |
| No  | 15.8 | 15.1 | 16.5 | 9,261  |
| Yes   | 84.2 | 83.5 | 84.9 | 46,851 |
| <b>Husband drinks alcohol</b>   |      |      |      |        |
| No  | 65.4 | 64.2 | 66.6 | 37,321 |
| Yes   | 34.6 | 33.5 | 35.9 | 20,520 |
| <b>Husband gets drunk</b>   |      |      |      |        |
| No or doesn't drink   | 65.8 | 64.6 | 67.0 | 37,611 |
| Yes, sometimes  | 27.9 | 26.9 | 28.9 | 16,563 |
| Yes, often  | 6.3  | 5.9  | 6.8  | 3,663  |
| <b>Household main occupation</b>  |      |      |      |        |
| Farming/agriculture   | 18.1 | 17.4 | 18.9 | 12,400 |
| Wage labourer   | 50.0 | 48.9 | 51.1 | 29,195 |
| Salaried employment   | 14.6 | 13.9 | 15.2 | 7,545  |
| Trading/Small business/Retired/Others   | 17.3 | 16.5 | 18.1 | 8,701  |

|   |       |       |       |        |
|---|-------|-------|-------|--------|
| <b>Women needing permission to go to the market</b>   |       |       |       |        |
| Permission not required   | 24.4  | 23.5  | 25.4  | 14,067 |
| Permission needed or not allowed to go at all   | 75.6  | 74.6  | 76.5  | 43,774 |
| <b>Women needing permission to visit friends or relatives</b>                                   |       |       |       |        |
| Permission not required   | 24.5  | 23.6  | 25.4  | 14,369 |
| Permission needed or not allowed to go at all   | 75.5  | 74.6  | 76.4  | 43,472 |
| <b>Women needing permission to visit a health facility for herself or her child</b>             |       |       |       |        |
| Permission not required   | 28.8  | 27.8  | 29.8  | 16,388 |
| Permission needed or not allowed to go at all   | 71.2  | 70.2  | 72.2  | 41,453 |
| <b>Involvement in decisions about what to cook</b>  |       |       |       |        |
| Woman involved  | 71.6  | 70.7  | 72.5  | 41,724 |
| Woman not involved  | 28.4  | 27.5  | 29.4  | 16,117 |
| <b>Involvement in decisions about obtaining healthcare for self</b>                             |       |       |       |        |
| Woman involved  | 62.7  | 61.7  | 63.7  | 36,399 |
| Woman not involved  | 37.3  | 36.4  | 38.3  | 21,442 |
| <b>Involvement in decisions about buying jewellery and other major household items</b>          |       |       |       |        |
| Woman involved  | 63.5  | 62.6  | 64.5  | 36,844 |
| Woman not involved  | 36.5  | 35.6  | 37.4  | 20,997 |
| <b>Women allowed to have money set aside that they can use as they wish</b>                     |       |       |       |        |
| No  | 41.6  | 40.5  | 42.8  | 24,579 |
| Yes   | 58.4  | 57.2  | 59.5  | 33,262 |
| <b>CBA district</b>   |       |       |       |        |
| No  | 73.2  | 71.6  | 74.8  | 40,807 |
| Yes   | 26.8  | 25.2  | 28.4  | 17,034 |
| <b>Social group/caste</b>   |       |       |       |        |
| General/others  | 21.0  | 19.8  | 22.2  | 11,813 |
| OBC   | 53.4  | 51.9  | 54.9  | 30,407 |
| SC/ST   | 25.6  | 24.4  | 26.9  | 15,621 |
| <b>Women who experienced physical or sexual violence by their husband in the last 12 months</b> |       |       |       |        |
| No  | 65.0  | 64.0  | 65.9  | 36,528 |
| Yes   | 35.1  | 34.1  | 36.0  | 21,313 |
| <b>Women who sought help about violence carried out by their husbands in the last 12 months</b> |       |       |       |        |
| No  | 96.77 | 96.29 | 97.19 | 20,567 |
| Yes   | 3.23  | 2.813 | 3.707 | 746    |