

Old Age Pension: A Multivariate Analysis to Explore the Role of Pension in Poverty Reduction

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Abstract: Poverty rate tends to increase with the age and the diversity of poverty in old age is often spreads. The policy makers—to reduce the old age poverty—frequently use old age pension as a tool. The present study analyses the impact of old age pension on poverty reduction among pensioners and their respective households with the help of the logistic regression technique in the state of Haryana. The study reveals that among pensioners, SC households are 4.43 times poorer than the non-SC households and pension is incapable to lift them out of poverty. Educated pensioners are 13 percent less poor than uneducated pensioners. Furthermore, the households with more elderly people are poorer than the households with less elderly people. The study indicates that among pensioners, the intoxicant users are 41 percent more poor than the non-intoxicant users. Moreover, the study measures the poverty gap among pensioners to understand the incidence of poverty and reveals that poverty gap with pension (17.6) is significantly lesser than the poverty gap without pension (27.9). The additional finding of the study is that old age pension reduces the overall poverty headcount ratio by 5.6 percentage points (6.1 in rural and 3.7 in urban).

Keywords: Old age Pension, Elderly, Poverty.

1. Introduction

Achieving SDG1 “End poverty in all its forms everywhere” pivots on addressing the specifics of poverty in old age.

India is home to second largest numbers of elderly people (years 60 and above) in the world just after China at 10.38 Crores (Registrar General of India, 2011). Population ageing is one of the most serious tackles that India is likely to face in the near future (Elderly in India, 2016). According to the draft of National Policy for Senior Citizens 2011, during the time period of 2000-2050, the overall population in India is likely to grow by 55 percent whereas population of the people aged 60 years and above will increase by 326 percent. This projected increase in both the absolute and relative size of the elderly population in India is a subject of growing concern for social policy (World Bank, 2001).

A major demographic issue for India in the 21st century is population ageing, with wide implications for economy and society in general. The Global Report on Ageing in the 21st Century (2012), reinforces the

observations made in India that there is multiple discrimination experienced by elderly, including in access to jobs and health care, subjection to abuse, denial of the right to own and inherit property, and lack of basic minimum income and social security (UNFPA and HelpAge International, 2012). Majority of the elderly in India are socially backward and economically poor. Further, as per 16th round of National Sample Survey conducted in 2004, nearly 72 percent of elderly are fully dependent on others with a high incidence of poverty and 6 percent of elderly population is reported as disabled. Old age dependency ratio unveils an increasing trend and risen from 10.9 percent in 1961 to 14.2 percent in 2011 (Elderly in India, 2016). However, the incidence of poverty in old age is very high as an estimated 18 million elderly people in India are living below the poverty line. When adjusting consumption expenditure in household size and structure, there is no significant difference in the incidence of poverty among elderly and non-elderly families in India (Srivastava and Mohanty, 2012). So, reinforcement of elderly becomes crucial for the State to help them in fighting against vulnerability.

Haryana (8.7 percent) is one of the states in India that has higher share of population aged 60 years and above in their respective total population as compare to the national average (8.0 percent). In Haryana there has been a progressive increase in both the number and the proportion of aged people since its creation, due to improved health profile, declining mortality and falling fertility. The elderly population in the state (aged 60 years and above) increased from 0.581 million in 1971 to 2.194 million in 2011—with around 69 percent staying in the rural areas of the state in 2011 (Registrar General of India, 2011). According to statistics revealed by NSSO, 60th round (2006), about 40 percent of elderly are fully economically dependent on others, while 33 percent are partially dependent in Haryana. Such a rising consequences of ageing bring to the forefront issues related to the welfare of the elderly which cannot be understood without considering the framework of social security.

The state has a long history of social security measures and interventions for its vulnerable elderly since it was carved out as a separate entity following the reorganization of states in 1966. Haryana introduced first old age pension scheme for its elderly, who were no regular income source or family support, as part of overall social security measures in the year 1966 (Department of Social Justice and Empowerment, Haryana, Chandigarh). The state government further boosted the scheme with new dynamism and resettled eligibility criterion (age 60 years instead of 65 years) and presented “*Old Age Pension Scheme-1991*”, which has been now renamed as “*Old Age Samman Allowance*” (OASA). The aim of the scheme is to ensure the benefits of old age pension to the needy and in particular the poor section of the society. Despite, more than 50 years of running of the programme and with spent of substantial resources amounting to a total of Rs. 2965 Crores during the financial year 2017-18 in Haryana, there is a substantial dearth of significant and well accepted research in the area of old age pension and its impact on pension holders and their households. The concern subject is largely undocumented and not fully understood in state of Haryana.

Therefore, this paper is an attempt to fill this research gap and more precisely it examines the impact of the old age pension on poverty eradication among pension holders by economic prospective. Additionally, it shall contribute to the literature by erecting reliable estimates of the impact of old age pension for further research.

Scanning of review of literature underlined a significant and positive impact of old age pension on poor elderly. Barrientos (2003), found a positive impact of non-contributory pension programme on reduction of

poverty in South Africa and Brazil. Non-contributory pension enable investment in human and physical capital within pension holder households (Ardington and Lund, 1995). Bello et al. (2010) measured the depth of poverty with and without the non-contributory pension and found that Lesotho government required least insertion to take the pension holders out of poverty. Vydmanov (N.d), described importance of pension for social protection floor, which was working in path of eradicating poverty, reducing inequality and sustaining equitable economic growth in developing countries. HelpAge India (2008) defined pension played a very crucial role as poverty reduction instrument and situation of elders improved after availing the pension. Kaushal (2014) stated that the Indira Gandhi National Old Age Pension scheme in India lowered poverty among families with elders. Irish Aid and European Community (2014) observed that old age allowance in Nepal helped the poor to meet basic needs and improve their capacity to contribute in family income.

2. Methodology

2.1 Research Model

This paper adopts the revised model used by Barrientos, (2003) to analyze the impact of non-contributory pension on poverty reduction, which was done for Brazil and South Africa in 2000 and also used by Bello et al. (2010) to analyze the same for Lesotho. However, some modification is made with reference to the variables included in the model.

The model to be estimated is of the poverty profile type. In the poverty profile, it is assumed that the ratio of individual or household spending to the poverty line is a function of the vector X of individual and household characteristics. More specifically the model is specified as:

$$y_i/z = \beta'X_i + u_i, \dots\dots\dots 1$$

Where 'u' is a stochastic error term that follows normal distribution $\sim N[0, \sigma^2]$

The logistic regression equation from which the probability of poverty is predicted is given by:

$$P(Y) = \frac{1}{1+e^{-(b_0+b_1X_i)}} \dots\dots\dots 2$$

Where, P(Y) is the probability of occurring Y and e is the base of natural logarithms.

This can be estimated by regressing the individual or household poverty measure y_i/z on a range of individual, household and socio-demographic backgrounds. As for each individual the poverty headcount measure P_0 is a binary indicator taking the value given as follows:

- 1 if $y_i/z \leq 1$ or MPCE is below poverty line (presence of poverty) and
- 0 if $y_i/z \geq 1$ or MPCE is above poverty line (absence of poverty)

The probability that household i will be found to be poor is given by:

$$Prob_i = Pr[P_{0i} = 1/X_i] = Pr[U_i < 1 - \beta^1X_i] = \theta[1 - \beta^1X_i] \dots\dots\dots 3$$

Where X is a vector containing the individual and household's background characteristics, which are deemed relevant in explaining the probability being poor, thus

X= Caste, Place of residence, Gender of HH, work status, Age, Education, addiction, Marital status

And the β is a vector containing the co-efficient of concern corresponding to each variable, thus $\beta = \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$

Therefore the empirical model to be estimated is:

$$Pr[P_{0i} = 1/X_i] = \beta_0 + \beta_1 \text{Caste} + \beta_2 \text{Place of residence} + \beta_3 \text{Gender} + \beta_4 \text{Work status} + \beta_5 \text{Age} + \beta_6 \text{Edu} + \beta_7 \text{Addition} + \beta_8 \text{Marital Status} + U_i \dots \dots \dots 4$$

2.2 Poverty Indicators

2.2.1 Poverty Methods

Poverty headcount ratio and poverty gap are widely used poverty measures. These poverty measures are special cases of the Foster, Greer, and Thorbecke class of poverty measures (Foster et al. 1984).

The headcount index is an important descriptive tool which calculated by comparing the income of y of each household to the poverty line z. Concretely, an indicator variable is constructed for each household, taking the value 1 when income falls below poverty line or 0 if income is greater.

- 1** if $y_i/z \leq 1$ below poverty line and
0 if $y_i/z \geq 1$ above poverty line

The poverty gap measures the amount of money by which each person falls below the poverty line. It matters here whether income and poverty line are measured on a per capita basis or whether they are put into adult equivalent terms or adjusted for scale economies (Milanovic, 2002). The appropriate formula is given below with respect to income expressed in per capita terms:

$$P_\alpha = \frac{1}{n} \sum_{t=1}^q \left[\frac{z - y_i}{z} \right]^\alpha \quad \text{for } \alpha \geq 0$$

n = Total number of individuals

q = Number of poor individuals

z = Poverty line

y_i = Standard of living indicator of household i

α = Aversion of poverty parameter

Where $\alpha = 0$, P_0 provides a poverty headcount measure. Where $\alpha = 1$, P_1 provides a poverty gap measure, interpreted as the improvement in standard of living required to bring the poor to the level of the poverty line. Further, these two poverty measures will be used in the empirical work to analyze the impact of pension on poverty.

2.2.2 National Poverty Line and Standard of Living Indicator

The traditional approach to measure poverty is to specify the minimum expenditure (or income) required to purchase a basket of goods and services necessary to meet basic human needs and this minimum expenditure is called the poverty line. Estimates of the poverty line in India are based on consumption expenditure and not on the income level due to difficulties in estimating the income of self-employed people, daily wage labourers, large fluctuations in income due to seasonal factors, additional side income as well as data collection difficulties in India's large-scale rural and informal economy. In that case,

consumption expenditure may be able to provide a better basis for determining the standard of living of the household. Therefore, most of the poverty estimation committees proposed that per capita consumption expenditure or household expenditure were the correct statistical alternative for calculating poverty in India (Gaur and Rao, 2020). The methodology of estimating poverty is reviewed periodically. In addition to the Alag Committee (formed in 1977), previous poverty estimation panels D.T. Lakdawala Panel (1989) and the Tendulkar Committee (2005), which submitted their recommendations in December 2009. Tendulkar Committee has adopted the Monthly Per Capita Expenditure (MPCE) method and recommended Rs. 1000 and Rs. 816 respectively for urban and rural areas, which is equal to the cost of the minimum basket of consumption required for physical survival. The Rangarajan Committee was established in 2012 due to widespread criticism of the Tendulkar Committee methodology. This committee submitted its report in June 2014 and recommended a higher expenditure of Rs. 1407 for urban and Rs. 972 for rural. But government did not take a call on the Rangarajan Committee report and the National Poverty Line for 2011-12 was estimated on the basis of Tendulkar Committee report.

According to the World Bank, poverty has many dimensions. This includes the inability to obtain the basic goods and services necessary to survive with dignity. More precisely a person is considered to be poor if his or her expenditure falls below 1.9 US\$. India is committed to achieve the Sustainable Development Goals (SDGs), a key proponent of the first goal that talks the issue of poverty. This goal commits the participants to eliminate poverty according to the common international poverty line of \$1.25 per person per day (at 2005 Purchasing Power Parity). The poverty status in India is exacerbated by lack of employment opportunities with unemployment estimated at 6.1 of total labour force (PLFS by NSSO, 2019).

Therefore, it is difficult to select a suitable poverty line at the best of times. Our further analysis adopts the Common International Poverty Line (\$ 1.25/per day), as it is a prescribed eligibility criterion for the scheme.

2.2.3 Data

The data in this paper is taken from household survey executed in 2018 in four districts of Haryana. 8 villages (rural areas) and 8 MC wards (urban areas) were approached to get the comprehensive information. The survey targeted households with Old age pension holder, inspected from the 'head of the household' and an additional supplement for old age pension holder, inspected from the persons themselves.

The Schedule Type 2 reference period (defined in NSSO, 68th round) with few modifications was used for the expenditure assessment because the MPCE used as criterion of living standard. It will be mixed method and moving reference period, which reported consumption expenditure of household or individual prior to the date of interview for collection of data from the individuals and households. The questionnaire covered household structure, housing conditions, socio-demographic information, employment, income-expenditure and loan status, health care of elderly, self-reported well being and self-reported impact of old age pension holder.

3. Findings and Discussion

3.1 Descriptive Analysis

Socio-economic and Demographic Background of Pension Holders

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To go more specifically in pension impact, key socio-economic-demographic variables such as caste, religion, age, gender, family size, education, income, and monthly per capita expenditure etc. were subjected to descriptive statistical analysis the results of which are described in this section.

3.1.1 Caste and Religion of the Household Heads'

Table 1 reveals the information about religion and caste of the head of the elderly households. Among elderly households, majority of belongs to Hindu religion (95.2). Around 4.3 percent of the households belong to Shikhs, while belonging to other religions like Jains are less than one percent. As far as rural-urban variation is concerned, those households belong to Hindu and other religion are slightly higher in urban areas than in rural areas while Shikhs are relatively higher in rural areas compared to urban areas. In respect of caste, 27.3 percent of the head of the elderly households belong to Scheduled caste (SCs), 26.3 belong to other backward classes (OBCs) and 46.4 percent belong to General category. The proportion of households belonging to SCs is found almost double in rural areas as compare to urban areas. In contrast, the head of the households belonging to OBCs and General (35 percent, 50 percent respectively) are more in urban areas compared to rural areas (24 percent and 45.5 percent respectively).

Table 1: Religion and Caste of the Pensioner's Household

Religion of the household head	Place of residence		Total	Frequency
	Rural	Urban		
Hindu	94.6	97.5	95.2	373
Sikhs	5.4	0.0	4.3	17
Others	0.0	2.5	0.5	2
Caste of the household head				
SCs	30.4	15.0	27.3	107
OBCs	24.0	35.0	26.3	103
GEN	45.5	50.0	46.4	182

Source: Author's findings

3.1.2 Economic Status of the Elderly Households

3.1.2.1 Monthly Per Capita Consumer Expenditure (MPCE)

MPCE is generally used as a measure of economic condition of the individuals. The survey collected information on consumer expenditure using mixed method and moving reference period defined by NSSO 68th round, 2011, which collects data (i) during the last week for some selected items, (ii) during the last thirty days for some other selected items, and (iii) during the last 365 days for some others. Table presents the distribution of the elderly households by MPCE categories by place of residence. Four percent of elderly households have MPCE of Rs. 1000 or below and about 13.3 percent have Rs. 1000-1500. More than one-third of the elderly household have MPCE of Rs. 1500-2500 and a slightly less than the half have MPCE of Rs. 2500 and more. This percentage is about two-third for urban area while 38.5 percent in rural. A majority of the rural elderly households have MPCE less than Rs. 2500 as compared in urban household it is more than Rs. 2500 for the majority.

Table 2: Monthly Per Capita Expenditure of the Pensioner's Household

MPCE (in Rs.)	MPCE (Weekly*4.29+monthly+yearly/12)
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	Rural	Urban	Total	Frequency
<1000	3.8	5.0	4.1	16
1000-1500	16.0	2.5	13.3	52
1500-2500	41.7	26.3	38.5	151
2500+	38.5	66.3	44.1	173
Total	100.0	100.0	100.0	392
(N)	312	80	392	

Source: Author's findings

3.1.2.2 *Wealth Index*

Wealth index is also an indicator to recognize the economic status of the households. It is consistent with expenditure and income measures. This index was constructed using information on household assets and housing characteristics. This has been used as one of the background characteristics throughout the study to identify the impact of wealth status on consumption pattern of pension holders.

Each household asset was assigned a weight (factor score) for each item covered by the questions, generated through principal component analysis in SPSS. A wealth index score was calculated for each household by weighting the response with respect to each item pertaining to that household by the coefficient of the first principal component, and summing the outcomes. The resulting household scores were standardized in relation to a standard normal distribution with a mean zero and standard deviation of one (Gwatkin et al., 2000). All households in the sample were ranked according to the assigned wealth index score of the household and then divided into quintiles.

Table 3: Wealth Status of the Pensioner's Household

Quintiles	Wealth quintiles		
	Rural	Urban	Total
Lowest	19.9	20.0	19.9
Second	23.7	6.3	20.2
Middle	22.1	11.3	19.9
Fourth	19.6	22.5	20.2
Highest	14.7	40.0	19.9
Total	100.0	100.0	100.0
(N)	312	80	392

Source: Author's findings

3.1.3 Household Size and Elderly Status of Household Head

Table 4 shows the household information by background characteristics, which reveals the mean size of the elderly households, was 5.2 persons, with no difference between rural and urban areas. This may be higher than census 2011 for Haryana, mainly due to the fact that we had included only those households who had at least one elderly member, particularly old age pension holder. The distribution of the survey households by the number of household member shows that about 16 percent of the households have one or two members and over one third households have 3-5 members. About half of the households consist of 6 or more members. Small households with one or two members, as well as large households with 6 or more

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members, are found more in rural areas than in urban. Controversially, medium households with 3-5 members are found more in urban areas than rural.

Table 4, also shows the distribution of the elderly households by household headship. The findings indicate that majority of the households have been headed by an elderly person. The headship rate is found more among elderly male (67 percent) than elderly female (29.1 percent). The elderly headship rate is found a slightly higher in rural areas (96 percent) than in urban areas (95 percent) and vice versa non-elderly households are slightly higher in urban areas than rural areas.

Table 4: Household Size Sorting and Household Headship in the Pensioners' Households

Number of usual members	Place of residence		Total	Frequency
	Rural	Urban		
1	3.2	2.5	3.1	12
2	12.8	11.3	12.5	49
3-5	35.6	41.3	36.7	144
6+	48.4	45.0	47.7	187
Mean size of household	5.0	5.0	5.0	N.A
Household headship				
Male elderly	67.0	65.0	66.6	261
Female elderly	29.1	30.0	29.3	115
Non-elderly	3.8	5.0	4.1	16
Total	100.0	100.0	100.0	392
(N)	312	80	392	

Source: Author's findings

3.1.4 Age and Marital Status of Pension Holders

From selected households, 312 (80 percent) pension holders were from rural area and (20 percent) from urban area. Table 5 presents the age composition and marital status of the pension holder by place of residence and gender. Overall, around 45 percent of the pension holders were aged 60-69 years and another 39 percent were aged 70-79 years. Thus, taken together, about 84 percent of the pension holders were up to 80 years of the age. Other hand, 16 percent of the pension holders were above 80 years.

Table 5: Age Distribution and Marital Status of the Pension Holders

Age/Marital status	Rural	Urban	Total	Frequency
Current age in completed years				
60-69	42.9	51.2	44.6	175
70-79	40.4	35.0	39.3	154
80+	16.7	13.8	16.1	63
Median age	70.0	68.0	70.0	N.A
Current marital status				
Never married	0.5	0.0	0.3	1
Currently married	76.0	40.5	57.9	227
Widow/separated/deserted/divorced	23.4	59.5	41.9	164

Source: Author's findings

Overall, around 58 percent of the elderly are currently married while 42 percent are Widow/separated/deserted/divorced. Only 0.3 percent of the total is found who never got married. There is significant gender differential in marital status exist. The percentage of widowed is far higher among elderly women than among elderly men. However, the rural-urban difference is not very significant with respect to widowed status of the elderly. Given the higher widowhood among elderly women—they outstrip their male counterparts in the extreme ages—this group needs special attention.

3.1.5 Current Work Status of Pension Holders

The distribution over occupation is shown in table 6 and which replicates the percentage of elderly currently working and not working classified by place of residence. The current work participation rate (25.3 percent) in Haryana is considerably lower than the rate estimated from the NSSO data for all India for the period 2004-05 (39 percent) but this is not strictly comparable as the current study covers only one state. Conversely, similar finding is also given by BKPAI for seven states in 2011. There is significant rural-urban difference in the work participation rate among elderly. In rural areas around 27.2 percent of the pension holder are currently working while about 17.5 percent among urban pension holders are doing so.

Table 6: Occupation Structure of Sampled Pension Holders

Current work status	Rural	Urban	Total	Frequency
Currently working	27.2	17.5	25.3	99
Currently not working	72.8	82.5	74.7	293
Total	100.0	100.0	100.0	392

Source: Author's findings

3.1.6 Living Arrangement and Status in the Household

In our traditional society, particularly in rural area, the foundation of the family is central to everyday life. It stipulates that children—principally male children—provide support to parents in their old age, usually in the form of co-residence. However, with increasing urbanization and employment-related migration within and outside the country, the co-residential structure of the Indian family is seeing a dramatic transformation. In addition, fertility transition will continue to contribute to the debauchery of the youth bulge in favour of an older population age structure in the future. Increased longevity among the elderly, particularly women, due to medical advances is another factor.

The traditional co-residential family living arrangement is the most common practice across all the surveyed area. Table 7 presents the finding over percentage of elderly living with or without family. A majority of the elderly (87.4 percent) is lived with their married children or grand children. This may imitate by their receiving of old age pension. It also show that about 3.1 percent pension holder are living alone which is exactly half of the BKPAI survey, 2011. Such percentage is considerable higher in rural area (3 percent) than urban (2.5 percent). However, about 9.4 percent of the pension holders are living with their spouse only. Nevertheless, there is no significant difference in rural-urban with respect to living arrangement of the elderly.

Table 7: Living Arrangement and Status of Elderly in the Household

Living arrangement/status	Rural	Urban	Total	Frequency
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Current Living arrangement				
Alone	3.0	2.5	3.1	12
With spouse only	9.6	9.2	9.4	37
With family	87.1	88.7	87.4	343
Status of the elderly in the HH				
Elderly headed HH	96.2	95.0	95.9	376
Non-elderly headed HH	3.8	5.0	4.1	16
(N)	312	80	392	N.A

Source: Author's findings

3.2 Incidence and Probability of Poverty

3.2.1 Poverty Headcount Ratio and Incidence of Poverty

India ranks 129th out of 189 countries in the Human Development Index issued by UNDP and ranks 124th in GNI per capita income with income of US \$ 6,829 in 2019. The Gini-coefficient is estimated at 35.7, which shows a high level of inequality among the Indian society (World bank, 2013).

Headcount ratio is the simplest and one of the well-known poverty measures. It identifies the share of the population whose income is below the poverty line. It is, not surprisingly, the most calculated poverty measurement. This measurement literally counts heads, allowing policy makers and researchers to track the most immediate dimension of the human scale of poverty (Morduch,). According to World Bank (2011), Poverty headcount ratio at national poverty line in India was 21.9.

Table 8 is summing-up the poverty headcount ratio and poverty gap as percentage to poverty line with and without pension income. Income with pension includes income received by the household from all other sources with social pension, while income without pension does not include social pension.

Table 8: Poverty Headcount Ratio and Poverty Gap With and Without Social Pension Income

	With social pension	Without social pension
Rural		
Poverty headcount ratio	54.8	60.9
Poverty gap as % to poverty line	18.7	29.5
Urban		
Poverty headcount ratio	33.8	37.5
Poverty gap as % to poverty line	13.4	21.4
Total		
Poverty headcount ratio	50.5	56.1
Poverty gap as % to poverty line	17.6	27.9

Source: Author's findings

Note: using household income per capita

By scrutinizing the above table, we can say that social pension reduces, ceteris paribus, both the poverty headcount ratio and poverty gap in rural as well as urban areas. Social pension income reduces the poverty

headcount among members of the households with elderly 5.6 percentage points for whole, which is 6.1 and 3.7 percentage points for rural and urban respectively. Not only poverty headcount, pension also has a strong impact on poverty incidence for the elderly households. The poverty gap has been calculated to measure the incidence of poverty. It is found that poverty gap with pension (17.6) is significantly lesser than the poverty gap without pension (27.9). Other things being constant, the absence of old age pension income would increase the poverty gap for rural as well as urban.

3.2.2 Multivariate Analysis and Probability of Being Poor

As a second step in identifying the impact of old age pension on poverty, a multivariate analysis is performed. In multivariate setting, the logistic model is designed to explore the impact of old age pension on poverty. A multivariate setting enables the identification of the impact of a pension beneficiary on the possibility that household members are poor, controlling for the effects of household and individuals characteristics, as well as other income sources. The explanatory variables included in this model reflect individual characteristics such as age, place of residence, caste, marital and work status, family size, dummy variables for gender, and the level of education of the elderly, which also found important in explaining the likelihood of poverty in similar studies (May, 2000; Woolard and Klasen, 2003; Barrientos, 2003; Bello et al. 2010). A complete list of variables can be found in Appendix One.

Table 9, reports the result of logistic regression model of the determinants of the probability that a household is being above poverty line. Reported parameters are marginal effects computed at the mean of the regressors. Broadly, the logistic regression results are as expected but some parameters seem different than expected. The current model correctly classifies 272 cases but misclassifies 120 others and it correctly classifies 69.4 percent of cases.

The coefficient linked with caste of the pension holder is statistically significant at 1 percent level indicates that SCs pension holder households are more prone to be below poverty line. The probability of SCs pension holder households being poor is 4.43 times more than the non-SCs households. It could be explained by that incidence of poverty among SCs households are much higher than for the rest of the population and only pension can't take up them out of poverty. The Government should adopt additional measures for SCs households to get them out of poverty.

The coefficient related with place of residence of pension holder households is statistically significant at 1 percent level and specifies that households living in rural areas are 2.22 times more likely to be poor than their urban counterparts.

The coefficient associated with gender of the head of the household, apparent in table is worth mentioning given the standard presumption that households headed by males are likely to be less poor than that of female headed. The presumptions are grounded on the fact that in our society males are regarded breadwinners. The coefficient statistically significant at 5 percent level of significance indicates that our presumption is failed and female-headed households are less prone to poverty. That implies that if a household is male headed, the probability of being below poverty line in that household will increase by 50 percent, other things remains constant. This could be explained by the fact that in the preliminary statistical

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analysis of data, some men were found to spend much of their income on alcohol and not on household care.

Table 9: Results for the Logistic Model
Method: Maximum Likelihood Estimation

Regressor (X)	Co-efficient (β)	Standard Error	Wald	P-Value	Odds ratio (Exp. β)
<i>Constant</i>	-.1932	1.276	2.292	.130	.15
<i>Caste</i>	1.487	.302	24.240	.000	4.43
<i>Place of residence</i>	.797	.299	7.112	.008	2.22
<i>Gender of Head of HH</i>	.406	.368	1.215	.270	1.50
<i>Work Status</i>	.399	.384	1.081	.298	1.49
<i>AGE</i>	.009	.017	.292	.589	1.01
<i>Education of elderly</i>	-.143	.033	18.292	.000	.87
<i>Addiction status</i>	.341	.271	1.578	.209	1.41
<i>Marital status of elderly</i>	.247	.343	.518	.472	1.28

Source: Author's findings

Note: $R^2 = .187$ (Cox & Snell), 0.252 (Nagelkerke), $\chi^2=18.45$, -2 Log likelihood= 499.13

The probability of households who are living with currently working pension holders is more than the members living with non-working pension holders. This could be explained by that only those elderly are currently working who can't survive with pension money only. Those pension holders, who are not currently working may not need to work because they already have the basic requirements and can keep their livelihood with pension money only.

Moreover, the coefficient of the age of the elderly is not statistically significant but the probability of households being below poverty line tends to increase with the age of elderly. Thus the probability of households being poor increases with the age of the elderly by 1 percent. This of course emphasizes the point that households with more elderly are more prone to be below poverty line. This could be explained by that some elderly spend much on medicines and health care rather than household care.

The coefficient of education reflects the prime role that human capital plays in determining poverty among households of pension holders. It is observed that education has a negative impact on probability of being poor. In other words, education increases the probability of households being above poverty line. Educated pension holders' households are 13 percent less likely to be poor. This therefore marks the importance of education in poverty alleviation. It could be argued that households with educated pension holder spend more on household consumption hence are likely to be above poverty line.

In the sequence of above analysis the coefficient of addiction status of elderly indicates that who are consuming intoxicants are more likely to be poor. It is found that the pension holders who having addiction habit are 41 percent more likely to be poor. It could be explained by the fact that who spend much of their income on alcohol and tobacco and not on household basics lives a poor life. The coefficient

of marital status indicates that the probability of households with widow/widowed elderly is 28 percent more than that of their currently married counterparts.

4. Conclusion

The current study investigates the role of the old age pension as a measure for reducing poverty among the elderly. In conclusion, the current study shows that SC households are 4.43 times poorer than non-SC households among pension holders, and old age pension is unable to raise them out of poverty. Pensioners with a high level of education are 13 percent less poor than those with a low level of education. Furthermore, households with a higher proportion of older individuals are poorer than households with a lower proportion of elderly persons. According to the research, intoxicant users are 41 percent poorer than non-intoxicant users among elderly. Furthermore, the study examines the poverty gap among pension holders in order to determine the prevalence of poverty, and finds that the poverty gap with pension (17.6) is significantly lower than the poverty gap without pension (27.9). The study also discovered that receiving an old age pension lowers the poverty headcount ratio by 5.6 percentage points (6.1 in rural and 3.7 in urban).

Appendix

Name of variable	One variable definition
Gender of Household head	Gender of Household head (Male=1, Female=0 (Base))
Place of residence	Whether household lives in rural area (Yes=1, No=0 (Base))
Caste	Caste of Head of household (SC=1, Non-SC=0 (Base))
Work status	Currently work status of elderly (Yes=1, No=0(Base))
Age	Age in completed years
Education	Number of completed schooling years
Addiction status	Elderly currently addiction status (Addicted=1 (Base), Non-addicted=0)
Marital status	Currently marital status of elderly (Yes=1(Base), No=0)

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