



Income Support and Household Welfare in India: Propensity Score Matching Estimation of the Effect of Elderly Women Old Age Pension on Household Consumption

T. Lakshmanasamy

IGSSR Senior Fellow and Formerly Professor, Department of Econometrics, University of Madras, Chennai. E-mail: tlsamy@yahoo.co.in

Abstract: Women, especially in old age, are vulnerable to poverty and poor health. The social assistance provided by governments helps the households with elderly women in consumption and well-being. This paper analyses the effects of the Indira Gandhi National Old Age Pension Scheme (IGNOAPS) on the well-being of households with elderly women in India using the 2011-2012 India Human Development Survey-II data and applying the nonparametric propensity score matching (PSM) method. The effect of pension amount received under IGNOAPS on household monthly per capita consumption expenditure is estimated. The IGNOAPS increases household monthly per capita consumption expenditure on food items, education and health by 8 percent and reduces household poverty. As the programme is unconditional cash transfers to the targeted elderly women, the entire household derives the larger benefits in terms of increased consumption. Thus, IGNOAPS is welfare improving.

Keywords: Elderly women, old age pension, IGNOAPS, programme participation, consumption expenditure, propensity score matching estimation

Received : 25 April 2022

Revised : 22 May 2022

Accepted : 30 May 2022

Published : 17 June 2022

TO CITE THIS ARTICLE:

Lakshmanasamy, T. (2022). Income Support and Household Welfare in India: Propensity Score Matching Estimation of the Effect of Elderly Women Old Age Pension on Household Consumption, *Society and Culture Development in India*, 2: 1, pp. 221-237. <https://doi.org/10.47509/SCDI.2022.v02i01.15>

Introduction

In India, the expenditure on social assistance programmes accounts for a modest 1.5 percent of GDP in 2016. But, most such schemes like the Employees' Provident Fund Organisation and Employees' State Insurance Corporation offer social security plans and pensions to the workers in the organised formal sector only. The informal workers accounting for nearly 92 percent of total employment in India

have no such institutionalised social security arrangement. To alleviate such a gap, the government of India has introduced the National Social Assistance Programme (NSAP) intending to provide social security or pension to certain target groups. Such social assistance programmes initially tried in Latin America in the late 1990s are largely conditional or unconditional cash transfers programmes. There are strong economic rationales behind such cash transfers programmes targeted at the socially and economically weaker sections of the society, especially elderly women. These women are of poor health, economically inactive, have fewer employment opportunities, earn meagre amounts, and have unsteady income sources. But, the expenses on health and medicine are quite substantial. Without financial sources, they have to depend on others even for consumption. The social assistance benefits are transfers intended to meet the same kinds of needs as social insurance benefits but are provided outside of an organised social insurance scheme and are not conditional on payment contributions.

In India, the National Social Assistance Programme (NSAP) was introduced by the central government in 1995 to provide a safety net for the vulnerable sections of society. The NSAP has five components - National Old Age Pension Scheme, National Widow Pension Scheme, National Disability Pension Scheme, National Family Benefit Scheme and Annapurna Scheme. In 2007, the scheme was renamed the Indira Gandhi National Old Age Pension Scheme (IGNOAPS). The National Old Age Pension Scheme (NOAPS) provided a monthly pension of ₹75 to old age people, widow and disabled persons aged 65 or older and live below the poverty line. In 2007, the scheme was renamed the Indira Gandhi National Old Age Pension Scheme (IGNOAPS). The age eligibility criterion of the beneficiaries for the programme was reduced from 65 to 60 years and the financial assistance was also increased to ₹200. In 2011, the cash transfer to beneficiaries aged 60-79 was increased to ₹300 and for those above 80 years of age was increased to ₹500. While the central government provides a fixed amount as transfers based on the state poverty line, the state governments are required to top up the central government contribution. The IGNOAPS covered 6.7 million beneficiaries in 2002-03 and by 2012-13 nearly 22 million were covered under the scheme, nearly a tripled growth. The allocation for IGNOAPS has increased by 1.4 times between 2007-08 and 2011-12.

The benefits of such cash transfers programmes aiming to ensure elderly women consumption and welfare, and alleviate household poverty crucially depend on their participation in the scheme to benefit from the programme. The provision of such a cash transfers scheme is expected to increase women's participation in

the scheme and to augment the economic security of the elderly women in the household reducing the old age poverty rate and increase the probability of later age survival. Therefore, the share of spending incurred on food is expected to increase for those households with women who receive the pension than the households where elderly women do not participate and receive the benefit under the old age pension programme. The unconditional cash transfers Indira Gandhi National Old Age Pension Scheme is not only a safety net for women but also a means of dealing with the phenomena of missing women, especially among the elderly (Pal and Palacios, 2011). Most evaluations of such welfare schemes that analyse the impact of cash transfers on welfare are heavily focused on income, and essentially test the welfare effects of cash transfers between men and women. Less attention has been given to the welfare effects of a programme centred on female participants. More importantly, the consumption part of the welfare programmes is totally ignored. Even if income assistance is made to elderly women, there exists a lot of difficulties for aged women to consume the required goods and incur the desired consumption expenditure. Barrientos *et al.* (2003) underline the need to evaluate the effects of cash transfers programme on female programme participation and their consumption pattern to understand the impact of such programmes. Therefore, participation in the welfare scheme is important to benefit from the programme.

This study evaluates the impact of the Indira Gandhi National Old Age Pension Scheme on the well-being of households with elderly women. The main objective of this study is to estimate the effect of pension amount received under IGNOAPS on the household monthly per capita consumption expenditure. The impact of elderly women's participation in the IGNOAPS and the amount of cash transfers on household monthly per capita consumption expenditure incurred on food items like pulses, vegetables, fruits, nuts, meats, eggs, milk and milk products, and non-food items like education and health is examined using the 2011-2012 India Human Development Survey-II data applying the nonparametric propensity score matching (PSM) method.

Review of Literature

The cash transfers welfare programmes are widely implemented in Latin America in the 1990s. The Brazilian and Mexican programmes are popular and widely evaluated. The South African old age pension scheme is recognised as a typical example of an unconditional cash programme where large cash sums, almost twice the median per capita income of African households. Case and Deaton (1998)

evaluate the redistributive effects of South Africa's old age pension cash transfers on the recipient households' income allocation to food, schooling, transfers and savings, as well as levels of living and on their families. The study finds that pension has the same positive effect on food expenditure as the non-pension income and changes the living arrangements of the recipient households.

Sosa-Rubi *et al.* (2011) analyse the long term effects of the Mexican programme Oportunidades/Progresá on poor rural women's use of antenatal and delivery care in Mexico. The programme provides cash transfers to women conditional on attending antenatal care visits and reproductive health discourse. The length of the programme participation is expected to influence women's preferences and use of not only antenatal care but also other services such as institutional delivery. The study uses data on 5051 women aged between 15 and 49 years old with at least one child aged less than 24 months living in rural localities from the 1998, 2003 and 2007 rounds of the rural evaluation survey (Encuesta de Evaluación Rural, ENCEL-rural) applying multilevel probit and logit methods. The study finds that the average of antenatal care visits among populations benefiting from Oportunidades has increased from 4.4 visits in 1998 to 5.7 visits in 2003 and 6.4 in 2007. Women with longer exposure to Oportunidades report 2.1 percent more antenatal care visits than women living in localities with less exposure. Young women aged 15-19 and living in localities with longer exposure to Oportunidades have 88 percent, while women aged 20-24 years have a 41 percent greater likelihood of choosing a physician/nurse than a traditional midwife for childbirth. Women of indigenous origin are 68.9 percent less likely to choose a physician/nurse for delivery care than non-indigenous women. Thus, the antenatal visits and women participation under Oportunidades indeed has the desired benefits of institutional delivery and care.

Nelson (2012) analyses the link between social assistance benefit levels and material deprivation in European countries using data from the EU-SILC and SaMip dataset, covering 26 European countries. As it is difficult to differentiate between enforced want to basic consumption and mere choice, analytical studies combine income-based poverty thresholds and consumption-based deprivation indicators into a single poverty measure and count only those individuals or households that are both materially deprived and have a low income as consistently poor. But, evidence shows an only moderate overlap between relative income poverty and material deprivation as people who are relatively income poor are not always materially deprived (Nolan and Whelan, 2010). The study finds a negative relationship between social assistance and deprivation showing that material deprivation is less extensive in European countries with higher benefit levels. There is no clear effect

of public services or active labour market policy on material deprivation, the factors essential in the EU discussion on poverty and social inclusion.

Zaky (2014) evaluates the impact of a conditional cash transfers programme Ain El-Sira Experiment on poor slum families in Egypt with respect to various aspects such as female work, empowerment, violence, and family planning. The conditional cash transfers programmes provide money to poor families contingent on certain behaviour, usually investments in human capital, such as sending children to school or bringing them to health centres. The conditional cash transfers programmes address the failures in delivering social assistance through more traditional social assistance programmes such as weak poverty targeting, disincentive effects, and limited welfare impacts and a demand-side complement to the supply of health and education services. The success stories of conditional cash transfers programmes in Colombia, Honduras, Jamaica, Mexico, Nicaragua and Turkey are widely evaluated. Evidence shows that the conditional cash transfers programmes in Colombia, Mexico and Nicaragua are successful in increasing enrollment rates, improving preventive health care, raising household consumption, and empowering women. The Egyptian conditional cash transfers programme did impact the participating families, in particular the women, and the school attendance of children.

Aydiner-Avsar (2015) examines the gender dimensions of social protection policies around the world. Since the 1980s under the neoliberal environment, the social protection policies have transformed from one of universalism to targeted welfare state regimes and shifted away from male breadwinners to the adult worker approach. However, the study notes that despite the progress in the focus, gender inequality persists. Under the emerging scenario, the paper examines the gender perspectives of social protection policy experiences of industrialised and developing countries. Specifically, the gender effects of care-related programmes are examined to derived gendered implications and policy measures. The paper observes that only by mainstreaming gender in policymaking will social protection systems be able to effectively promote social capabilities and help close the gender gap.

Pandey and Parthasarathy (2019) try to understand the beneficial impact of the government schemes of women upliftment implemented through non-governmental organisations. Specifically, the study examines the benefits of the Mahila E-Haat, a Make in India Initiative entrepreneurship programme to promote women by creating a direct online digital market platform for women who are linked to NGOs through SHGs and other women entrepreneurs that helps them to sell and display their self-made products and services on an e-platform. The study was conducted in three villages of Maharashtra and the data are collected from NGOs, women

entrepreneurs and women beneficiaries associated with SHGs. The focus of the government programmes is to progressively motivate women to participate in the economic activities addressing the issues through employment, empowerment, labour force participation, education, gender equality and entrepreneurship by promoting the economic, socio-cultural, interpersonal, psychological, political and legal domains of women empowerment. The study reports that 45 percent of the women have started with their own business, 90 percent of women have improved their standard of living, 50 percent of women gained confidence as they expanded their business on the online platform, 50 percent of women contribute to their household income after being a part of the E-Haat.

In the Indian context, only a few studies like Garroway (2013), Kaushal (2014) and Unnikrishnan and Imai (2020) evaluate the impact of IGNOPS on indicators of household welfare applying the propensity score matching method. Garroway (2013) measures the impact of two NSAP schemes, the old age pension and the widow's pension programmes on household income, consumption and poverty status using the 2005 IHDS data and applying the propensity score matching method. The study finds that the effect of pensions vary widely as there exists a great diversity of recipients across income quintiles, spatial location and social group. The estimates show that widow's pension reduces poverty among recipients by about 2.7 percentage points. Based on the results, the study concludes that government attempts to target the pensions to poor households have been ineffective and calls for the universal implementation of the schemes to improve their effectiveness.

Kaushal (2014) study the effect of the IGNOPS on elderly well-being, living arrangements, employment and expenditure pattern using NSSO data applying the propensity score matching method. The study uses a proxy measure on education to identify programme recipients. The study estimates show that public pension has no effect on the employment of elderly women with primary or lower education, but a modest negative effect on the employment of similar men. However, pension raises family expenditures, lowers poverty, and the effect was smaller on families headed by illiterate persons. The study also finds that households spent most of the pension income on medical care and education, which implies possible household intergenerational transfers of resources.

Unnikrishnan and Imai (2020) note that due to population ageing, elderly poverty is rising and the female poverty rate in India is a crucial factor contributing to missing elderly women. The study examines the effect of the unconditional cash transfers programme IGNOPS on household welfare measures of consumption expenditure, income, assets and poverty using a panel of 2004-05 and 2011-12

IHDS data and applying the propensity score matching (PSM) method. The counterfactual group is constructed by the PSM and the time invariant unobservable household characteristics are eliminated by the PSM weighted fixed effects method. The estimated results show that participation in the IGNOAPS by elderly women increases both food and non-food household consumption expenditure and household assets, and reduces household labour supply. The Difference-in-difference (DID) estimates reveal that the poverty reducing effect of pension on women declined in 2011-12, after the changes in the programme in 2007, because the households reduced labour supply while keeping the level of consumption. maintained the level of consumption.

Data and Methodology

This study on the effects of pension amount received under IGNOAPS on the poverty of households with elderly women uses the 2011-12 Indian Human Development Survey (IHDS-II), a nationally representative survey of 42,152 households, consisting of 27,579 households in 1503 villages and 14,573 in 971 urban neighbourhood across India. The sample for this study consists of 41,106 observations of which 3706 households have at least one elderly woman receiving old age pension under IGNOAPS and 37,400 households do not participate in the IGNOAPS programme. The IHDS-II data contains information on household consumption expenditure, number of elderly women, old age pension, and other government financial assistance, besides the usual socioeconomic and demographic information. This study uses household monthly per capita consumption expenditure as the outcome variable and elderly women old age pension as the treatment variable.

Propensity Score Matching Method

The Propensity Score Matching (PSM) method is a statistical matching technique that attempts to estimate the effect of a treatment, intervention or policy by accounting for the covariates that perfect receiving the treatment. Conventionally, impact evaluation methods use the control group vs target group approach to estimate the pure effects of a programme i.e. the extent of benefits accrued to the target group purely from the programme participation. Unfortunately, the control group is not the same as the target group, as the control group is not eligible to participate in the programme participation. Besides, the differences in individual unobserved heterogeneity may bias the estimate. Hence, what is needed is a comparison group of those individuals who are eligible for the programme but are not participating

in the programme. Therefore, a randomised allocation of beneficiaries of the programmes as participants and non-participants generates the ideal control group for the impact evaluation.

Usually, the targeted beneficiaries are identified based on a certain eligibility criterion, an assignment rule. In the present study, such an eligibility criterion is age. Only the elderly women aged 60 and above are eligible to receive the old age pension under the IGNOAPS. Therefore, those elderly women receiving the old age pension are the treatment group and those elderly women who do not receive the old age pension but are eligible to receive are the control group. Thus, elderly women are assigned into two groups: the treated group that received the treatment and the control group that did not. Treatment status d is a binary variable that determines if the observation has the treatment or not: $d=1$ for treated observation and $d=0$ for control observation. Let the likelihood of being assigned into the treated group is conditional on a set of covariates variables:

$$P(y) = P(d = 1 | x) \quad (1)$$

The predicted outcome represents the estimated probability of participation or propensity score. The propensity score is the probability of an observation being assigned to a specific treatment given a set of observed covariates. Every sampled participant and non-participant will have an estimated propensity score. There will be two potential outcomes for the observation, the outcome under treatment and the outcome under treatment not being received. The observed outcome for the observation can be specified as:

$$y = \begin{cases} 1 & \text{if } d = 1 \\ 0 & \text{if } d = 0 \end{cases} \quad (2)$$

Rosenbaum and Rubin (1983; 1984) show that if potential outcomes are independent of treatment conditional on covariates x , then the outcomes are also independent of treatment:

$$[y_1, y_0] \perp d | p(x) \quad (3)$$

Then, the propensity score $p(d = 1 | x) = p(x)$. (4)

An advantage of the propensity score is that it does not require identical observations for comparison. Instead, it requires only that the observations being compared are to have the same probability of treatment assignment. Therefore, it is easier to obtain a valid estimate of the causal effect of the treatment on the basis of propensity score matching. However, exact matching propensity scores

$[p(x_i) = p(x_j)]$ and observations $[x_i = x_j]$ are difficult to find. Even if the propensity scores are matching, the exact matching on the covariates is nearly impossible as in observational studies $[x_i \neq x_j]$. Fortunately, matching on the propensity score guarantees the distributional equivalence: $\Phi(y | d = 1) = \Phi(y | d = 0)$. Therefore randomisation of assignment to the treatment and control groups permits unbiased inferences on the basis of propensity score matching.

The propensity score is conditional (predicted) of receiving treatment given pre-treatment characteristics that match observations from treated and control groups based on their propensity scores. Typically, the propensity score is estimated using the logistic regression method with d as the dependent variable and x as a set of independent variables. When exact matching is suspected, other techniques such as the nearest neighbour, radius matching, stratification and interval matching, kernel or local linear matching and weighting on propensity score matching methods are used to estimate the probability of treatment given a set of covariates are also valid. When the treatment effect is not equivalent across the entire distribution, the propensity score matching technique focuses on common support i.e. the part of the distribution where there is a substantial probability that either treatment might be selected, the overlap region, $0 < p(d = 1 | x) < 1$]. Figure 1 describes the method of propensity score matching with common support.

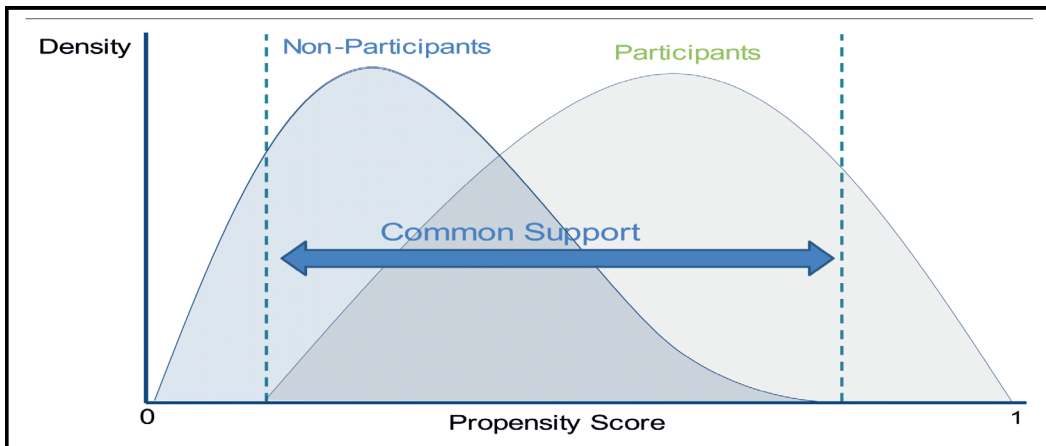


Figure 1: Propensity Score Matching Method–The Common Support

The PSM compares the outcome of the treated observations with the outcome of the treated observations if they were not treated and if such matching is not available, finds a close match using the control observations and use their outcome. Then, the PSM estimates the treatment effect by comparing the outcomes y between

the treated and control observations after matching. Then, the treatment effect of the programme is the difference between the two alternative potential outcomes:

$$\Delta = y_1 - y_0 \quad (5)$$

As one of the potential outcomes is unobserved, estimating the individual treatment effect Δ is not feasible. Therefore, the widely used estimate of the causal effect is the average treatment effect (ATE). The ATE is the difference in the outcomes of treated and control observations:

$$\Delta = (y_1 - y_0) = ATE = E(\Delta) = E(y_1 | x, d = 1) - E(y_0 | x, d = 0) \quad (6)$$

The ATE is fine for random experiments but in observational studies, the ATE may be biased if treated and control observations are not similar. Therefore, the average treatment effect on the treated (ATT) is to be used as the estimate of the causal effect. The ATT is the difference between the outcomes of the treated observations if they had not been treated:

$$ATT = E(\Delta | d = 1) = E(y_1 | x, d = 1) - E(y_0 | x, d = 0) \quad (7)$$

The second term is the counter-factual which is not observed and needs to be estimated. After matching on propensity scores, the outcomes of treated and untreated observations are compared:

$$ATT = E(\Delta | p(x), d = 1) = E(y_1 | p(x), d = 1) - E(y_0 | p(x), d = 0) \quad (8)$$

Thus, the PSM casual effect estimator is simply the mean difference in outcomes over the common support, weighted by the propensity score distribution of observations:

$$ATT_{PSM} = E_{p(x)|d=1} \{E[(y_1 | p(x), d = 1)] - E(y_0 | p(x), d = 0)\} \quad (9)$$

Empirically, the treatment effect is estimated by:

$$y_i = \alpha + \beta d_i + \gamma x_i + \varepsilon_i \quad (10)$$

with weights of 1 for participants and weights of $\hat{p}(y)/(1 - \hat{p}(y))$ for the control observations and d_i is the treatment indicator. The specification accounts for latent differences across treatment and comparison units that would affect selection into the programme as well as resulting outcomes.

Empirical Analysis

In the empirical analysis on whether the IGNOAPS participation really improves the well-being of households with elderly women, this study uses the average household monthly per capita consumption expenditure on food items like pulses,

meat, milk and milk products, and fruits and nuts, and non-food items like education and health as the dependent variable. Along with the main explanatory variables, whether the aged woman receives an old age pension and the amount of old age pension received under the IGNOAPS by the household elderly women, further covariates considered are the residence, community, adult education, education and health expenditures, land owned, women's access to newspaper and radio, BPL household, ration card, recipient of other government welfare benefits, and recipient of Indira Awas Yojana benefit received. Table 1 presents the description and descriptive statistics of the variables used in the empirical analysis. The number of IGNOAPS beneficiaries is about 8 percent and the average old age pension received under IGNOAPS is ₹2638 per annum.

Table 1: Descriptive Statistics of Variables

<i>Variable</i>	<i>Mean</i>	<i>Std. dev.</i>
If household participated in IGNOAPS=1, 0 otherwise	0.088	0.69
Old age pension received under IGNOAPS (₹ per annum)	2638.42	1690.51
Household consumption expenditure per capita (₹ per month)	2321.67	2725.34
Household income (₹ per annum)	52,766.81	48332.62
Health expenditure (₹ per annum)	5342.14	3538.16
Education expenditure (₹ per annum)	4678.14	3792.21
Number of working members	2.94	2.53
Number of household elderly members	1.52	1.98
Education of household head (years)	5.71	4.11
If household is below poverty line=1, 0 otherwise	0.47	0.41
If household receives other government pension benefit=1, 0 otherwise	0.09	0.11
If household has received Indira Awas Yojana benefit=1, 0 otherwise	0.22	0.21
If household receives other government programme benefits=1, 0 otherwise	0.21	0.44
If household receives non-government programme benefits=1, 0 otherwise	0.02	0.32
If household belongs to socially weaker community (SC/ST)=1, 0 otherwise	0.36	0.28
If household women have access to television=1, 0 otherwise	0.51	0.66
If household women have access to newspaper=1, 0 otherwise	0.68	0.42
If household owns land=1, 0 otherwise	0.47	0.75
If household resides in urban area=1, 0 otherwise	0.23	0.18
Observations	41,106	

The propensity score matching model (PSM) matches each participant with an identical non-participant and then measure the average differences in the outcome variable between the participants and non-participants. The estimation procedure includes a probit regression to estimate the propensity scores, the number of blocks

and stratification. The area of common support in those propensity scores within the range of the lowest and highest estimated values forms the treatment group. The observations are matched on the basis of their propensity to participate in the IGNOAPS, The propensity scores are constructed based on a set of covariates that determine participation in the IGNOAPS applying the probit estimation method. On matching the samples, the kernel matching method is used to construct the counterfactual group to pair treatment and control observations applying weighted averages of all households in the control group. Figure 2 shows the graph on the common support region and Figure 3 presents the distribution of the propensity score in the treatment and matched control group. The observations with a propensity score above 0.3 are dropped as no comparable control households are there in the sample. The treatment and control observations have a similar distribution in the area with a propensity score between 0.05 and 0.9.

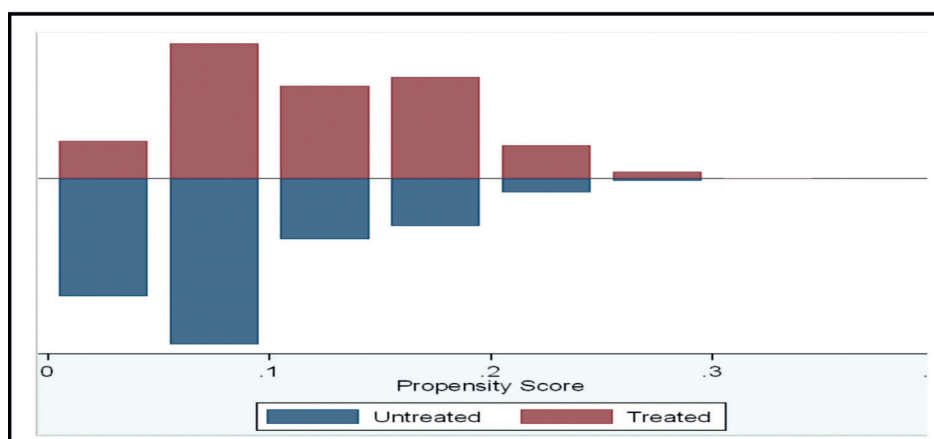


Figure 2: Propensity Score Matching of IGNOAPS - Common Support Regions

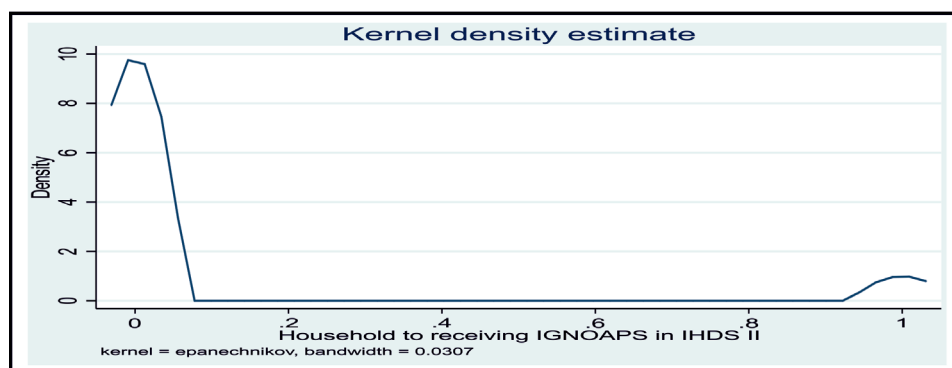


Figure 3: Kernel Density Propensity Score Matching of IGNOAPS

The estimating equation is equation (10) and the coefficient of interest is β , the estimate of the treatment effect i.e. the average effect of receiving IGNOAPS on the household monthly per capita expenditure. The regression is weighted by the estimated propensity score. The propensity score is estimated by probit regression with a set of conditioning variables. Under the unconfoundedness assumption that the treatment is independent of the outcome conditional on pre-treatment variables, the sample weight of 1 is assigned for all households in the treatment group and $\hat{p} / (1 - \hat{p})$ for the control group to derive the ATT, where \hat{p} is the estimated propensity score (Hirano *et al.* 2003). Table 2 presents the estimates of household monthly per capita consumption expenditure in households with elderly women.

The dummy variable of whether the household receives IGNOAPS pension is positive and statistically significant. The household monthly per capita consumption expenditure on food and non-food items increases by about 8 percent implying that IGNOAPS beneficiary household welfare improves as a result of cash transfers. Thus, elderly women old age pension augments household consumption and reduces household poverty in IGNOAPS participation households. The financial assistance received under IGNOAPS by the beneficiary household significantly increases household monthly per capita expenditure by about 7 percent. The availability of similar government pension-like benefits other than IGNOAPS also contributes to household consumption positively but its effect is statistically insignificant. The households that availed Indira Awas Yojana benefit, the subsidised housing loan scheme, also improved consumption significantly. The existence of various other government and non-government programmes to improve the living conditions and earnings capacity of poor households increase household monthly per capita consumption expenditure significantly. Participation in the IGNOAPS increases consumption expenditure of below poverty line households on food and non-food items by 14 percent compared to non-BPL households. Thus, the household consumption expenditure increases due to the cash transfers benefit under IGNOAPS but also from other such welfare schemes by the government and non-government sources.

The presence of the elderly in the household increases household monthly per capita consumption expenditure by 2 percent. This is expected as the elderly need more healthcare and require more medicines. The expenditure on health and education is the main consumption expenditure after food expenditure. Both education and health expenditures of the household drive substantially the household monthly per capita consumption expenditure as their coefficients are significantly positive. This again shows IGNOAPS participation improves the quality of household members and hence the well-being of the household. An

increase in education of the household head decreases household consumption expenditure by 1 percent. The socially weaker sections like scheduled caste and scheduled tribe households incur more consumption expenditure. Importantly, women access to information reduces household food expenditure. The number of working members in the household is influenced by participation in the IGNOAPS and reduces the household expenditure by 5 percent. With more earnings from the earning members the household is better-off and spend more on non-food goods like comforts and luxuries thus allocating less for food consumption. The impact of television is well known, as the visual media has much more influence than the information from reading newspapers. The consumption expenditure of households with women watching television is nearly 7 percent higher compared to households without access to television viewing. Similarly, urban residence and land ownership have a negative effect on household consumption expenditure. Probably for these households as they are relatively well-off non-food consumption dominate food, education and health expenditures.

Table 2: PSM Estimates of Old Age Pension Effects on Household Welfare

<i>Variable</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>t-statistic</i>	<i>p-value</i>
Average treatment effect on the treated (ATT)	0.084	0.022	3.82	0.00
Old age pension amount received under IGNOAPS	0.078*	0.015	5.20	0.00
Other government pension beneficiary	0.126	0.16	0.78	0.81
Indira Awas Yojana beneficiary	0.213*	0.035	6.10	0.00
Other government programme beneficiary	0.049*	0.019	2.59	0.00
Other non-government programme beneficiary	0.294***	0.049	1.71	0.08
Health expenditure	0.053*	0.018	2.92	0.00
Education expenditure	0.093**	0.020	1.98	0.04
Number of working members	-0.058*	0.021	2.59	0.00
Household elderly members	0.024*	0.004	6.00	0.00
Education of household head	-0.013*	0.002	6.26	0.00
BPL household	0.143*	0.018	3.70	0.00
Socially weaker community	0.038*	0.006	5.56	0.00
Women access to newspaper	-0.305	0.221	1.38	0.17
Women access to television	-0.076*	0.017	3.92	0.00
Land ownership	-0.003	0.020	0.19	0.85
Urban residence	-0.108*	0.012	9.20	0.00
Constant	-1.248*	0.092	13.60	0.00
Pseudo R square	0.276	F-statistic		82.22
Lok-likelihood	-1172.264	LR chi ²		1447.59

Dependent variable: Household monthly per capita consumption expenditure

The robustness of the average treatment effect estimate is checked with the nearest neighbour and kernel matching methods. The results of robustness checks are presented in Table 3. The estimated average treatment effects are remarkably consistent. The ATT estimate is 0.078 by the nearest neighbour matching and 0.076 by the kernel matching methods compared to 0.084 of the propensity score matching method. Thus, the IGNOAPS has helped to increase household welfare by about 8 percent.

Table 3: Robustness of Treatment Effect Estimates

<i>Matching method</i>	<i>Treated</i>	<i>Control</i>	<i>ATT</i>	<i>Std. error</i>	<i>t-value</i>
Propensity score	3706	37400	0.084*	0.022	3.82
Nearest neighbour	16492	24838	0.078*	0.026	3.00
Kernel	2849	39303	0.076*	0.023	3.30

Note: * Significant at 1 percent level.

Conclusion

The vulnerability of poor households to slip into poverty is high in the presence of elderly dependents in the family. The social safety nets and other benefits extended by the various government schemes to the elderly help meet the food and health care needs to some extent. Such beneficial programmes not only accrue to the elderly alone but also benefit the entire household in terms of consumption expenditure. The Indira Gandhi Old Age Pension Scheme (IGNOAPS) is one such programme that aims at improving the well-being of the elderly in India. This unconditional cash transfer programme is for all aged 60 years and above with financial assistance of ₹300 for 60-79 aged and ₹500 for above 80 years old. This study evaluates the effects of IGNOAPS participation by elderly women on household well-being using the 2011-12 IHDS-II data applying the propensity score matching method. Household well-being is measured in terms of household monthly per capita consumption expenditure that consists of expenditures on food items like pulses, vegetables, fruits, nuts, meats, eggs, milk and milk products, and non-food items like education and health are considered.

As the IGNOAPS has only age eligibility conditions and cash transfers in unconditional, the participation is voluntary or the beneficiary self-selects to

participate in the programme. Hence, the probability or propensity of participation is to be estimated. The propensity score is estimated as the probability of participation in the scheme or treatment. To ascertain the pure causal effects of the IGNOAPS programme, a comparable or control group has to be identified. The elderly women receiving the old age pension is the treatment group and those elderly women eligible to receive but are not receiving the benefit are the control group. Among the impact evaluation methods, the propensity score matching method matched beneficiaries and non-beneficiaries on the basis of comparable characteristics. After matching the observations in the treatment and control groups on the basis of common support, the casual effect of IGNOAPS is estimated as an average treatment effect (ATT). The estimated causal effect of the IGNOAPS on household consumption is about 0.084. Hence, the IGNOAPS participation increases household monthly per capita consumption expenditure on food items, education and health by 8 percent. With the additional source of income for the elderly women in the household, there is an increase in the demand for goods not only for the aged women but also for the entire household, which is reflected through the higher per capita consumption expenditure of the households.

Overall, IGNOAPS participation is welfare improving and reduces budget constraints on household expenditure significantly and enables households to spend more on food, education and health. As the consumption expenditure is an indicator of well-being, the increased household consumption expenditure indicates the ability of IGNOAPS participating households to reduce household poverty. As the programme is unconditional cash transfers to the targeted elderly women, the entire household members derive the benefits in terms of increased consumption. Thus, IGNOAPS is welfare improving.

References

- Aydiner-Avsar, N. (2015). "The Gender Impact of Social Protection Policies: A Critical Review of the Evidence", *Review of Political Economy*, 27, 3, 410-441.
- Barrientos, A., M. Gorman and A. Heslop (2003). "Old Age Poverty in Developing Countries: Contributions and Dependence in Later Life", *World Development*, 31, 3, 555-570.
- Case, A. and A. Deaton (1998). "Large Cash Transfers to the Elderly in South Africa", *Economic Journal*, 108, 450, 1330-1361.
- Garroway, C. (2013). "How Much Do Small Old Age Pensions and Widow's Pensions Help the Poor in India", Development Papers 1306, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) South and South-West Asia Office.

- Hirano, L. G.W. Imbens and G. Ridder (2003). "Efficient Estimation of Average Treatment Effects Using the Estimated Propensity Score", *Econometrica*, 71, 4, 1161-1189.
- Kaushal, N. (2014). "How Public Pension Affects Elderly Labor Supply and Well-being: Evidence from India", *World Development*, 56, Issue C, -225.
- Nelson, K. (2012). "Counteracting Material Deprivation: The Role of Social Assistance in Europe", *Journal of European Social Policy*, 22, 2, 148-163.
- Nolan, B. and C.T. Whelan (2010). "Using Non-Monetary Deprivation Indicators to Analyse Poverty and Social Exclusion: Lessons from Europe?", *Journal of Policy Analysis and Management*, 29, 2, 305-325.
- Pal, S. and R. Palacios (2011). "Understanding Poverty Among the Elderly in India: Implications of Social Pension Policy", *Journal of Development Studies*, 47, 7, 1017-1037.
- Pandey and Parthasarathy (2019). "Impact Analysis of Welfare Schemes of Women's Empowerment: With Reference to RMK, STEP and E-Haat", *Journal of Management*, 6, 2, 146-156.
- Rosenbaum, P.R. and D.B. Rubin (1983). "The Central Role of the Propensity Score in Observational Studies for Causal Effects", *Biometrika*, 70, 1, 41-55.
- Rosenbaum, P.R. and D.B. Rubin (1984). "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score", *Journal of the American Statistical Association*, 79, 387, 516-524.
- Sosa-Rubi, S., D. Walker, E. Servan and S. Bautista-Arredondo (2011). "Learning Effect of a Conditional Cash Transfer Programme on Poor Rural Women's Selection of Delivery Care in Mexico", *Health Policy and Planning*, 26, 6, 496-507.
- Unnikrishnan, V. and K. Imai (2020). "Does the Old Age Pension Scheme Improve Household Welfare? Evidence from India", *World Development*, 134, Article 105017.
- Zaky, H.H.M. (2014). "Does the Conditional Cash Transfer Program Empower Women? Evidence from Ain El-Sira, Egypt", *Social Sciences*, 3, 4, 132-136.