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# SOCIAL ASSISTANCE AND WELFARE IN INDIA: PROPENSITY SCORE MATCHING ESTIMATION OF THE IMPACT OF INDIRA GANDHI NATIONAL OLD AGE PENSION SCHEME ON HOUSEHOLD CONSUMPTION

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**Abstract:** *Women, especially in old age, are vulnerable to poverty and poor health. The social assistance, such as women's old-age pension, provided by the government helps households with elderly women improve household well-being by increasing household consumption expenditure and reducing household poverty. 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 2011-12 India Human Development Survey-II data and applying the non-parametric 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%, and reduces household poverty. As the programme involves unconditional cash transfers to the targeted elderly women, the entire household derives the larger benefits in terms of increased consumption. Thus, the IGNOAPS is a welfare-improving and poverty-reducing social assistance programme.*

**Keywords:** *Elderly Women, Old-Age Pension, IGNOAPS, Programme Participation, Consumption Expenditure, Propensity Score Matching Estimation*

## Introduction

In India, the expenditure on social assistance programmes accounts for a modest 1.5% of GDP in 2016. However, 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% 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 transfer programmes.

There are strong economic rationales behind such cash transfer 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. However, 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. Five constituents encompass the NASP – 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 Rs. 75 to old-age people, widows, and disabled persons aged 65 or older and live below the poverty line. In 2007, the scheme was rechristened 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 Rs. 200. In 2011, the cash transfer to beneficiaries aged 60-79 was increased to Rs. 300, and for those above 80 years, it was increased to Rs. 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, which covered 6.7 million beneficiaries in 2002-03, benefited nearly 22 million by 2012-13 – triple the growth. The allocation for IGNOAPS has increased by 1.4 times between 2007-08 and 2011-12.

The benefits of such cash transfer programmes aiming to ensure elderly women's 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 augment the economic security of the elderly women in the household, reducing old-age poverty rate and increasing 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 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 phenomenon of missing women, especially among the elderly (Pal & 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. Barrients 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 the 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, and milk and milk products, and non-food items like education and health is examined, using the 2011-12 India Human Development Survey-II data, applying the non-parametric propensity score matching (PSM) method.

## Review of Literature

The cash transfer welfare programmes were 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, are involved. 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/Progresa 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 programmes and reproductive health discourses. The length of 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 5,051 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 Evaluation 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% more antenatal care visits than women living in localities with less exposure. The likelihood of women in the ages 15-19 with longer exposure to Oportunidades choosing organised assistance like a physician or a nurse is 88%, compared to the 41% of women in the ages 20-24 years living in the

non-Oportunidades localities. As regards delivery care, about 68.9% of indigenous women are less likely to choose a formal physician or nurse than non-indigenous women. Thus, the antenatal visits and women's 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. However, evidence shows only a 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 transfer 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. A conditional cash transfer programme offers cash to poor families, provided they adopt a certain behaviour. The common contingent is associated with either education or the health of children. 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, limited welfare impacts, and a demand-side complement to the supply of health and education services. The success stories of conditional cash transfer 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 derive gender 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 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% of the women have started their own businesses, 90% have improved their standard of living, 50% have gained confidence as they expanded their business on the online platform, and 50% 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 IGNOAPS on indicators of household welfare by 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. Reflecting the vast disparity in terms of income, locality, and social status, the study finds varying effects of pensions among the recipients. The estimates show that there is a 2.7% decline in household poverty due to the provision of the widow's pension. 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) studies the effect of the IGNOAPS 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 the programme recipients. The study estimates show that public pension has no effect on the employment of elderly women with primary or lower education, whereas it has a modest negative effect on the employment of similar men. However, pension raises family expenditures and 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, IGNOAPS, 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 PSM method is used to construct the counterfactual group. The PSM weighted fixed effects method is used to eliminate the time-invariant unobservable household characteristics. The study finds that the participation of elderly women in the IGNOAPS increases household welfare, increasing both food and non-food household consumption expenditure, as well as household assets, but household labour supply declines with the old-age benefits. 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/maintaining the level of consumption.

## Data and Methodology

This study, on the effects of the 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 1,503 villages and 14,573 in 971 urban neighbourhoods across India. The sample for this study consists of 41,106 observations, of which 3,706 households have at least one elderly woman receiving the old-age pension under IGNOAPS, and 37,400 households not participating 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 socio-economic and demographic information. This study uses household monthly per capita consumption expenditure as the outcome variable and the elderly women's 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. the target group approach to estimate the pure effects of a programme, i.e. the extent of benefits accrued to the target group purely from programme participation. Unfortunately, the control group is not the same as the target group, as the control group is not eligible for 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 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 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 to 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. The likelihood of being assigned to the treated group is conditional on a set of covariate variables:

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

The predicted outcome represents the estimated probability of participation or the propensity score. The propensity score is the probability of an observation being assigned to a specific treatment, conditional on a set of observed covariates. The PSM estimates the effect of a treatment, policy, or other intervention by accounting for the covariates that predict

receiving the treatment. 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:

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

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.

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

Then, the propensity score

$$p(d = 1 \mid x) = p(x) \quad (4)$$

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 match, 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 distributional equivalence: $\Phi(y \mid d = 1) = \Phi(y \mid d = 0)$. 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) on 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 the 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, $0 < p(d = 1 \mid x) < 1]$ ]. Fig. 1 describes the method of propensity score matching with common support.

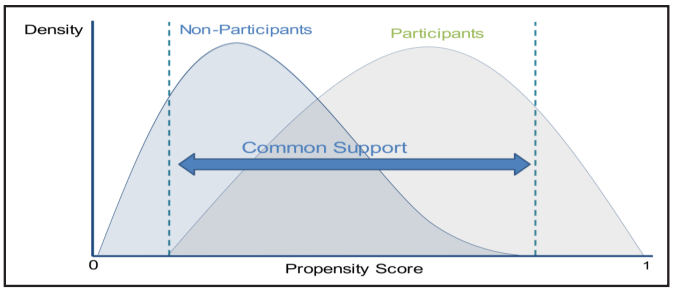


**Fig. 1: Propensity Score Matching Method – The Common Support**

The PSM compares the outcome of the treated observations with the outcome of the treated observations if they were not treated, and if such a matching is not available, finds a close match using the control observations and uses 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:

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

The ATE is fine for random experiments; however, 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.

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

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:

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

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:

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

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  for the control observations; $d_i$ is the treatment indicator. The specification accounts for the latent differences across treatment and comparison units that would affect selection into the programme, as well as the resulting outcomes.

## Empirical Analysis

In the empirical analysis of 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, fruits and nuts, and non-food items like education and health as the dependent variables. 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. Table 1 presents the description and descriptive statistics of the variables used in the empirical analysis. The number of IGNOAPS beneficiaries is about 8% and the average old-age pension received under IGNOAPS is Rs. 2,638 per annum.

**Table 1: Descriptive Statistics of Variables**

| Variable | Mean | Std. Dev. |
|---|---|---|
| If household participated in IGNOAPS = 1, 0 otherwise | 0.088 | 0.69 |
| Old-age pension received under IGNOAPS (Rs. per annum) | 2638.42 | 1690.51 |
| Household consumption expenditure per capita (Rs. per month) | 2321.67 | 2725.34 |
| Household income (Rs. per annum) | 52,766.81 | 48332.62 |
| Health expenditure (Rs. per annum) | 5342.14 | 3538.16 |
| Education expenditure (Rs. 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 newspapers = 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 measures 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 by 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 by applying weighted averages of all households in the control group. Fig. 2 shows the graph of the common support region and Fig. 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 there are no comparable control households 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.

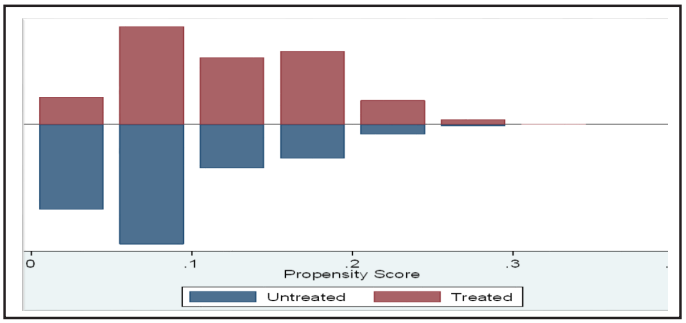


**Fig. 2: Propensity Score Matching of IGNOAPS – Common Support Regions**

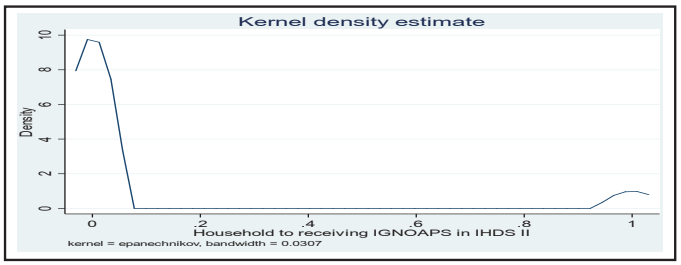


**Fig. 3: Kernal Density Propensity Score Matching of IGNOAPS**

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%, implying that IGNOAPS beneficiary household welfare improves as a result of cash transfers. Thus, elderly women's 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%. 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 of the 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 household 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%, 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 of the government and non-government sources.

The presence of the elderly in the household increases household monthly per capita consumption expenditure by 2%. 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 substantially drive the household monthly per capita consumption expenditure, as their coefficients are significantly positive. This again shows that 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%. The socially weaker sections, like scheduled caste and scheduled tribe households, incur more consumption expenditure. Importantly, women's 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%. With more earnings from the earning members, the household is better-off and spends 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 information from reading newspapers. The consumption expenditure of households with women watching television is nearly 7% higher, compared to households without access to television. 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 dominates food, education, and health expenditures.

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

Dependent variable: Household monthly per capita consumption expenditure

| Variable | Coefficient | Std. Error | T-Statistic | P-Value |
|---|---|---|---|---|
| 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's access to newspaper | −0.305 | 0.221 | 1.38 | 0.17 |
| Women's 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 |

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 the 0.084 of the propensity score matching method. Thus, the IGNOAPS has helped increase household welfare by about 8%.

**Table 3: Robustness of Treatment Effect Estimates**

| Matching Method | Treated | Control | ATT | Std. Error | T-Value |
|---|---|---|---|---|---|
| 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% level.

## Conclusion

The chances of poor households slipping into poverty are high with 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 people aged 60 years and above, with a financial assistance of Rs. 300 for people aged 60-79 and Rs. 500 for those above 80 years old. This study evaluates the effects of IGNOAPS participation by elderly women on the household's well-being, using the 2011-12 IHDS-II data and 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, and milk and milk products, and non-food items like education and health.

As the IGNOAPS has only the age eligibility conditions, and cash transfers are unconditional, participation is voluntary or the beneficiary chooses to participate in the programme by themselves. 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 the household monthly per capita consumption expenditure on food items, education, and health by 8%. 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, the IGNOAPS participation of elderly women is welfare-improving as the pension benefits reduce budget constraints on household expenditure significantly and enable the households to spend more on food, education, and health. As the programme involves unconditional cash transfers to the targeted elderly women, the entire household members derive the benefits, in terms of increased consumption. Thus, the IGNOAPS is a welfare-improving and poverty-reducing social assistance mechanism in India.

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