

Unpacking the Elderly Welfare in Rural Indonesia: The Multidimensional Poverty Index-Based Analysis

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ABSTRACT

This study examines the elderly welfare in Wonogiri Regency, Indonesia, using a multidimensional framework based on the Multidimensional Poverty Index (MPI). The study begins with a comprehensive analysis of the elderly welfare in rural and semi-urban. Utilized National Socioeconomic Survey (SUSENAS) data collected between 2021 and 2023, the study employs a binary logistic regression model, which uniquely combines dimensions such as social assistance, internet technology use, social participation, regional classification, and income to assess the elderly welfare in rural Indonesia, where structural inequalities are more pronounced. Empirical findings indicate that internet use, social assistance, income, and urban residence has the positive relationship and significant effect on elderly welfare. Surprisingly, social participation exhibits a significant negative relationship, suggesting potential underlying stressors. These practical implications highlight the need for targeted digital inclusion, enhanced social protection, and income-generating programs for older adults in rural areas, which could inform more effective and region-sensitive policy interventions in developing countries.

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1. INTRODUCTION

The global population is rapidly aging, a demographic shift with significant implications for public policy, economic systems, and social development worldwide. Projections indicate that the number of individuals aged 60 and above will surpass two billion by 2050. This trend presents particular challenges for low- and middle-income countries, which often have underdeveloped and unevenly distributed institutional support systems. Indonesia, a large developing nation, is experiencing this transition at an accelerated rate. Here, the elderly already make up over 10% of the national population, a figure expected to climb substantially in the coming decades (Pilleron et al., 2021). The effects of this demographic shift are particularly acute in rural areas, where limited access to healthcare, income security, and social services makes elderly welfare a critical area for policy and research (Razavi, 2022). Elderly welfare extends beyond just income or longevity. Current approaches emphasize a multidimensional perspective, encompassing access to education, health services, infrastructure, social inclusion, and psychological well-being. The Multidimensional Poverty Index (MPI), developed by the Oxford Poverty and Human Development Initiative, provides a strong framework for measuring welfare by considering the various deprivations individuals face simultaneously. Applied to the context of aging, this framework offers a more accurate portrayal of the living conditions of elderly individuals, especially in rural and underserved regions. While international literature on aging and multidimensional poverty is expanding (Zeng et al., 2022; and

Zhao et al., 2024), empirical studies in Indonesia remain scarce, particularly those that disaggregate data regionally and focus on the unique experiences of older adults in non-urban settings.

Previous studies have highlighted several key factors influencing elderly welfare. Social protection programs, including direct income support and subsidized healthcare, demonstrably reduce vulnerabilities among older adults (Álvarez-Gálvez et al., 2022; and Xu et al., 2021). Digital inclusion, though often overlooked in rural areas, is increasingly vital for accessing services, information, and maintaining social connections (Dawson-Townsend, 2019; and Sen et al., 2020). Furthermore, income from employment or entrepreneurial activities consistently links to higher well-being and autonomy in old age (Chi et al., 2024; and Prince et al., 2016). Regional differences and place of residence also significantly impact access to resources and opportunities, thus affecting welfare outcomes (Zhou et al., 2018). Despite this growing body of literature, few studies offer a comprehensive, empirical examination of how these determinants interact specifically within a rural Indonesian context. Even fewer apply a robust, multidimensional framework like the MPI to measure welfare beyond simple income-based metrics.

Furthermore, the role of social participation in elderly welfare remains a subject of debate in the literature. While some research affirms its positive effects on mental health and life satisfaction (Ma et al., 2020; and Tomioka et al., 2017), other studies caution against overgeneralizing these benefits, particularly when participation is motivated by economic necessity or cultural obligation rather than genuine voluntary engagement (Bogam et al., 2023). These mixed findings highlight a critical need for more context-sensitive analyses that consider the specific socio-economic realities of older populations in resource-constrained environments. Without such nuanced studies, policy interventions risk being either ineffective or misaligned with the actual needs of the elderly.

This study addresses these gaps by investigating the determinants of elderly welfare in Wonogiri Regency, a rural area in Central Java with the province's highest proportion of elderly residents. By employing panel data from the National Socio-Economic Survey (2021-2023) and utilizing a binary logistic regression model grounded in the MPI framework, this research offers a nuanced understanding of how social assistance, internet technology use, income, regional characteristics, and social participation collectively shape elderly welfare. The novelty of this study lies in its integrated, multidimensional approach, its specific focus on a rural Indonesian setting, and its empirical validation of emerging factors like digital inclusion. The remainder of this article is organized as follows: The next section describes the data sources, variables, and methods used. This is followed by the presentation and analysis of results, where empirical findings are interpreted in light of relevant literature. The discussion section then deepens this interpretation by comparing the findings with supportive and contradictory evidence from previous research. Finally, the conclusion highlights key implications for policy and future research directions.

2. RESEARCH METHODS

This study adopts a quantitative research design aimed at identifying the determinants of elderly welfare in Wonogiri Regency, Central Java Province, over the period 2021 to 2023. A panel dataset was constructed using secondary data derived from the National Socio-Economic Survey (SUSENAS) provided by Indonesian Statistics (BPS). Quantitative approaches remain essential in evaluating policy-relevant variables and social indicators, particularly in measuring multidimensional constructs such as welfare (Allen et al., 2020; and Smith et al., 2024). The empirical strategy employed in this study draws from existing frameworks that integrate demographic, socio-economic, and infrastructural variables to measure elderly welfare, incorporating multidimensional welfare assessments consistent with the MPI approach (Zhou et al., 2023). This study focuses on a rural and semi-urban context to examine the relationship between elderly welfare and a set of independent variables, including access to social assistance, internet technology use, social participation, place of residence, and income level. Given the complexity of elderly welfare and the multifactorial nature of its determinants, a panel logistic regression model was employed to account for both inter-temporal variation and heterogeneity across respondents. The choice of this model is consistent with studies that emphasize the need for capturing time-variant and time-invariant effects in demographic and social policy research (Bolina & Tavares, 2016; and Santhosh et al., 2024).

The scope of this study covers individuals aged 60 years and above residing in Wonogiri Regency, which, as of 2023, holds the highest proportion of elderly population in Central Java Province at 22.1% (BPS, 2023). The study sample includes 497 elderly individuals selected from the SUSENAS dataset through purposive sampling. Respondents were filtered based on age eligibility and data availability across the three observation years. The use of microdata from BPS ensures robust coverage of household-level socio-economic indicators and enhances the reliability of the analysis. The elderly welfare is conceptualized as a condition that reflects safety, prosperity, and independence. Operationally, the dependent variable—elderly welfare—is measured using an adapted version of the Multidimensional Poverty Index developed by the Oxford Poverty and Human Development Initiative (Zhou et al., 2023).

Table 1. The Description of Variables and Sources

Variables	Description	Source
Elderly welfare (<i>P</i>)	Elderly welfare is measured using an adapted version of the multidimensional poverty index (MPI) developed by the Oxford Poverty and Human Development Initiative (Zhou et al., 2023). The final welfare score ranges from 0 to 1. In a logistic regression model, the binary outcome of elderly welfare, with a value of 1 = not poor and a value of 0 = poor.	Oxford Poverty and Human Development Initiative
Social assistance (<i>SocAss</i>)	Social assistance refers to the receipt of any form of social protection benefits from the government by elderly household members. The measure is 1 if social assistance is received and 0 otherwise. The literature shows that social protection programs play a crucial role in reducing vulnerability among the elderly, particularly in low-income and rural areas (Rugel et al., 2022)	SUSENAS Block XXII (code 2205)
Internet technology use (<i>InternetUse</i>)	Internet technology use measured by the respondent accessed the internet within the past three months. Digital inclusion has been recognized as a facilitator of social connectivity, access to information, and health services among the elderly (Sen et al., 2020). The variable is coded as 1 for internet users and 0 for non-users.	SUSENAS Block VII (code 808)
Social participation (<i>SocPart</i>)	Social participation, captures the involvement of elderly individuals in formal or informal activities during the previous week. The variable takes into account activities such as employment or engagement in community events. Research has consistently shown that active social participation contributes to psychological well-being, although excessive demands or insufficient support may result in adverse outcomes (Álvarez-Gálvez et al., 2022; Dawson-Townsend, 2019; Geigl et al., 2023). The dummy variable is coded as 1 for participants and 0 for non-participants.	SUSENAS Block VII (code 703),
Region of residence (<i>Region</i>)	Region of residence distinguishes between urban and rural areas, the location is coded as 1 for urban and 0 for rural. This categorization enables analysis of geographic disparities in access to services and quality of life, building on studies that highlight the critical role of regional infrastructure in shaping elderly welfare (Zhou et al., 2018).	SUSENAS Block I (code 105)
Income (<i>Income</i>)	Income is defined as personal income generated from employment or entrepreneurial activity. Identifying elderly respondents who report economic activity as income earners. The variable is coded as 1 if income is present and 0 otherwise. Income security has been consistently linked to improved welfare and autonomy among the elderly, especially in contexts where pension systems are underdeveloped (Chi et al., 2024; Prince et al., 2016).	SUSENAS (codes 703 and R10)

The MPI integrates indicators across three dimensions: health, education, and living standards. For this study, health is captured through access to basic services and absence of major illnesses;

education is reflected by the number of years of formal schooling; and living standards are assessed using indicators such as housing conditions, access to clean water, sanitation, and ownership of durable goods. The MPI assigns equal weights to the three core dimensions, with each contributing one-third to the overall index. Within each dimension, indicator weights are distributed equally. Health comprises two indicators (1/6 weight each), education one indicator (1/3), and living standards six indicators (1/18 each). The final welfare score ranges from 0 to 1, with a score equal to or exceeding 0.333 categorized as poor or deprived, and thus indicating low welfare. Individuals scoring below this threshold are considered non-poor and regarded as having achieved a minimum standard of elderly welfare.

The logistic function estimates the probability of welfare success conditional on the predictors. The logistic regression model equation is specified as follows:

$$\text{logit}\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 \text{SocAss} + \beta_2 \text{InternetUse} + \beta_3 \text{SocPart} + \beta_4 \text{Region} + \beta_5 \text{Income} + \varepsilon \quad (1)$$

where, P represents the probability that an elderly individual is non-poor (has attained welfare), and β_0 through β_5 are coefficients estimated from the data.

To assess model performance, three diagnostic tests are employed. The first is the Hosmer-Lemeshow test for goodness-of-fit, which evaluates whether observed event rates match expected event rates across deciles of risk. A p-value greater than 0.05 indicates that the model fits the data adequately. Second, model accuracy is assessed by calculating the percentage of correctly predicted cases, comparing predicted classifications against observed outcomes. Third, the McFadden R-squared is computed to gauge the proportion of variance in the dependent variable explained by the independent variables, recognizing that this measure does not have the same interpretation as R-squared in linear regression. The final model—identified as the most appropriate based on the lowest AIC value—includes all five independent variables and explains approximately 50.57% of the variance in elderly welfare as per the McFadden R-squared. The regression results indicate that social assistance, internet use, region, and income have a statistically significant positive effect on elderly welfare, while social participation shows a negative coefficient. These results are consistent with prior findings emphasizing the multidimensional and context-dependent nature of aging outcomes (L. Zhou et al., 2023). Through this methodology, the study seeks to provide empirically grounded insights into the dynamics of elderly welfare in a rural Indonesian context, with implications for targeted policy interventions aimed at enhancing the well-being of aging populations in developing countries.

3. RESULTS AND DISCUSSION

3.1. Result

This section presents the results of the study, beginning with descriptive statistics and followed by inferential analysis using logistic regression. The results aim to empirically verify the relationship between social assistance, internet technology use, social participation, regional classification, and income on the welfare status of elderly individuals in Wonogiri Regency from 2021 to 2023.

Table 2 presents the descriptive statistics for the variables employed in this study. The mean value for social assistance is 0.592, indicating that approximately 59.2% of the elderly respondents received some form of social protection during the study period. The average for internet technology use (PTI) is 0.1321, suggesting low digital inclusion among elderly participants, with only 13.2% having accessed the internet in the past three months. In contrast, the social participation variable has a high mean of 0.898, indicating that nearly 90% of respondents reported involvement in work or community activities. The region variable shows a mean of 0.243, meaning only about 24.3% of respondents live in urban areas, further reinforcing the rural character of the sample. The income variable has a mean of 0.611, suggesting that 61.2% of the elderly had some form of income from employment or entrepreneurial activity. Lastly, the welfare indicator has a low mean of 0.097, suggesting that only 9.8% of elderly respondents met the criteria for being classified as having achieved a multidimensional state of welfare.

Table 2. The Results of Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
<i>SocAss</i>	1,491	0.00	1.00	0.592	0.491
<i>InternetUse</i>	1,491	0.00	1.00	0.132	0.338
<i>SocPart</i>	1,491	0.00	1.00	0.898	0.301
<i>Region</i>	1,491	0.00	1.00	0.243	0.429
<i>Income</i>	1,491	0.00	1.00	0.611	0.487
<i>P</i>	1,491	0.00	1.00	0.097	0.297

The low mean value for the welfare variable reflects the broader challenge of achieving multidimensional well-being among elderly populations in rural settings. This aligns with previous findings in developing countries, where access to quality health services, education, and basic infrastructure remains limited (Aksan & Chakraborty, 2023; and Alemi et al., 2023).

This section presents the model selection results based on the Akaike Information Criterion (AIC) to identify the best fitting logistic regression model for predicting elderly welfare in Wonogiri Regency. A total of 30 models were tested, each comprising different combinations of independent variables such as social assistance, internet technology use, social participation, region, and income. The aim was to determine the most parsimonious and statistically robust model to explain variations in elderly welfare. Among all models evaluated, Model 30, which includes all five independent variables, yields the lowest AIC value (0.324), indicating the best model fit among the set. This model also has significant coefficients across most predictors, suggesting their relevance in explaining welfare outcomes. The constants and coefficients for each variable are as follows:

Table 3. The Results of Akaike Info Criterion (AIC) test

Variables	Coefficient	AIC
Constants	-4.316	0.324
<i>SocAss</i>	1.025	
<i>InternetUse</i>	4.060	
<i>SocPart</i>	-1.207	
<i>Region</i>	0.763	
<i>Income</i>	0.848	

Model 1, therefore, is selected as the final model to interpret the determinants of elderly welfare in this study. It incorporates all five predictors and provides the most efficient trade-off between goodness of fit and model complexity. These results support a multidimensional framework in assessing elderly well-being, integrating social, digital, regional, participatory, and economic dimensions. The AIC test in this study serves as a statistical tool to determine the most suitable logistic regression model that explains the determinants of elderly welfare in Wonogiri Regency. The AIC is used to compare multiple models based on their goodness-of-fit and complexity, where a lower AIC value indicates a better balance between model accuracy and simplicity. In the context of this research, the AIC test was applied to 30 different regression model specifications, each combining various independent variables such as social assistance, internet technology use, social participation, regional classification, and income. Among these models, the one that included all five predictors yielded the lowest AIC value, suggesting that this model best captures the relationships between the predictors and the dependent variable, which is elderly welfare. This result justifies the selection of the full model for further interpretation and discussion. The simplified AIC test results focus on highlighting only a few representative models, particularly the best-performing model and a few others for comparison, to make the information more accessible and to avoid overwhelming the reader with excessive numerical detail. This approach enhances the clarity of the statistical reasoning and supports the robustness of the empirical findings.

The results demonstrate that all five independent variables are statistically significant predictors of elderly welfare. Social assistance has a positive and significant effect on elderly welfare. This implies that elderly people who receive social assistance will provide welfare opportunities for elderly people of $\exp(B)$ 2,788 times more than elderly people who do not receive

social assistance. This indicating that receipt of social benefits increases the likelihood of an elderly individual achieving welfare. Internet technology use shows the strongest positive and significant effect on elderly welfare. This implies that elderly people who use the internet will have a welfare opportunity of $\exp(B)$ 57,993 times greater than elderly people who do not use the internet. Highlighting the transformative potential of digital inclusion for elderly welfare. The region variable also positively and significant effect on elderly welfare). This implies that elderly people who live in urban areas will have welfare opportunities that are $\exp(B)$ 0.299 times greater than elderly people who live in rural areas. Suggesting better elderly welfare outcomes in urban areas. Likewise, income is a positive and significant predictor in influencing the well-being of the elderly. This implies that elderly people who still have income after not working will have a welfare opportunity of $\exp(B)$ 2.145 times greater than elderly people who do not have income after not working. Confirming the role of financial independence in elderly welfare.

Table 4. The Results of Logistic Regression Model

Dependent variable = $\log\left(\frac{P}{1-p}\right)$					
Variable	Coefficient	Std. Error	z-Statistic	Prob	Exp(B)
Constants	-4.316	0.449	-9.600	0.000	-
<i>SocAss</i>	1.025	0.286	3.582	0.000	2.788
<i>InternetUse</i>	4.060	0.272	14.895	0.000	57.993
<i>SocPart</i>	-1.207	0.434	-2.777	0.005	0.299
<i>Region</i>	0.763	0.262	2.903	0.003	2.145
<i>Income</i>	0.848	0.302	2.804	0.005	2.337
Model Summary:					
McFadden R-squared	0.5057				
LR statistic	483.357				
Prob (LR statistic)	0.000				

Interestingly, social participation has a negative and significant effect on elderly welfare. This implies that elderly people who were involved in formal or informal activities during the last week will have a welfare opportunity of $\exp(B)$ 2.337 times lower than elderly people who were not involved in formal or informal activities during the last week. This counterintuitive result implies that participation in social activities might be associated with economic or psychological burdens, potentially driven by necessity rather than voluntary engagement, as observed in some rural contexts (Liao et al., 2022). The model's McFadden R-squared value of 0.505761 indicates that approximately 50.57% of the variability in elderly welfare status is explained by the model. This represents a relatively high explanatory power for logistic regression in social sciences, suggesting a well-specified model (Santhosh et al., 2024).

3.2. Discussion

The discussion in this study is strengthened by engaging with a broad body of previous empirical findings, both those that reinforce and those that diverge from the results presented here. The positive association between social assistance and elderly welfare corroborates prior research, particularly the findings by Lu et al. (2021) who emphasized the role of public transfer programs in mitigating poverty and enabling access to essential services among older adults. In similar fashion, study by Kong et al. (2021) found that effective social welfare mechanisms improve health outcomes for elderly migrants in China, this finding that supports the inference that robust social assistance directly contributes to multidimensional welfare. Within the Indonesian context, this relationship becomes even more significant given the structural limitations in rural and semi-urban areas, where institutional coverage remains sparse and dependency ratios are high.

The strong effect of internet use on elderly welfare, as demonstrated in this study, also finds resonance in contemporary literature. Study by Dawson-Townsend (2019) found that digital access facilitates social connectivity and is also connected to telehealth, e-government, and family networks. Study by Sen et al. (2020) similarly concluded that digital inclusion plays a significant role

in social integration, psychological well-being, and overall life satisfaction among the elderly. The evidence provided here reinforces those conclusions and extends them by emphasizing the urgency of closing the digital divide in rural areas such as Wonogiri Regency, where low internet penetration could represent a significant barrier to inclusion. This study's findings, indicating a statistically significant and robust positive effect of internet use on welfare, align with these perspectives and point toward digital literacy and access as policy priorities.

Income level, another key predictor examined in this study, consistently appears as a foundational determinant of elderly welfare across various geographical contexts. (Chi et al., 2024) found that income inequality adversely affects healthcare utilization among older adults, underscoring the role of economic capacity in accessing basic services. Prince et al., (2016) examined urban and rural households in Peru, Mexico, and China and concluded that income security underpins not only material well-being but also autonomy and intergenerational respect. The present findings echo these conclusions and validate them within the Indonesian rural setting, where informal labor markets and limited pension coverage place greater emphasis on income from employment or entrepreneurial activity. Financial self-sufficiency, even in modest forms, appears to be a crucial mediator of well-being in older age, suggesting the need for community-based economic programs targeted at senior populations.

The effect of regional classification, particularly the urban-rural divide, also emerges as a significant factor in this study. The regression results demonstrate that urban residency is associated with better welfare outcomes among the elderly, a finding that is consistent with the work by Zhou et al. (2018), who documented urban advantages in healthcare access, infrastructure, and social services. In a similar vein, study by Xu et al. (2021) reported that urban elderly migrants enjoy better health conditions due to improved institutional support. However, the literature is not unequivocal on this point. Study by Liebrecht et al. (2023), in a review of rural age-friendly ecosystems, highlighted that strong community ties and lower living stress in rural settings can also contribute positively to well-being under the right policy frameworks. These mixed results suggest that geographic effects are mediated by infrastructural quality, policy coverage, and cultural norms. Therefore, rather than interpreting urban advantage as absolute, it should be viewed as context-dependent, reinforcing the need for tailored regional interventions.

Perhaps the most intriguing and counterintuitive finding in this study concerns the relationship between social participation and elderly welfare. While the majority of existing studies posit a positive correlation between social engagement and psychological or physical well-being (Tomioka et al., 2017), the results here reveal a significant negative association. This suggests that, in the case in Wonogiri Regency, social participation might not be voluntary or enriching, but rather driven by economic compulsion or cultural expectations. This interpretation is supported with the study by Bogam et al. (2023), who found that the form and context of participation significantly influence its effects on well-being. In their study of elderly villagers in Telangana, India, they observed that participation arising from necessity—such as engagement in labor-intensive community roles—can be physically taxing and emotionally burdensome. This nuance aligns with findings from Liao et al., (2022), who argued that resilience and psychological preparedness mediate the benefits of social interaction. Thus, while social participation is broadly encouraged in aging policy frameworks, its design and implementation must consider the socio-economic realities of the target population.

Beyond the statistical relationships, the McFadden R-squared value of 0.5057 suggests that the logistic model explains over 50% of the variation in elderly welfare. This is relatively high for social science models and affirms the explanatory strength of the selected predictors. Yet, it also implies that nearly half of the variation remains unexplained, indicating the potential relevance of other latent factors. Previous studies have pointed to mental health status, intergenerational relationships, access to community health services, and even subjective well-being as additional variables worth exploring (Rugel et al., 2022). Given these dimensions, future research could benefit from incorporating mixed-method approaches to capture both the quantitative determinants and qualitative experiences of the elderly.

The methodological strength of this study lies in its use of panel data from SUSENAS between

2021 and 2023, which allows for capturing temporal changes and avoiding bias from cross-sectional snapshots. Employing the Multidimensional Poverty Index framework enables the analysis to move beyond income and incorporate health, education, and living standards into a composite measure of welfare. This multidimensional approach is consistent with recent scholarly calls for a broader conception of well-being in later life (Zeng et al., 2022; and Zhao et al., 2024). Moreover, by grounding the empirical strategy in logistic regression, the study aligns with statistical best practices for modelling binary outcomes in social research (Santhosh et al., 2024).

Taken together, the findings underscore the value of intersectional and localized analyses in aging studies. They highlight that while general determinants such as income, social protection, and digital access hold relevance across contexts, their magnitude and interaction effects vary depending on regional, cultural, and institutional conditions. The unique contribution of this research lies in demonstrating how these variables operate within a rural Indonesian setting—specifically in a regency with the highest elderly proportion in Central Java. The study thus adds empirical weight to the growing literature advocating for regionally adaptive, multidimensional, and equity-oriented aging policies. From a policy standpoint, these results have several implications. First, expanding and better targeting social protection schemes for elderly populations in rural areas is essential to buffer against income insecurity and deprivation. Second, investment in digital infrastructure and training programs tailored for senior citizens can substantially improve their welfare outcomes. Third, reevaluating the nature and structure of social participation programs is crucial to ensure that such initiatives do not impose undue burdens or create hidden forms of labor exploitation. Finally, more nuanced urban-rural interventions are needed, recognizing the diverse opportunities and constraints embedded within different geographic locales.

This study contributes to the empirical and theoretical discourse on aging in developing countries by offering a multidimensional, evidence-based assessment of elderly welfare. By integrating both supporting and contradictory findings from global literature, it not only validates the robustness of its own results but also illuminates the complexity and context-dependence of aging outcomes. These insights can inform more effective, equitable, and context-sensitive public policy frameworks aimed at enhancing the dignity and well-being of older populations in Indonesia and comparable settings.

4. CONCLUSIONS

This study confirms the usefulness of a multidimensional approach in analyzing elderly welfare, especially in rural Indonesian settings. By applying the Multidimensional Poverty Index (MPI) and a panel logistic regression model, the research shows that digital access, social protection, income, regional context, and social participation significantly influence welfare outcomes. Among these, internet use is the most impactful factor, with elderly users being nearly 58 times more likely to achieve welfare. This emphasizes the importance of digital literacy and infrastructure expansion as core pillars of aging policy. Social protection and income generation remain vital, increasing the odds of elderly welfare by over 2.7 and 2.3 times, respectively. These findings point to the need for expanding income support and livelihood opportunities for older populations, particularly in underserved regions. The urban-rural divide further underscores the structural inequalities faced by rural elderly. Urban residency increases the odds of achieving welfare by over 2 times, suggesting that rural elderly require more localized and outreach-based policy mechanisms.

Conversely, social participation—typically seen as beneficial—was found to negatively affect welfare. This calls for a reassessment of how engagement programs are designed. Rather than assuming participation is always positive, policymakers must consider the underlying motivations and burdens faced by the elderly. This study contributes to the growing literature on aging in the Global South by offering empirical insights grounded in local realities. Future research should expand the analytical framework to include mental health, caregiving, and environmental factors, and may adopt longitudinal or qualitative methods to enrich understanding. Policymakers are encouraged to adopt targeted, intersectional, and regionally adaptive approaches to ensure aging with dignity, inclusion, and security.

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