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Prevalence and associated factors of multidimensional poverty among rural households in West Gojjam Zone, northern Ethiopia: a household-based cross-sectional study

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heads are particularly at risk. To address these challenges, the study recommends policies that focus on enhancing agricultural productivity, expanding access to financial services, improving road infrastructure, and fostering non-farm income-generating activities. Strengthening agricultural extension services is essential to enhancing household resilience and reducing poverty.

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Introduction

Multidimensional poverty, defined as deprivation in multiple dimensions such as income, education, healthcare, living standards, and access to essential services, remains a persistent issue in rural Ethiopia [1, 2]. Despite various development interventions, regions like West Gojjam continue to exhibit high poverty levels. This is primarily attributed to inadequate infrastructure, limited healthcare access, poor educational opportunities, and a dependence on subsistence agriculture [3, 4].

While several studies have explored the socio-economic determinants of poverty in Ethiopia, including household size, dependency ratio, education level, gender of the household head, access to credit, and off-farm income [5–15], the role of the household head's age in shaping multidimensional poverty remains underexplored, particularly in the context of West Gojjam. Although a prior study in East Gojjam incorporated age as a variable in its poverty analysis [15], its findings may not fully generalize to West Gojjam due to socio-economic differences. Additionally, the three-year gap between that study (2020) and the current research (2023) necessitates an updated and localized analysis.

The age of the household head is a significant factor in influencing access to resources, decision-making capabilities, and resilience to economic shocks [16–19]. However, most previous research has relied on aggregated community-level data, which can obscure intra-household disparities and fail to account for individual-level dynamics in influencing poverty status [20]. Furthermore, although studies across the Amhara region have identified key poverty-related factors—such as household size, gender of the household head, farm size, livestock holdings, and participation in non-farm or off-farm activities—they often overlook critical variables such as access to agricultural extension services and cultivated land size. Additionally, findings across studies remain inconsistent [3, 15, 21], highlighting the need for a more comprehensive and context-specific analysis.

This study seeks to address these gaps by examining the prevalence of multidimensional poverty in West Gojjam and identifying the socio-economic factors contributing to it. Specifically, the research will address two key questions: (1) what is the prevalence of multidimensional poverty among rural households in West Gojjam? And (2) what socio-economic factors are significantly associated with multidimensional poverty in the region?

By answering these questions, the study aims to provide updated, region-specific evidence to inform the

development of targeted and effective poverty reduction strategies in West Gojjam.

Materials and methods

Study area

This study was conducted in the West Gojjam Zone, located in the Amhara Region of Ethiopia. The zone is

February 15, 2023, by a team of trained enumerators to

Demographic characteristics, particularly the age of the household head, were also significant. Households led by individuals aged 60 years and above were 12.2 times more likely to experience multidimensional poverty (AOR = 12.182). This reflects the heightened vulnerability of elderly individuals due to diminished earning capacity, higher health needs, and increased dependency. To address this, age-responsive policies—including social pensions, accessible healthcare, and community-based care programs—are essential to protect older adults from falling into or remaining in poverty.

Discussion

regions, such as Burji and Konso, underscore the importance of land access in alleviating poverty [37].

Access to credit emerged as a significant protective factor against multidimensional poverty in this study, with households accessing credit being 98.1% less likely to experience poverty. Credit facilitates investment in income-generating activities, enhances agricultural productivity, and improves access to essential services such as education and healthcare. Despite its benefits, access remains constrained by high transaction costs and limited financial literacy, particularly in rural areas. Addressing these barriers through affordable credit schemes and targeted financial education is essential for effective poverty reduction. These findings are consistent with prior research in the Gozamin district of East Gojjam [38] and evidence from other low- and middle-income countries [39].

This study reveals a strong inverse association between off-farm income and multidimensional poverty, with a 1% increase in off-farm income linked to a 98.4% reduction in the likelihood of being multidimensionally poor. Off-farm income serves as a critical source of financial stability, enabling rural households to access essential services such as education, healthcare, and adequate housing. It also enhances resilience by reducing dependence on agriculture, thereby buffering households against environmental and economic shocks. While concerns have been raised about the precarious nature of off-farm employment—often characterized by informality, low wages, and lack of social protection [40]—other studies underscore its positive contribution to poverty reduction [15]. Our findings align with previous research in Ethiopia poverty [41, 42], further emphasizing the importance of income diversification in rural development strategies. To maximize the benefits of off-farm income, targeted policy interventions are needed to promote vocational training, entrepreneurship, and access to secure and sustainable off-farm employment, particularly in underserved rural areas.

Infrastructure is a critical factor in poverty reduction. Road infrastructure is a critical factor in reducing multidimensional poverty. This study finds that households with year-round road access are 99.9% less likely to experience poverty (AOR=0.001) compared to those without access. Roads provide vital connections to markets, agricultural inputs, healthcare, education, and off-farm employment opportunities, significantly boosting income, agricultural productivity, and overall living standards. Similarly, agricultural extension services contribute substantially to poverty reduction, with each additional service provided annually lowering the likelihood of poverty by 97.3% (AOR=0.027). These services enhance agricultural productivity and improve access to essential services, reinforcing the positive cycle of poverty

alleviation. Our findings align with previous research in Ethiopia and low-income contexts globally, which highlight the transformative impact of infrastructure on productivity and poverty reduction [15, 43, 44]. For instance, studies in the Amhara region show that road access significantly reduces multidimensional poverty [3]. However, regions like West Gojjam still face challenges due to underdeveloped road networks, limiting access to critical services and economic opportunities. Therefore, targeted investments in rural infrastructure, coupled with efforts to enhance education, healthcare, and livelihood diver-

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