

Original Research Article

Knowledge, coverage and willingness to enrol in health insurance schemes among rural households: a community-based cross-sectional study

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Received: 03 September 2026

Accepted: 16 October 2026

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ABSTRACT

Background: Rural households remain vulnerable to catastrophic health expenditure despite the expansion of publicly financed health insurance schemes. This study assessed awareness, coverage and willingness to enrol in health insurance among rural households.

Methods: A community-based cross-sectional study was conducted in Singanagudem village, Krishna district, Andhra Pradesh, from September to November 2021. One village was randomly selected from the rural field-practice area. All 413 households were approached, and 384 participated (response rate, 93%). Data were collected using a pretested interviewer-administered schedule and analysed descriptively.

Results: Overall, 70.3% of households were aware of health insurance, whereas 91.1% held a valid insurance card. Dr YSR Aarogyasri was the predominant scheme among insured households (95.1%), and 85.7% reported family coverage. Among 34 uninsured households, 52.9% were willing to enrol. Fear of medical expenses was the most common reason for willingness (38.9%), whereas lack of trust was the most common reason for unwillingness (50%).

Conclusions: Health insurance coverage was high, but awareness was lower than card possession. Strengthening insurance literacy through frontline health workers may improve informed and equitable use of benefits.

Keywords: Awareness, Health insurance, Insurance coverage, Rural health, Willingness to enrol

INTRODUCTION

Health-care financing remains a major challenge in low- and middle-income countries, where a substantial share of health expenditure is paid directly by households at the point of care. In India, out-of-pocket expenditure continues to expose families, particularly those in rural settings, to delayed care seeking, indebtedness and financial hardship. Global and national health-expenditure data show that out-of-pocket payments remain an important component of health financing, including expenditure for inpatient care.^{1,2} Evidence from

nationally representative data also suggests that publicly financed insurance programmes for poor households can reduce inpatient out-of-pocket costs, although the degree of protection depends on awareness, access and use of benefits.³

India has progressively expanded publicly financed health insurance schemes to improve financial protection among vulnerable populations. National survey evidence shows that health-care use and expenditure patterns differ substantially between rural and urban households, making rural community-level assessment important.⁴ Financial-

protection profiles also emphasise that coverage must be interpreted alongside residual out-of-pocket expenditure.⁵ Community-based and publicly financed insurance mechanisms have evolved to address the limited access of rural and informal-sector populations to employer-based or private insurance.^{6,7} In Andhra Pradesh, Dr YSR Aarogyasri is a major state-supported programme that provides cashless hospital services to eligible families.⁸

However, insurance coverage alone does not guarantee effective financial risk protection. Beneficiaries must know that they are covered, understand scheme benefits and exclusions, and be able to access empanelled facilities when hospitalization is required. Systematic evidence from India indicates that publicly financed health insurance schemes can improve service utilization, but their effect on financial protection has been variable.⁹ Concerns have also been raised that publicly financed schemes may remain insufficient if households continue to experience informal payments, indirect costs or lack of clarity regarding entitlements.¹⁰

Rural communities may face additional barriers because of lower health literacy, limited exposure to formal insurance systems, dependence on informal advice and inadequate knowledge of claim procedures. Community-based studies are therefore useful because they assess not only enrolment, but also awareness, possession of insurance cards, willingness to enrol and practical barriers to utilization. Such evidence is particularly relevant in settings where administrative coverage may be high but beneficiary understanding may remain incomplete.

The present study was undertaken in Singanagudem village, a rural field-practice area of a medical college in Krishna district, Andhra Pradesh. It aimed to assess household awareness of health insurance schemes, household insurance coverage and coverage characteristics, and willingness to enrol among uninsured households.

METHODS

Study design and setting

A community-based cross-sectional descriptive study was conducted from 1 September to 30 November 2021 in Singanagudem village, Krishna district, Andhra Pradesh. The village forms part of the rural field-practice area attached to Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation.

Study population

The study population comprised all households residing permanently in Singanagudem village during the study period. The head of the household was interviewed; in the absence of the household head, any responsible adult member aged 18 years or above who was available at the time of the visit was included.

Sample size and sampling technique

Among the ten villages in the rural field-practice area, Singanagudem village was selected randomly. The selected village had 413 households with a population of 1,161. All households in the selected village were approached by house-to-house visits. Twenty-nine households remained locked even after three visits and were excluded. Thus, data were collected from 384 households, giving a response rate of 93%.

Inclusion and exclusion criteria

Households residing permanently in the village and providing written informed consent were included. Locked households after three visits, migrant households and households refusing consent were excluded.

Study tool and data collection

Data were collected using a predesigned, pretested interviewer-administered questionnaire. The tool included socio-demographic details; lifestyle factors and comorbidities; awareness of health insurance schemes; possession, type and duration of insurance; and willingness to enrol among non-insured households. The questionnaire was prepared in English, translated into Telugu and back-translated to ensure consistency. It was pilot tested among 20 households in a neighbouring village and modified as required. Socioeconomic status was classified using the modified B. G. Prasad scale 2021.

Operational definitions

Awareness was defined as self-reported knowledge of at least one government or private health insurance scheme.

Enrolment was defined as possession of a valid health insurance card at the time of interview.

Willingness to enrol was defined as expressed readiness by currently uninsured households to join a health insurance scheme in the future.

Statistical analysis

Data were entered in Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) version 25. Categorical variables were summarised as frequencies and percentages.

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Committee of Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation. Written informed consent was obtained from participants, and confidentiality was maintained throughout the study.

RESULTS

Socio-demographic profile

A total of 384 households were surveyed. The household heads were predominantly male (84.8%). The highest proportion of household heads belonged to the 31-40 years age group (26%), followed by 41-50 years (25.8%). Most households practice Christianity (68.2%), followed by Hindu (31.3%). Scheduled Caste households constituted 42.4%. (Table 1)

Table 1: Socio-demographic profile of households (n=384).

Variables	Category	Percentage (%)
Age group of head of family (years)	≤30	6.8
	31-40	26
	41-50	25.7
	51-60	22.7
	>60	18.8
Gender	Male	84.8
	Female	15.2
Religion	Hindu	31.3
	Muslim	0.5
	Christian	68.2
Caste	OC	27.1
	BC	28.7
	SC	42.6
	ST	1.6
Type of family	Nuclear	76.9
	Joint	8.9
	Three generation	14.2
Family size	≤4	70.8
	5-7	26.3
	≥8	2.9
Educational status	Illiterate	40.4
	Primary school	18.2
	Middle school	14.3
	High school	13.3
	Intermediate/diploma	8.6
	Graduate	3.1
	Professional degree	2.1
Occupation	Unemployed	6.5
	Unskilled	30.2
	Semi-skilled	7.7
	Skilled worker	4.2
	Clerk/shop owner/farmer	45.1
	Semi-professional	2.9
	Professional	3.4
Socioeconomic status (modified B.G. Prasad scale)	Class I	7.6
	Class II	20.3
	Class III	34.6
	Class IV	28.4
	Class V	9.1

Nuclear families were most common (76.8%), and 70.8% of households had a family size of four or less. Illiteracy among household heads was 40.4%. Farming, clerical work and shop ownership together formed the largest occupational group (45.1%), while 30.2% were unskilled workers. According to the modified B.G. Prasad scale, 34.6% of households belonged to class III socioeconomic status (Table 1).

Lifestyle factors and household health profile

More than half of the households (51.6%) reported at least one comorbidity among family members. Among households reporting comorbidity, hypertension (56.1%) and diabetes mellitus (54%) were the most common. Most households consumed a mixed diet (95.8%). No addictive habit was reported in 61.5% of households, while tobacco and alcohol together were reported in 11.5% (Table 2).

Table 2: Lifestyle factors and health profile of households (n=384).

Variables	Category	Percentage (%)
Diet	Vegetarian	4.2
	Mixed	95.8
Habits/addictions	Tobacco smoking/chewing	9.1
	Alcohol	8.9
	Tobacco smoking/chewing and alcohol	11.5
	Others	0.8
	Multiple	8.3
	None	61.5
Comorbidities	Present	51.6
	Absent	48.4

Awareness and possession of health insurance

Out of 384 households, 70.3% were aware of health insurance schemes, while 91.1% possessed a health insurance card. An important gap was observed because 93 of the 114 households who reported that they did not know about health insurance were nevertheless holding an insurance scheme among insured household, indicating passive coverage without adequate beneficiary awareness (Table 3).

Table 3: Awareness and possession of health insurance among households (n=384).

Variables	Category	Percentage (%)
Knowledge about health-insurance scheme	Aware	70.3
	Unaware	29.7
Household holding insurance policy	Yes	91.1
	No	8.9

Health-insurance profile among insured households

Among the 350 insured households, 40% had been covered for 6-10 years and 39.4% for 1-5 years. Public

insurance predominated (97.7%). Dr YSR Aarogyasri accounted for 95.1% of insurance schemes, and family coverage was reported by 85.7% of insured households (Table 4).

Table 4: Health-insurance profile among insured households (n=350).

Variables	Category	Percentage (%)
Duration of holding health insurance in years	≤1 to 5	39.4
	6-10	40
	>10	20.6
Type of insurer	Public	97.7
	Private	2
	Both	0.3
Insurance scheme	Aarogya Raksha	0.3
	Dr YSR Aarogyasri	95.1
	CGHS	1.7
	ESI	2.3
	Private	0.6
Type of health-insurance coverage	Family	85.7
	Individual	13.7
	Group	0.6

Willingness to enrol among non-insured households

Among the 34 households without health insurance, 18 (52.9%) were willing to join a health insurance scheme in the future. The most common reason for willingness was

fear of expensive medical care (38.9%), followed by convenience (33.3%). Among those unwilling to enrol, lack of trust was the leading reason (50%), followed by the perception that contribution before illness was unnecessary (37.5%) (Table 5).

Table 5: Willingness to enrol and reasons among non-insured households.

Variables	Category	Frequency (%)
Willing to enrol in health insurance in future (n=34)	Willing	18 (52.9)
	Not willing	16 (47.1)
Reasons for willingness to enrol (n=18)	Fear of medical expenses	7 (38.9)
	All family members will be covered	4 (22.2)
	Convenient	6 (33.3)
	Frequent Hospitalisation	1 (5.6)
	≤Rs 1000	5 (27.8)
Premium amount willing to pay per annum (n=18)	Rs 2000-5000	11 (61.1)
	Not yet decided	2 (11.1)
	Cannot afford premium	2 (12.5)
Reasons for unwillingness to enrol (n=16)	Contribution before illness is unnecessary	6 (37.5)
	Lack of trust	8 (50)

DISCUSSION

The present community-based study assessed awareness, coverage and willingness related to health insurance among rural households in Singanagudem village. The principal finding was that possession of health insurance was high (91.1%), whereas awareness of health insurance was lower (70.3%). This difference demonstrates an important knowledge-practice gap: many households were formally covered but did not clearly recognise their insurance status or entitlements. Thus, the study shows

that administrative enrolment alone cannot be considered equivalent to informed and effective coverage.

The socio-demographic profile of the study population provides important context for interpreting this gap. A large proportion of households belonged to Scheduled Castes (42.4%), most families were nuclear (76.8%), and illiteracy among household heads was 40.4%. These characteristics indicate that the study population included socially and educationally vulnerable groups, among whom written information, card possession or passive enrolment may not be sufficient to ensure understanding

of scheme benefits. Earlier rural studies have also shown that health insurance awareness and uptake are influenced by household education, occupation, gender of respondent and socio-economic circumstances.¹¹⁻¹³

Awareness of health insurance in the present study (70.3%) was higher than the 35.3% reported by Madhukumar et al in rural Bangalore and higher than the awareness levels reported in several earlier rural settings.¹¹ Raja et al also reported variation in awareness across demographic groups in rural Tamil Nadu, with differences by sex and education.¹³ The higher awareness in the present study may be related to the long-standing presence of state-supported insurance in Andhra Pradesh and repeated exposure to Dr YSR Aarogyasri through community networks. Nevertheless, the fact that nearly 30% of households remained unaware shows that insurance literacy has not reached all eligible families.

The enrolment level in the present study was markedly higher than the 22.7% insurance uptake reported by Madhukumar et al and the 44.7% coverage reported by Manuja et al in rural Karnataka.^{11,12} This difference is may reflect the strong presence of publicly financed insurance in Andhra Pradesh, especially Dr YSR Aarogyasri, which accounted for 95.1% of insured households in the present study. Unlike voluntary or premium-based schemes, state-supported enrolment can achieve wide numerical coverage; however, the present findings show that high possession of insurance cards must be accompanied by active beneficiary education.

Family-based coverage was reported by 85.7% of insured households in the present study. This is programmatically important because family coverage reduces the risk that only the household head or an elderly member is protected while other members remain uncovered. In comparison, Madhukumar et al reported that only about half of insured families had all members covered.¹¹ The predominance of family coverage in the present study may therefore indicate an important strength of the state-supported insurance model, although its benefit depends on whether families know when and how to use the card.

Health need was also evident in the study population. More than half of households reported at least one comorbidity among family members, with hypertension and diabetes being the most common reported conditions. This is relevant because chronic diseases produce repeated expenditure on consultations, medicines and investigations, while most insurance schemes are better understood by beneficiaries as hospitalisation-oriented benefits. Therefore, households with chronic illness may continue to experience out-of-pocket expenditure even when they possess health insurance, unless referral pathways, covered procedures and empanelled services are clearly communicated.

The finding that 52.9% of uninsured households were willing to enrol shows that there is still demand for health insurance protection among uncovered families. Fear of

expensive medical care was the most common reason for willingness, which supports the basic purpose of health insurance as protection against unpredictable health expenditure. Similar findings have been reported by Adedeji et al, who observed high willingness to participate in community health insurance when households perceived protection from health-care costs as useful.¹⁴

Lack of trust was the leading reason for unwillingness to enrol in the present study (50%), followed by the belief that contribution before illness was unnecessary (37.5%). This finding is meaningful because it shows that non-enrolment is not only a financial issue. Trust in scheme administration, claim settlement, empanelled hospitals and transparency strongly influences enrolment behaviour. Jehu-Appiah et al. similarly emphasised that household perceptions of trust, scheme credibility and perceived value affect enrolment in health insurance programmes.¹⁵

The findings have practical implications for primary health-care teams. Frontline health workers such as accredited social health activists (ASHAs) and auxiliary nurse midwives (ANMs) are well positioned to bridge the gap between coverage and informed utilization. Household-level counselling can verify whether families possess valid cards, explain the conditions covered, identify empanelled hospitals, clarify documentation requirements and guide families during hospitalization. Such interventions are especially important in low-literacy households, where passive possession of insurance documents may not translate into actual financial protection.

The main strength of the study is its community-based design with a high response rate of 93%, which allowed direct assessment of households rather than relying only on administrative enrolment data. The study also examined awareness, possession and willingness together, giving a more complete understanding of the knowledge-practice gap. However, the study has limitations. It was conducted in a single village and therefore may not be generalisable to all rural settings. Responses were self-reported and may be affected by recall or reporting bias. The study did not collect detailed information on the number of times households availed insurance services or the specific ailments for which insurance was used. Because of the cross-sectional design, causal relationships between socio-demographic factors and insurance awareness could not be established.

CONCLUSION

The present study shows that health insurance coverage among rural households in Singanagudem village was numerically high, mainly due to public insurance coverage through Dr YSR Aarogyasri. However, awareness was lower than actual possession of insurance, indicating a clear knowledge-practice gap. A substantial number of households held insurance without knowing

about it, which can limit timely utilization of cashless services.

The findings emphasise that enrolment alone is insufficient for meaningful financial protection. Insurance literacy, trust-building and simple guidance on scheme procedures are required to convert passive coverage into informed and active use. Strengthening counselling through ASHAs, ANMs and primary health-care facilities may improve equitable utilization and help rural households derive the intended benefit from publicly financed health insurance schemes.

Recommendations

Insurance literacy should be integrated into routine primary health-care activities, including Village Health and Nutrition Days, outreach sessions and chronic disease follow-up visits. ASHAs and ANMs should be trained to verify insurance cards, explain covered services, list empanelled hospitals and guide families through claim procedures. Information on Dr YSR Aarogyasri benefits, exclusions, helpline numbers and claim steps should be displayed in Telugu at sub-centres, primary health centres and community-level meeting points. Simple grievance-redressal mechanisms should be strengthened at the village or primary health-centre level to address denial of service, informal payments and misinformation. Future studies should evaluate the effect of structured insurance-literacy interventions on utilisation and out-of-pocket expenditure.

Funding: The study received support under the Undergraduate Short-Term Research Studentship (UG-SRS) Programme of Dr NTR University of Health Sciences, Vijayawada (Registration No.: UG-SRS 21M-122)

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation (IEC/2021/09/34; 25 August 2021)

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Cite this article as: Parasuram JB, Babu TMK, Bhavaraju S, Meghana MV. Knowledge, coverage and willingness to enrol in health insurance schemes among rural households: a community-based cross-sectional study. Int J Community Med Public Health 2026;13:6764-9.