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Original Article

Health Hazards and Awareness of Health Insurance status among Handloom workers in Mangalagiri

[1]Mahendra Kumar Kondipati
[1]Faculty, Dept. of Economics, Acharya Nagarjuna University, Guntur, Andhra Pradesh.

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Abstract: *Handloom weaving is an integral part of Indian culture and tradition and the weavers face a number of occupational health problems such as the adoption of faulty postures during weaving, exposure to cotton dust and chemical dyes used on yarn, and poor lighting and ventilation in the household setting. Mangalagiri (also GI tagged) in the district of Guntur, Andhra Pradesh is one such handloom cluster where more than 3200 registered weaver households' health hazards are yet to be taken into cognizance. The study focuses on the type and magnitude of ill health and work hazards faced by the weavers in Mangalagiri and on the insurance coverage of the weavers and their level of cognizance concerning health insurance schemes, based on a sample of 140 respondents in 2025. Using descriptive statistics, percentage analysis, cross-tabulation, and chi-square tests, the study indicates that musculoskeletal disorders (MSD), respiratory disease (RD) and eye strain were the three most common health issues. A shocking 71.4% of the workers have no valid health insurance. Knowledge about government schemes like PM-JAY, AP state health schemes is poor. Significant chi-square associations between education and awareness about insurance and between severity of health hazards and insurance status were found. The study ends with selective policy implications for strengthening the occupational health infrastructure, widening the coverage of insurance, and conducting awareness programmes in the Mangalagiri handloom cluster.*

Keywords: *Handloom Workers, Occupational Health Hazards, Health Problems, Health Insurance, Insurance Awareness, Mangalagiri, Weaving.*

I. INTRODUCTION

Occupational health is an important aspect of labour welfare, and it influences the efficiency and dignity of the worker in traditional industry and the quality of life. The handloom industry, with a workforce of more than 43.31 lakh people in India (Ministry of Textiles, GoI, 2023–24), has proven to be the most difficult to organise given its informal employment system, home-based work arrangements, and a complete absence of occupational health amenities. Producers of handloom clusters weave using pit looms and fly-shuttle looms for 8 to 12 hours a day in small rooms where they can barely breathe, exposed to cotton dust, unventilated environments, exposure to chemical dyes, and deficient in natural and/or artificial light. This leads to a predictable range of work-related health problems, like byssinosis (respiratory disease associated with cotton dust), musculoskeletal disorders caused by repetitive movement and constrained sitting postures, chronic eye strain, skin ailments caused by contact with chemical dyes, and hearing loss due to loom noise. The Government of Andhra Pradesh has acknowledged the occupational health risks of the handloom sector under its YSR Aarogyasri health scheme, covering weaver families for tertiary hospitalization for ₹5 lakh per annum and through NHDC-linked welfare (BP Sridevi, Interview 1, 2017; GoAP Health, Medical and Family Welfare Department, 2022). In addition, the Central Government's PM-JAY covers BPL households, including weaver families. The usage of health insurance among handloom workers is dismally low in spite of these schemes, owing to lack of awareness, documentation hassles and location access issues. More than 58% of weaver households in AP were found to be uninsured in terms of health by the Third Handloom Census (2009 – 10) and subsequent state-level surveys conducted by NGOs, a scenario which is not expected to have changed significantly owing to continuing institutional lacunae. Mangalagiri is a case in point for such an examination in Guntur district (Rao et al. Mangalagiri is a major handloom cluster in Guntur district with around 1800 active weavers). The post-COVID period has been characterized by increased vulnerability to health hazards when weavers went back to working long hours without sufficient protective measures. This research fills this significant void, thereby providing a basis to formulate evidence-based health policy for the Mangalagiri cluster.

II. BACKGROUND OF THE STUDY

Mangalagiri's handloom cluster, located 12 km from Vijayawada in the Guntur district of Andhra Pradesh, is known for weaving unique cotton fabrics through household-based pit-loom weaving. About 3,200 weaver households registered to the cluster live and work in physically taxing conditions that exhibit significant consequences for the health of the workforce. Workers rest themselves on low wooden platforms and use foot pedals and hand shuttles for hours, contributing to the

ergonomic stress on their spines, shoulders, and wrists. Exposure to raw cotton fibres and chemical dyes during the processes of warping and dyeing also contributes to respiratory and skin risks. The Andhra Pradesh Government, through its Department of Handloom and Textiles, has been providing welfare schemes like YSR Nethanna Nestham, a cash transfer of ₹24,000 p.a. and group insurance under Handloom Weavers Comprehensive Welfare Scheme (HWCWS), which insures life and accident for ₹2–5 lakh (GoAP Handloom and Textiles Department, 2023). But, health insurance tailored for occupational diseases of weavers is still grossly absent in the clusters. Field findings and secondary literature reveal that there are still a large number of eligible weavers in Mangalagiri who are yet to register under such schemes on account of illiteracy and due to difficulty in getting documents, making this an empirical investigation.

III. PROFILE OF HANDLOOM INDUSTRY IN MANGALAGIRI

The handloom business of Mangalagiri is an intrinsic part of the socio-economic life of Guntur district. Granted a Geographical Indication tag in the year 2009, Mangalagiri fabric enjoys national fame for its unique temple-border cotton sarees and dress materials. The records of Handlooms and Textiles of the (AP) Department (2023) show a total of 1800 active weavers at present who work in their homes, rotating them are members of weavers' cooperative societies. Production is mainly fly-shuttle pit loom-based at households where raw cotton yarn obtained through NHDC channels is woven into fabric and then sold to master weavers and cooperative outlets. The GI tag has enhanced marketing visibility, but weaver welfare parameters such as health care facilities, insurance coverage, and occupational safety compliance are poor, keeping the cluster as a critical theme for health-centred research.

IV. IMPORTANCE OF HANDLOOM IN INDIA AND ANDHRA PRADESH

India's handloom weaving, being the second largest decentralized source of employment, sustains more than 3.5 crore families and contributes around 31,000 crores to the value of annual textile export (Ministry of Textiles, GoI, 2023). Andhra Pradesh is one of the top 5 handloom-producing states, also with GIT clustered at Mangalagiri, Pochampally, Dharmavaram, Uppada, etc. The sector contributes to the livelihoods of predominantly SC/ST and OBC communities, which makes it integral to inclusive development. The National Handloom Development Programme (NHDP) and State welfare schemes are indicative of the government's acknowledgement of its socio-economic strategic importance. Worker health and welfare are important components for the sector's sustainability.

V. REVIEW OF LITERATURE

Krishnamurthy and Rao (2019) investigated occupational health risks amongst handloom weavers in Andhra Pradesh and reported that 74% of the weavers were affected by musculoskeletal disorders, mainly lower back pain and cervical spondylosis, resulting from the bent postures adopted for long hours whilst weaving, and that 18% had accessed treatment under some form of medical insurance. Mishra and Panda (2020) assessed respiratory health in a group of cotton textile workers of Orissa and demonstrated that 61% of the workers showed signs of byssinosis and chronic bronchitis as a consequence of occupational exposure to cotton dust, advocating for compulsory respiratory health surveillance along with dust reduction practices in handloom clusters. Sundaramurthy (2021) evaluated health insurance entitlements among artisan groups of Tamil Nadu and found out that 22% of the handloom workers in the study were aware about the State and Central Government Health Schemes that were applicable to them, and a low level of awareness was due to a lack of penetration in the implementation of schemes by the agencies and literacy among older weavers. PM-JAY Prasad & Naidu, (2021) assessed the utilization of PM-JAY by the Below Poverty Line (BPL) weaver households in the Tarnaka locality of Hyderabad (Telangana) and uncovered that though 78% of the weavers were eligible for the scheme, 31% of them possessed active Ayushman Bharat cards (given the scheme is a relatively new introduction in the country), concluding that barriers to final stage enrolment including documentation requirements and dearth of local facilitation centres, inhibited the reach of the scheme. Venkatesh and Subramaniam (2022) researched eye strain and visual disorders among handloom workers of Karnataka and found that 68% of the participants had chronic eye fatigue and 34% suffered from a discernible decrease in visual acuity caused by poor illumination in the environment of the domestic loom, and none of the workers had availed of ophthalmological service through insurance. Chakraborty and Sen (2023) analyzed skin diseases and chemical exposure experienced by dye-processing workers of West Bengal's handloom clusters and observed that 55% of them suffered from contact dermatitis and allergic reactions due to synthetic dye chemicals, and awareness about compensation for occupational skin diseases was nonexistent among the victims.

VI. STATEMENT OF THE PROBLEM

Weavers of Mangalagiri cotton sarees face numerous occupational threats -- from inhaling cotton dust and being subjected to chemical dyes, ergonomic strain due to long hours of sitting in weaving posture, poor lighting and loom noise, resulting in musculoskeletal, respiratory, dermatological and visual ailments. Even though Mangalagiri weavers can avail health insurance schemes offered by the government, such as PM-JAY, YSR Arogyasri and HWCWS, the coverage of insurance is very weak among them. The difference between scheme availability and coverage is largely attributed to a lack of awareness among the workers on their eligibility, how to enrol, and the spectrum of diseases covered. None of the existing

research has empirically reported, based on recent primary data, the extent of health risk, insurance coverage, and awareness of Mangalagiri handloom workers in a cluster-specific manner. Such evidence is lacking, which hinders the formulation of effective, focused health welfare interventions for this at-risk population.

VII. NEED FOR THE STUDY

Workers in the handloom industry in Mangalagiri are a health-risk occupational group working within informal, unorganized household production settings with little or no access to occupational health services or insurance coverage. National level surveys and aggregate state data highlight the broad contours of weaver health concerns, yet there is a glaring lack of cluster-level micro evidence from Mangalagiri on the exact nature, frequency and seriousness of occupational health burdens, alongside insurance status, and awareness– these could add a lucrative layer to academic and policy knowledge. The health welfare investments of the Government of Andhra Pradesh, which include the YSR Arogyasri scheme for hospitalisation up to ₹5 lakh, also require a strict assessment of utilisation in order to see if Mangalagiri weavers benefited from any of these. The lack of insurance coverage is thus a major factor affecting the welfare of the households of weavers, more so in a time when post-COVID health vulnerabilities, escalating cost of treatment and stagnant income of weavers are setting in. Also, the specific relationship between education and insurance awareness, occupational hazard exposure and insurance utilisation has not been examined empirically for Mangalagiri. Inferences from the chi-square analysis reported in this study will provide the evidence-based justification for cluster-specific health policy interventions, which can potentially improve the occupational health and insurance access levels of Mangalagiri handloom weaving workers.

VIII. OBJECTIVES OF THE STUDY

- To know the type and magnitude of health problems and occupational hazards faced by handloom workers at Mangalagiri with special reference to working conditions.
- To determine the health insurance coverage and awareness of government health insurance schemes among the handloom workers in Mangalagiri.

IX. RESEARCH METHODOLOGY

This is descriptive and analytical research, to study health issues, occupational risk, insurance coverage and awareness of health insurance among Handlooms workers at the Mangalagiri, Guntur district in the state of Andhra Pradesh, considering 2025 as the year of reference. The study is mainly based on the primary data, which has been collected by using a structured interview schedule from 140 handloom workers from active weaving households across the prime weaving location of Mangalagiri through a purposive random sampling method. The sample size has been calculated by applying the formula given by Yamane (1967), $n = N/1+Ne^2$, where N is the population size of registered active weavers (nearly 1,800), e is the margin of error (Set at 0.08), thus resulting in a valid sample of 140 respondents interviewed in 2025 Personal Interview. Data so obtained were coded, tabulated, and analysed using percentage analysis, cross tabulation and chi-square test of association($\chi^2=\Sigma[(O-E)^2/E]$), where "O" is the observed frequency and "E" is the expected frequency . The level of statistical significance was tested at 5% and 10%. Active handloom weavers who had been weaving for at least one year were eligible to participate, while master weavers and cooperative heads were excluded so as to keep respondents homogeneous.

X. RESULTS

Table 1: Socio-Economic Profile of Respondents (n=140)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	84	60.0
	Female	56	40.0
Age Group	Below 30 years	28	20.0
	30–45 years	63	45.0
	Above 45 years	49	35.0
Education	Illiterate	29	20.7
	Primary	47	33.6
	Secondary	42	30.0
	Higher Secondary & above	22	15.7
Marital Status	Married	112	80.0
	Unmarried	28	20.0
Family Size	1–3 members	38	27.1
	4–5 members	72	51.5
	Above 5 members	30	21.4
Monthly Income	Below ₹5,000	42	30.0
	₹5,001–₹8,000	61	43.6
	Above ₹8,000	37	26.4

Source: *Primary data*

A) Socio-Economic Profile of Respondents

The socioeconomic status shows that 60% of the respondents are male and 40% of them are female. In this study, this indicates the good participation of women in the handloom industry. Most (45 per cent) are in the 30–45 age range, with 35 per cent over 45 years, highlighting an ageing workforce at risk of chronic disease. Educational level is very low, 20.7% illiterate, and 33.6% received only a primary education, which critically limits the insurance-related knowledge and health-seeking behaviours. Around 80% are married with dependent family, and 51.5% are 4–5 member households, exacerbating the economic impact of health spending. The incomes are too low to pay for healthcare themselves, with 73.6% of them earning less than ₹8,000 a month, so for this group, obtaining health insurance is a need, not a luxury."

Table 2: Health Problems and Occupational Hazards (n=140)

Health Problem / Hazard	Frequency	Percentage (%)
Lower back pain and spinal disorders	108	77.1
Shoulder and wrist musculoskeletal pain	94	67.1
Chronic eye strain / reduced visual acuity	91	65.0
Respiratory problems (cough, breathlessness)	83	59.3
Cotton dust exposure symptoms (byssinosis-like)	67	47.9
Skin disorders/contact dermatitis from dyes	58	41.4
Hearing difficulties from the loom noise	49	35.0
Headaches from poor ventilation	72	51.4
Fatigue and sleep disturbances	88	62.9
No significant health complaints	14	10.0

Source: *Primary data*

B) Health Problems and Occupational Hazards

The occupational disease burden of Mangalagiri handloom workers is indicative of a very high level of health risk. Musculoskeletal disorders were highest in lower back and spinal disorders (77.1%), and shoulder and wrist pain (67.1%) was the most common disorder attributable to the restricted sitting posture used in the pit-loom operation. The physical load can be expressed as the following ergonomic risk formula: Physical stress index = force × repetition × posture constraints, and these three factors are at their highest in pit-loom weaving. About 65% of the respondents suffer from chronic eye strain, an unsurprising result of dealing with thin threads in dimly lit surroundings in their own homes while weaving. Respiratory ailments were reported by 59.3%, and 47.9% shows symptoms of cotton dust exposure that resemble byssinotic symptoms in the early stage, an occupational lung disease that can be avoided. Energy depletion and sleep interruption are reported by 62.9%, in line with the progressive physical impact that excessive working hours in the financial stress environment takes. Nearly 41.4% of the cases of skin diseases are due to chemical dyes, especially in those who work in the processes of dyeing and yarn. Hearing impairment due to noise in the looms was reported by 35%, and headache due to bad ventilation was reported by 51.4%. A mere 10 per cent had no significant health-related complaints, suggesting almost all of the sample suffered from occupational ill-health. These results highlight the necessity for occupational health screening, ergonomic measures, dust suppression, better illumination and chemical safety procedures in the weaving families of Mangalagiri.

Table 3: Health Insurance Status and Awareness (n=140)

Indicator	Category	Frequency	Percentage (%)
Health Insurance Status	Possess valid health insurance	40	28.6
	No health insurance	100	71.4
Type of Insurance Held (n=40)	PM-JAY / Ayushman Bharat card	18	45.0
	YSR Arogyasri	14	35.0
	HWCWS group insurance	5	12.5
	Private health insurance	3	7.5
Awareness of PM-JAY	Fully aware	21	15.0
	Partially aware	43	30.7
	Not aware	76	54.3
Awareness of YSR Arogyasri	Fully aware	34	24.3
	Partially aware	47	33.6
	Not aware	59	42.1
Awareness of HWCWS	Fully aware	16	11.4
	Partially aware	29	20.7
	Not aware	95	67.9
Reason for No Insurance	Lack of awareness	54	54.0
	Documentation difficulties	29	29.0

	Not applicable / excluded	11	11.0
	Affordability constraints	6	6.0

Source: *Primary data*

C) Health Insurance Status and Awareness

Insurance and awareness data reveal a huge protection gap among the Mangalagiri handloom weavers. An appalling 71.4 percent have no valid health insurance at all, which is to say that almost three-fourths of the respondent group are at the mercy of under-the-table payments for healthcare, even as several government schemes are purportedly available to them. Of the 28.6 per cent who are insured, 45 per cent have coverage under PM-JAY and 35 per cent under YSR Arogyasri, which means the government schemes are far more prominent compared to any private insurance (7.5%) in this segment of low-income individuals. The awareness levels are abysmally poor in all three major schemes. Full awareness of PM-JAY is only 15%, and 54.3% are completely unaware of the existence of the scheme or their applicability. YSR Arogyasri is also marginally better, with 24.3% full awareness and 42.1% are totally unaware. HWCWS awareness is lowest – there is full awareness among 11.4%, with 67.9% ignorance of this weaver-specific group insurance scheme, an indication of utter failure in implementation of a scheme that was tailor-made for this very occupational group. Among the uninsured workers (N=100), awareness was the biggest hurdle (54%), followed by documentation challenging - 29% and finances - 6%. The Insurance Coverage Rate (ICR = Insured/Total×100 = 28.6%) is also far below the national target of 80 under Ayushman Bharat. These results suggest that closing the insurance gap is more of an issue of awareness and facilitation than resources, and underline the need for more focused awareness raising and enrolment facilitation at the cluster level.

Table 4: Cross-Tabulation — Education Level vs Awareness of PM-JAY

Education Level	Fully Aware	Partially Aware	Not Aware	Total
Illiterate	1 (3.4%)	5 (17.2%)	23 (79.3%)	29
Primary	4 (8.5%)	12 (25.5%)	31 (66.0%)	47
Secondary	10 (23.8%)	18 (42.9%)	14 (33.3%)	42
Higher Secondary & above	6 (27.3%)	8 (36.4%)	8 (36.4%)	22
Total	21	43	76	140

Chi-Square Test: *χ^2 (calculated) = 24.18, df = 6, p = 0.000 (< 0.001)*
Source: *Primary data*

D) Education Level vs Awareness of PM-JAY

There is a strong relation between awareness of PM-JAY and education status from Table 4 (χ^2= 24.18, df=6, p< 0.001). Among illiterate working people, 79.3% are unaware, and this gradually declines to 66% among primary literate, 33.3% among secondary and 36.4% among higher secondary literate working people. Complete awareness increases similarly from 3.4% among the illiterates to 27.3% in the highest education group. This reiterates that education is the strongest determinant of scheme awareness, making it necessary to have non-literacy-based means of communication, viz., visual aids, local-language audio campaigns, and community mobilisation through co-operative societies, to address the 54.3% of workers who are still completely in the the dark about PM-JAY.

Table 5: Cross-Tabulation Health Hazard Severity vs Insurance Status

Health Hazard Severity	Insured	Uninsured	Total
Mild (1–2 complaints)	16 (53.3%)	14 (46.7%)	30
Moderate (3–4 complaints)	17 (28.3%)	43 (71.7%)	60
Severe (5+ complaints)	7 (14.0%)	43 (86.0%)	50
Total	40	100	140

Chi-Square Test: *χ^2 (calculated) = 14.93, df = 2, p = 0.001 (< 0.01)*
Source: *Primary data*

E) Health Hazard Severity vs Insurance Status

Table 5 also shows a very significant negative correlation between the severity of health hazards and insurance coverage (χ^2 = 14.93, df = 2, p = 0.001). Workers with mild complaints of health have a slightly higher coverage rate at 53.3 percent; those with moderate severity have only 28.3 percent coverage; and those severely affected workers(workers with five or more health complaints) have a dismally low coverage of 14 percent. This negative association exposes a vulnerability deepening paradox: those workers most in need of health care are least likely to have it. This pattern of results probably mirrors the finding that health hazard exposure is correlated with socio-economic disenfranchisement, low education, and lack of access to enrollment assistance, all of which both increase risk to health and make it harder to get insurance. These results call for a focused insurance enrolment drive amongst the most severely health-affected worker segments.

Table 6: Cross-Tabulation — Gender vs Health Insurance Status

Gender	Insured	Uninsured	Total
Male	28 (33.3%)	56 (66.7%)	84
Female	12 (21.4%)	44 (78.6%)	56
Total	40	100	140

Chi-Square Test: *χ^2 (calculated) = 2.18, df = 1, p = 0.140 (not significant at 5%)*
Source: *Primary data*

F) Gender vs Health Insurance Status

Table 6 investigates the relationship between sex and having health insurance. Among the employed population, female employees are less likely to be insured (21.4%) than male employees (33.3%), but the difference is not statistically significant according to the chi-square test ($\chi^2 = 2.18$, df = 1, p = 0.140). The existing gender divide in coverage has its reasons in lower income on average among female workers, lesser mobility to facilitate enrolment and more literacy barriers and not in direct disqualification from scheme eligibility. Although not statistically significant, the difference of 11.9 percentage points between the male and female rates of insurance coverage is a matter for policy concern to make outreach of information on insurance and enrolment campaign more gender sensitive, targeting specifically women weavers in Mangalagiri.

XI. DISCUSSION

The findings of this study indicate that Mangalagiri handloom weavers are facing a double tragedy: occupational health distress and unaffordable insurance. Musculoskeletal disorders (77.1%), chronic eye strain (65%), and breathing difficulties (59.3%) are nearly universal outcomes of the structural, ergonomic, and environmental risks of household pit-loom weaving in the absence of occupational health protections. With the presence of cotton dust, chemicals used to dye, inadequate ventilation, and extended periods in forced postures, around a multi-hazard working environment that progressively deteriorates worker health along career paths. Results of the chi-square analysis indicate that level of education was the major predictor of insurance knowledge, and that severity of health hazard was negatively associated with insurance coverage, suggesting that the workers who are at the greatest risk are also the ones who are least insured. The 71.4% uninsured is even more disturbing when considered alongside the several government schemes that should be within the reach of weaver households. That half (54%) of uninsured workers identify lack of awareness rather than affordability as the main barrier to coverage is a sign of a fixable policy failure, one that calls for focused outreach efforts to the Mangalagiri cluster. Although sex differentials in coverage are not statistically significant, these reflect the underlying socio-economic inequalities, which need to be addressed.

XII. CONCLUSION

This study shows that handloom workers in Mangalagiri bear a heavy and multi-dimensional occupational health load while they remain largely excluded from coverage under health insurance, primarily for want of knowledge about the government schemes that are in place. Musculoskeletal disorders, respiratory diseases and eye strain are the predominant health problems directly related to work-related ergonomic and environmental conditions in household pit-loom weaving. The fact that 71.4% of them are uninsured in a group that experiences near-universal health complaints is a glaring policy failure that begs the question of "why?" The statistically substantiated negative correlation between the severity of health hazards and insurance coverage reveals a structural injustice, wherein the most vulnerable workers are the least protected. Awareness barriers related to education can be overcome by adopting communication approaches that are independent of literacy and by conducting community-based enrolment promotion activities. The Government of Andhra Pradesh's health welfare system, though wellconceptual- ized at the scheme level, needs to be strengthened in last-mile delivery, particularly at the level of the Mangalagiri cluster, in order to materialize the intent of providing protection to the worker through scheme availability.

XIII. MAJOR FINDINGS

- Prolonged seated posture during pit-loom weaving operations in Mangalagiri was the direct cause of lower back pain and spinal deformities among 77.1% of the handloom workers.
- About 65% of respondents stated they had chronic eye fatigue and visual acuity problems, due to the fine thread discrimination needed in weaving in the same poor lighting conditions provided in homes with no corrective aids.
- Respiratory illness, in the form of chronic cough and breathlessness, compromised 59.3% of the workforce, 47.9% of them with symptomology indicative of inhaled occupational cotton dust and an early-stage byssinosis-like condition.
- Nearly 41.4% workers suffered skin diseases and contact dermatitis due to exposure to chemical dyes, especially among those engaged in yarn dyeing and preparation work and no protective gear was provided to them.
- An alarmingly high 71.4% handloom workers in Mangalagiri do not have any valid health insurance, and are completely reliant on spending from their pockets for healthcare in an almost universally complaint-ridden population.
- Awareness of PM-JAY is very low (only 15% among the sampled workers), while 54.3% have no information about the scheme, and 67.9% are ignorant about the weaver-specific HWCWS group insurance scheme.

- Awareness is the most commonly mentioned barrier among uninsured workers (54%), followed by complexity or difficulties in documentation (29%), indicating that the hurdle to insuring these workers is more one of information and assistance rather than resources.
- We also observed a statistically significant positive correlation between education and awareness of PM-JAY (χ^2 = 24.18, $p < 0.001$), where 79.3% of the illiterate workers were unaware, as against 36.4% of the higher secondary educated workers.
- There is a negative and significant association between the severity of health hazard and insurance status (χ^2 = 14.93, p = 0.001), indicating that workers with the worst health conditions have the least insurance coverage of 14%, unveiling a major equity gap.

XIV. POLICY IMPLICATIONS AND SUGGESTIONS

- As 54.3% workers do not know PM-JAY and the barriers to awareness are mostly literacy-related, door-to-door visual awareness drives in the form of pictographic brochures in Telugu, community radio announcements on local FM channels and group awareness sessions at the cooperative society levels should be methodically conducted in Mangalagiri to reach those workers whose access to written scheme information is limited.
- Claims of documentation barriers by 29% uninsured workers should be tackled through facilitated enrolment camps at the level of cooperative societies as well as major weaving pockets in Mangalagiri, where government facilitators could help workers with Aadhaar linking, ration card verification and PM-JAY golden card generation, thereby reducing the institutional inconvenience that deters eligible workers from availing existing coverage.
- A cluster-based intervention for ergonomic improvement should be planned for Mangalaghiri, providing a package that includes subsidised ergonomic seating modifications, provision of adjustable loom platforms, task lighting and protective gear such as dust masks and chemically resistant gloves, under the cluster development component of the National Handloom Development Programme, so that it may reach out to the 77.1% workers suffering from avoidable musculoskeletal disorders.
- In the light of the chi-square confirmed finding that the group facing the most grave health hazard has the least coverage (14%) in terms of insurance, the drives for enrolling in insurance in Mangalagiri must be directed primarily at workers with five or more occupational health problems, and by using the records of cooperative societies and health camp findings, as ever the most vulnerable weaver households should be speeded through enrollment for coverage under PM-JAY and YSR Arogyasri before they break down further.

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