

Service Quality, Customer Satisfaction, Health Insurance Literacy, and Perceived Health Outcomes Among Policyholders in Darjeeling and Jalpaiguri Districts of West Bengal, India: An Empirical Investigation

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ABSTRACT:

Health insurance literacy (HIL) determines whether formal coverage translates into financial protection and improved health for policyholders. In India, out-of-pocket spending accounts for approximately 59.6% of all health expenditure, a burden that low HIL directly worsens by leaving insured persons unable to navigate their coverage. This study examines how HIL relates to health service utilisation, service quality, customer satisfaction, perceived quality of care, and overall health outcomes among policyholders in the Darjeeling and Jalpaiguri districts of West Bengal. Data were collected through a structured questionnaire from 470 respondents, of whom 367 were insured and 103 were uninsured. Statistical analysis used Spearman's rank correlation, Pearson chi-square with Cramér's V, independent samples t-tests, and one-way ANOVA with Tukey HSD comparisons. All four hypotheses were supported. HIL was positively associated with health service utilisation ($\rho = 0.49$, $p < 0.001$; $\chi^2(4) = 100.28$, Cramér's $V = 0.37$). Service quality showed a strong link with customer satisfaction ($\rho = 0.88$, $p < 0.001$; $\chi^2(4) = 470.48$, Cramér's $V = 0.80$). HIL also correlated positively with perceived quality of health services ($\rho = 0.46$, $p < 0.001$) and with overall health outcomes ($\rho = 0.42$, $p < 0.001$), with financial risk protection as the most immediate benefit. Education and income were significant moderators throughout. The findings support a sequential model, $HIL \rightarrow \text{health service utilisation} \rightarrow \text{perceived service quality} \rightarrow \text{customer satisfaction} \rightarrow \text{overall health outcomes}$, with implications for insurers, IRDAI, and health policy in North Bengal..

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1. Introduction

India's health insurance sector has changed considerably since liberalisation in 1999. Insurance density, measured as premium per capita, rose from USD 11.5 in 2001 to USD 78 in 2020 (IRDA, 2021). Schemes like Ayushman Bharat PM-JAY have extended formal coverage to low-income households, particularly for secondary and tertiary care. Yet wider coverage does not, on its own, produce better utilisation or better health. What determines whether a policyholder actually benefits from coverage is a less visible factor: health insurance literacy. HIL refers to the knowledge, skills, and confidence that allow individuals to select, understand, and use health insurance (IRDAI, 2023; Sharma, 2018). Low HIL means policyholders who do not know which hospitals are in their insurer's network, pay out-of-pocket for services their policy covers, and are exposed to mis-selling. With out-of-pocket spending at 59.6% of total health expenditure (NHA, 2018), the financial stakes of low literacy are substantial. The Darjeeling and Jalpaiguri districts of West Bengal illustrate these challenges well. Urban residents in both districts have better access to doctors and insurance agents, but people in rural and tea garden areas face real barriers to coverage. Darjeeling's hilly terrain isolates many villages, making engagement with insurance schemes difficult. Across both districts, cost, limited awareness, and poor availability of healthcare services remain persistent obstacles. Slow claims processing and administrative delays further reduce the practical value of public schemes. These districts have received little empirical attention in the HIL literature, despite being a relevant setting for studying how literacy, service quality, and health outcomes interact across varying social and geographic conditions.

HIL remains low in both districts, many policyholders struggle to use their coverage effectively, and gaps in health outcomes and satisfaction point to the need for closer

investigation. This study tests a sequential model connecting HIL to healthcare utilisation, service quality perceptions, customer satisfaction, and health outcomes. Four objectives guide the work:

- (1) To examine how health insurance literacy affects the utilisation of health services.
- (2) To examine how service quality affects customer satisfaction with health insurance.
- (3) To analyse the correlation between health insurance literacy and perceived quality of health services.
- (4) To analyse the correlation between health insurance literacy and overall health outcomes.

The evidence base for this study draws on several converging lines of research. HIL, defined as the knowledge, skills, and confidence to select, understand, and use health insurance (IRDAI, 2023; Paez et al., 2014; Bardy, 2023, 2024), has been consistently linked to healthcare utilisation. Yagi et al. (2022) found that low HIL leads to poor and wasteful use of health systems, including avoidance of preventive care, and Edward et al. (2019) reported that 51% of a nationally representative sample had low HIL, with nearly half lacking confidence in accessing coverage, while Tipirneni et al. (2018) showed that lower literacy predicted greater cost-related avoidance of both preventive and non-preventive services. Self-efficacy, the confidence element of HIL, was found to moderate healthcare use among students (James et al., 2020), and qualitative work by Kakar et al. (2022) confirmed that knowledge, experience, and living conditions together shape access decisions. In India, a systematic review of 28 studies by Thakur et al. (2023) found knowledge of health insurance varied from 19.10% in Delhi to 89.27% in Kerala, and Paul and Sarkar (2023) identified insurance knowledge as a key driver of purchase decisions among middle-income households in West Bengal. On the supply side, service quality, encompassing responsiveness, claims efficiency, and hospital network access, shapes customer

satisfaction and determines whether policyholders remain engaged with their coverage (Holst et al., 2023). People whose insurance facilitates access to care develop more grounded assessments of care quality, and HIL confidence has been associated with lower financial toxicity (Lee et al., 2023; Adepoju et al., 2019). At the outcome level, financial risk protection tends to materialise before clinical health improvement, since behavioural changes, more preventive service use, timely treatment-seeking, and treatment adherence, take time to translate into health gains. West Bengal adds a further layer of difficulty: Hossain and Maji (2021) found that West Bengalis score low on financial literacy, and since financial literacy is an antecedent of HIL (O'Connor and Kabadayi, 2020), this pre-existing deficit compounds the insurance literacy challenge in the study districts. What the existing literature does not provide is an integrated test of the full HIL–utilisation–service quality–satisfaction–outcomes chain within a single geographically specific dataset. Studies from marginalised districts in India that combine ethnic diversity, tea garden economies, and limited healthcare infrastructure are largely absent. Most studies also test one pair of variables at a time. This study addresses both gaps by testing four linked hypotheses within a single sample drawn from Darjeeling and Jalpaiguri, using data collected directly from policyholders in these districts.

2. Research Methodology

2.1 Study Area

The study was carried out in the Darjeeling and Jalpaiguri districts of West Bengal. Darjeeling is the northernmost district of the Jalpaiguri Division, bordered by Sikkim, Nepal, Bhutan, and Jalpaiguri, a location that brings together diverse cultures and geographies. The two districts were selected because they represent different social and economic conditions while sharing common barriers: Darjeeling's terrain isolates many villages from insurance services, and both districts face challenges of cost, low awareness, and limited healthcare availability.

2.2 Research Design

This study uses a descriptive cross-sectional design. The aim was to describe existing patterns and associations among HIL, service quality, and health outcomes without manipulating any variable. A structured questionnaire served as the primary data collection instrument.

2.3 Population, Sample, and Sampling Method

The target population comprised two groups: employees of health insurance companies, including sales staff, customer service representatives, and agents, and insurance customers, both insured and uninsured, residing in the two districts. Including both groups allowed this study to capture perspectives from both providers and consumers of health insurance. The study sought to include a mix of education levels, income brackets, age groups, genders, and urban and rural locations. The final sample comprised 470 respondents: 277 from Darjeeling (58.9%) and 193 from Jalpaiguri (41.1%). Of these, 367 were insured (78.1%) and 103 were uninsured (21.9%). Analyses involving insurance-specific outcomes were run on the insured sub-sample ($n = 367$).

2.4 Measurement Instrument and Composite Indices

Six constructs were measured using Likert-scale items (1 = Strongly Disagree / Very Low to 5 = Strongly Agree / Very High). For each respondent, a composite index was calculated by averaging valid responses across the relevant items. Descriptive statistics for each index are as follows:

- (i) Health Insurance Literacy Index (HILI): 7 items, understanding key terms (premium, deductible, co-pay), awareness of plan types, knowledge of benefits, familiarity with exclusions, ability to compare plans, understanding of basic terminology, and awareness of preventive care coverage (Mean = 3.74; SD = 0.94; Median = 3.84).
- (ii) Utilisation of Health Services Index (UHSD): 5 items, use of preventive services, frequency of healthcare visits, insurance usage during visits,

insurance-enabled access to care, and perceived ease of access (Mean = 3.49; SD = 0.84; Median = 3.50).

(iii) Service Quality Index (SQI): 6 items, customer service responsiveness, speed of assistance, staff proactiveness, hospital network adequacy, and claims support efficacy (Mean = 3.96; SD = 0.85; Median = 3.90).

(iv) Customer Satisfaction Index (CSI): 3 items, overall satisfaction with insurer services, whether the insurer met expectations, and general contentment with insurance interactions (Mean = 3.82; SD = 0.84; Median = 3.88).

(v) Perceived Quality of Health Services Index (PQHSI): 6 items, general service quality, medical equipment adequacy, waiting times, trust in providers, and care responsiveness (Mean = 3.72; SD = 0.79; Median = 3.72; Cronbach's α = 0.95).

(vi) Overall Health Outcomes Index (OHOI): 2 items, perceived improvement in health and perceived reduction in financial burden from medical costs (Mean = 3.78; SD = 0.986; Median = 3.90; Cronbach's α = 0.80).

Reliability analysis returned Cronbach's α = 0.95 for PQHSI (excellent) and α = 0.80 for both UHSI and OHOI (good). Alpha could not be computed for HILI, SQI, and CSI because several items in these scales applied only to insured respondents, producing too many missing values for a stable estimate. All three indices nonetheless showed consistent, theoretically expected associations with other constructs.

2.5 Hypotheses

Four hypotheses were drawn from the conceptual framework:

H1: Health insurance literacy has a significant influence on health services utilisation in Darjeeling and Jalpaiguri districts.

H2: Service quality has a significant influence on customer satisfaction with health insurance in Darjeeling and Jalpaiguri districts.

H3: There is a significant correlation between health insurance literacy and perceived quality of health services in these districts.

H4: There is a significant correlation between health insurance literacy and overall health outcomes in these districts.

2.6 Statistical Analysis

Data were analysed using Microsoft Excel and JASP. The analysis proceeded in three stages. First, descriptive statistics, means, standard deviations, medians, and frequency distributions, were calculated for all variables. Second, each composite index was grouped into three ordinal levels: Low (≤ 2.5), Moderate (2.6–3.5), and High (> 3.5). Pearson chi-square tests with Cramér's V were used to assess associations at this categorical level. Third, Spearman's rank correlation (ρ) was used to examine the direction and strength of relationships between index scores. Spearman's rho was selected because the indices are based on ordinal Likert items and do not follow a normal distribution. Group comparisons used independent samples t-tests (insured vs. uninsured) and one-way ANOVA with Tukey HSD post-hoc tests across age, education, and income groups. The significance level was set at α = 0.05 throughout.

3. Results

3.1 Respondent Profile

Of the 470 respondents, 81.5% (n = 383) were male and 18.5% (n = 87) were female. The age distribution was concentrated in the 38–47 years bracket. Most respondents held graduate or postgraduate qualifications; those with diploma-level or lower education were underrepresented, consistent with the purposive sampling approach. Monthly incomes were concentrated in the ₹50,001–₹75,000 and above ₹75,000 brackets, with a smaller proportion earning below ₹25,000. Table 1 summarises the respondent profile.

Table 1: Respondent Profile (N = 470)

Variable	Category	n	%
District	Darjeeling	277	58.9%
	Jalpaiguri	193	41.1%
Gender	Male	383	81.5%
	Female	87	18.5%
Insurance status	Insured	367	78.1%
	Uninsured	103	21.9%
Age group	Predominantly 38–47 years	—	—
Education	Graduate / Postgraduate majority	—	—
Monthly income	₹50,001–₹75,000+ dominant	—	—

3.2 Descriptive Statistics of Composite Indices

Mean scores for all six indices fell between 3.49 and 3.96, indicating moderate to positive

engagement across constructs. Standard deviations ranged from 0.79 to 0.986, showing meaningful variation among respondents. Table 2 gives full descriptive statistics.

Table 2: Descriptive Statistics, Composite Indices

Index	n	Mean	SD	Median	Min–Max
Health Insurance Literacy Index (HILI)	470	3.74	0.94	3.84	1.00–5.00
Utilisation of Health Services Index (UHSI)	367	3.49	0.84	3.50	1.00–5.00
Service Quality Index (SQI)	367	3.96	0.85	3.90	1.00–5.00
Customer Satisfaction Index (CSI)	367	3.82	0.84	3.88	1.00–5.00
Perceived Quality of Health Services (PQHSI)	367	3.72	0.79	3.72	1.00–5.00
Overall Health Outcomes Index (OHOI)	367	3.78	0.986	3.90	1.00–5.00

3.3 H1, Health Insurance Literacy and Service Utilisation

Table 3 shows the cross-tabulation of HILI and UHSI categories. Among the 239 high-literacy

respondents, 135 (56.5%) also fell in the high utilisation category. Among the 32 low-literacy respondents, none reached high utilisation.

Table 3: Cross-Tabulation, HILI × UHSI (n = 367)

Literacy	Low Utilisation	Moderate Utilisation	High Utilisation	Row Total
Low	16	16	0	32
Moderate	24	60	12	96
High	16	88	135	239
Column Total	56	164	147	367

Chi-square test: $\chi^2(4) = 100.28$, $p < 0.000001$, Cramér's $V = 0.37$. Spearman's correlation: $\rho = 0.49$, $p < 0.001$. Table 4 summarises these results. H1 is supported.

Table 4: Test Results, H1 (n = 367)

1	Statistic	df	p-value	Effect / Interpretation
Pearson Chi-Square	$\chi^2 = 100.28$	4	< 0.000001	Cramér's $V = 0.37$ (moderate-to-strong)
Spearman's Correlation	$\rho = 0.49$	—	< 0.001	Moderate positive

3.4 H2, Service Quality and Customer Satisfaction

The cross-tabulation in Table 5 shows a near-perfect alignment. All 251 high-SQI respondents

also reported high satisfaction. Low satisfaction was almost entirely confined to those with low service quality ratings.

Table 5: Cross-Tabulation, SQI × CSI (n = 367)

Service Quality	Low Satisfaction	Moderate Satisfaction	High Satisfaction	Row Total
Low	16	4	0	20
Moderate	8	76	12	96
High	0	0	251	251
Column Total	24	80	263	367

Chi-square: $\chi^2(4) = 470.48$, $p < 0.000001$, Cramér's $V = 0.80$. Spearman's correlation: $\rho = 0.88$, $p < 0.001$. Table 6 summarises the results. H2 is supported.

Table 6: Test Results, H2 (n = 367)

Test	Statistic	df	p-value	Effect / Interpretation
Pearson Chi-Square	$\chi^2 = 470.48$	4	< 0.000001	Cramér's $V = 0.80$ (very strong)
Spearman's Correlation	$\rho = 0.88$	—	< 0.001	Very strong positive

3.5 H3, Health Insurance Literacy and Perceived Quality of Care

Spearman's correlation between HILI and PQHSI was $\rho = 0.46$, $p < 0.001$. Respondents with higher literacy tended to rate the quality of care they received more positively, including provider trust, hospital infrastructure, waiting

times, and service responsiveness. Respondents from Darjeeling showed a slightly closer alignment between literacy and quality perceptions than those in Jalpaiguri, consistent with comparatively higher education levels and easier access to information in Darjeeling. Table 7 presents the correlation results. H3 is supported.

Table 7: Spearman's Correlation, HILI with PQHSI and OHOI (n = 367)

Hypothesis	Variable Pair	Spearman's ρ	p-value	Interpretation
H3	HILI $\times$ PQHSI	0.46	< 0.001	Moderate positive
H4	HILI $\times$ OHOI	0.42	< 0.001	Moderate positive

3.6 H4, Health Insurance Literacy and Health Outcomes

Among high-literacy respondents, 159 of 239 (66.5%) recorded high health outcomes; among

low-literacy respondents, none did. Table 8 presents the full cross-tabulation. Spearman's correlation was $\rho = 0.42$, $p < 0.001$.

Table 8: Cross-Tabulation, HILI $\times$ OHOI (n = 367)

Literacy	Low Outcome	Moderate Outcome	High Outcome	Row Total
Low	20	12	0	32
Moderate	16	56	24	96
High	8	72	159	239
Column Total	44	140	183	367

The item-level breakdown shows that the association was stronger for reduction in financial burden (Mean = 3.91) than for improvement in overall health (Mean = 3.67). This reflects the indirect and time-dependent nature of health improvement: literacy reduces financial exposure first, while clinical improvement follows more gradually as policyholders begin using preventive services, seeking care on time, and adhering to prescribed treatments. H4 is supported.

3.7 Item-Level Scores

Table 9 presents mean scores for individual HILI and UHSI items. Within the HILI, knowledge of benefits covered scored highest (3.98) and understanding basic insurance terminology scored lowest (3.39). Awareness of preventive care coverage was also low (3.49). Within the UHSI, insurance-enabled access to care was the strongest item (3.95), while preventive service use (3.30) and frequency of visits (3.29) were lower, suggesting that having insurance does not automatically change preventive health behaviour.

Table 9: Item-Wise Mean Scores, HILI and UHSI

Construct	Item	Mean
Health Insurance Literacy	Knowledge of benefits covered under policy	3.98
	Awareness of different plan types	3.90
	Understanding key terms (premium, deductible, co-pay)	3.88
	Familiarity with exclusions and limitations	3.85
	Confidence in comparing insurance plans	3.74
	Awareness of preventive care coverage	3.49
	Understanding basic insurance terminology	3.39
Health Service Utilisation	Insurance-enabled access to care	3.95
	Insurance usage during healthcare visits	3.49
	Use of preventive services	3.30
	Frequency of healthcare visits	3.29

Table 10 shows item scores for service quality and health outcomes. Customer service responsiveness was rated highest among SQI items (4.02), followed by hospital network

adequacy (3.95) and claims reimbursement efficiency (3.86). For health outcomes, financial burden reduction scored higher (3.91) than improvement in overall health (3.67).

Table 10: Item-Wise Mean Scores, SQI and OHOI

Construct	Item	Mean
Service Quality	Customer service responsiveness	4.02
	Hospital network adequacy	3.95
	Claim reimbursement efficiency	3.86
Health Outcomes	Reduction in financial burden	3.91

Construct	Item	Mean
	Improvement in overall health	3.67
Perceived Health Quality	Overall satisfaction with services	3.90
	Infrastructure and equipment adequacy	3.68
	Trust in healthcare providers	3.67

3.8 Group Comparisons

3.8.1 Insured vs. Uninsured, t-Test

Insured respondents scored higher than uninsured on all three indices tested (Table 11).

The largest gap was in literacy ($t = 4.87$, $df = 367$, $p < 0.001$), indicating that insurance ownership and literacy reinforce each other.

Table 11: Independent Samples t-Test, Insured vs. Uninsured

Variable	Insured	Uninsured	t-value	df	p-value
HILI	Higher	Lower	4.87	367	< 0.001
UHSI	Higher	Lower	4.12	367	< 0.001
OHOI	Higher	Lower	2.36	367	0.020

3.8.2 ANOVA, Education, Age, and Income

Education produced the largest between-group difference in literacy ($F = 8.46$, $df = 4, 362$; $p < 0.001$). Income differentiated all three outcome indices. Age group differences were significant for literacy and utilisation but not for health outcomes, suggesting age affects engagement

with insurance systems but not how people ultimately perceive their health. Service quality perceptions did not differ by education level ($F = 1.21$, $p = 0.310$), indicating that the quality of insurer operations affects policyholders regardless of educational background. Table 12 presents the full ANOVA results.

Table 12: One-Way ANOVA, Socio-Demographic Comparisons

Grouping Variable	Dependent Variable	F-value	df	p-value
Education	HILI	8.46	(4, 362)	< 0.001
Education	UHSI	3.67	(4, 362)	0.008
Education	SQI	1.21	(4, 362)	0.310 (n.s.)
Age Group	HILI	3.21	(3, 363)	0.027
Age Group	UHSI	2.94	(3, 363)	0.038
Age Group	OHOI	1.12	(3, 363)	0.345 (n.s.)
Income	HILI	3.98	(4, 362)	0.005
Income	UHSI	3.44	(4, 362)	0.012
Income	OHOI	2.89	(4, 362)	0.027

Tukey HSD post-hoc comparisons identified three key contrasts: on literacy, graduate-and-above respondents differed from those with primary education; on utilisation, the gap was between middle-income and low-income groups; on health outcomes, the difference was between high-income and low-income respondents.

3.9 Summary of Hypothesis Tests

Table 13: Hypothesis Testing Summary

Hypothesis	Tests Used	Key Statistics	P-value	Effect Size	Decision
H1: HIL → Service Utilisation	χ^2 , Spearman	$\chi^2=100.28$; $\rho=0.49$	< 0.001	V = 0.37	Supported
H2: Service Quality → Satisfaction	χ^2 , Spearman	$\chi^2=470.48$; $\rho=0.88$	< 0.001	V = 0.80	Supported
H3: HIL → Perceived Care Quality	Spearman	$\rho = 0.46$	< 0.001	Moderate positive	Supported
H4: HIL → Health Outcomes	χ^2 , Spearman	$\rho = 0.42$	< 0.001	Moderate positive	Supported

4. Discussion

4.1 Literacy and Utilisation (H1)

The positive association between HIL and healthcare utilisation ($\rho = 0.49$; Cramér's V = 0.37) fits with what Yagi et al. (2022) found in their systematic review, that low HIL is linked to poor and wasteful use of health systems, and with Tipirneni et al. (2018), who found that lower literacy predicted greater avoidance of both preventive and non-preventive care. In North Bengal, geographic isolation, low per capita incomes, and limited information about insurance value create overlapping barriers to utilisation that make this relationship especially pronounced.

What stands out in the data is that none of the 32 low-literacy respondents reached the high utilisation category, while more than half of high-literacy respondents did. This pattern points to literacy as a behavioural activation mechanism: understanding entitlements, knowing how to access care, and managing claims are the practical steps that translate a policy into actual health services. The two weakest HILI items, basic insurance terminology (Mean = 3.39) and preventive care coverage awareness (3.49), mark the specific knowledge gaps where intervention would have the most impact.

James et al. (2020) found that the confidence element of HIL moderated students' healthcare use, and Kakar et al. (2022) confirmed that knowledge, experience, and living conditions together shape healthcare access decisions. Bhojak and Momin (2024) further showed that attitude acts as a critical mediating element in insurance coverage decisions, and Mamun et al. (2021) found from Malaysia that insurance knowledge, perceived benefits, and social influence all positively affected the intention to obtain health insurance. Both findings suggest that improving HIL in these districts requires not only knowledge-based education but also confidence-building. Community health workers and local NGOs translating insurance content into local dialects would address both the language barrier and the confidence gap, as the district-level evidence in this study supports.

4.2 Service Quality and Satisfaction (H2)

The service quality–satisfaction association ($\rho = 0.88$; Cramér's V = 0.80) is the strongest finding in this study. Every one of the 251 high-SQI respondents also fell in the high satisfaction category. This indicates that satisfaction with health insurance is not simply about having coverage; it depends on how that coverage is delivered, through claim settlement efficiency,

hospital network access, and customer responsiveness.

Holst et al. (2023) found that people with low HIL were less likely to switch insurers even when dissatisfied, suggesting that poor service quality and low literacy together can trap policyholders in unsuitable plans. In the Darjeeling and Jalpaiguri context, claims reimbursement efficiency scored lowest among the SQI items (Mean = 3.86), and bureaucratic delays and slow claims processing have been identified as ongoing problems in this region. Respondents from Darjeeling were slightly more satisfied than those in Jalpaiguri, consistent with better service responsiveness and healthcare accessibility in Darjeeling.

The ANOVA result that service quality perceptions did not differ by education level ($F = 1.21$, $p = 0.310$) is also notable. Literacy and utilisation are shaped by individual characteristics, but service quality is experienced similarly across education groups. How an insurer handles claims and responds to queries is an operational matter that affects all policyholders equally.

4.3 Literacy and Perceived Quality of Care (H3)

The correlation between HILI and PQHSI ($\rho = 0.46$, $p < 0.001$) is consistent with how people learn about healthcare through direct experience. When individuals understand their coverage and use services more, they form concrete views about care quality rather than relying on assumptions. Adepoju et al. (2019) found that insurance knowledge predicted how well people managed and used their health benefits; Adegboyega et al. (2020) similarly established that health literacy and HIL both require comprehension of health services and the ability to act on that information; the present results add that this knowledge also shapes how they evaluate the care received.

O'Connor and Kabadayi (2020) established that HIL is related to financial literacy, cognitive style, and locus of control, and that low-HIL individuals have more difficulty with healthcare

decisions. In this study, respondents from Darjeeling showed a slightly stronger literacy–quality perception link than those in Jalpaiguri, a gap consistent with higher education levels and better information access in Darjeeling.

4.4 Literacy and Health Outcomes (H4)

HIL was positively associated with health outcomes ($\rho = 0.42$, $p < 0.001$). The item-level data provide a more specific picture: reduction in financial burden (Mean = 3.91) was rated higher than improvement in overall health (Mean = 3.67). This reflects the time-dependent nature of health change, literacy reduces financial exposure first, and clinical improvement follows more gradually through sustained behaviour changes, including greater preventive care use, timely treatment-seeking, and adherence to prescribed treatments.

Lee et al. (2023) found that HIL confidence was directly associated with lower financial toxicity in cancer patients, which in turn supported healthcare engagement, a pattern consistent with Williams et al. (2020), who found that inadequate insurance literacy among cancer patients was linked to financial hardship and treatment-related borrowing. Ghimire et al. (2023) found from Nepal that older adults and those with chronic illness were the most consistent users of insured services, reinforcing that health benefits from insurance literacy accumulate over time.

Given that 59.6% of India's health expenditure is out-of-pocket (NHA, 2018), the finding that literacy most strongly reduces perceived financial burden is directly relevant. In both districts, low per capita incomes and modest willingness to pay for private insurance have been documented in the broader regional literature. For these policyholders, financial risk protection is not a secondary benefit, it is the most immediate and concrete one.

4.5 The Role of Education and Income

Education was the strongest socio-demographic predictor of literacy ($F = 8.46$, $p < 0.001$). This is consistent with Hossain and Maji (2021), who found that West Bengalis have low financial literacy, and since financial literacy feeds into HIL

(O'Connor and Kabadayi, 2020), this pre-existing gap compounds the insurance literacy problem in these districts. Abdollahipour et al. (2020) similarly found that gender, age, education level, and income were all significantly correlated with HIL among insured individuals, reinforcing that socio-demographic factors are systematic moderators of literacy levels.

Income differentiated all three outcome indices. Higher-income respondents were better at converting insurance awareness into actual service use and financial protection. Post-hoc tests showed that the utilisation gap was most pronounced between middle-income and low-income groups, and the health outcomes gap between high-income and low-income groups. Low-income policyholders gain least from literacy they nominally possess, the structural barriers they face limit what literacy alone can do.

4.6 The Sequential Model

Across all four hypotheses, the data support the following sequential chain:

Health Insurance Literacy → Health Service Utilisation → Perceived Service Quality → Customer Satisfaction → Overall Health Outcomes

Each link is statistically significant and directionally consistent. Two mechanisms are evident in the data: a behavioural activation mechanism (HIL → utilisation), where literacy removes cognitive and procedural barriers to care; and a service experience mechanism (service quality → satisfaction → outcomes), where insurer performance determines whether coverage produces tangible benefit. Education and income moderate the first mechanism; insurer operations drive the second. The model holds across demographic sub-groups, not only for a specific segment of the sample.

5. Conclusions, Implications, and Limitations

5.1 Conclusions

This study tests the HIL–service–satisfaction–outcome chain in Darjeeling and Jalpaiguri, two districts that have been largely absent from the

HIL literature despite their relevance to Indian health policy. All four hypotheses were supported. Service quality was the most powerful predictor in the model (Cramér's $V = 0.80$). HIL drives the chain from the front, without adequate literacy, policyholders cannot convert coverage into utilisation. The most immediate health outcome of literacy is financial risk protection; clinical improvement accumulates later through changed healthcare behaviour.

5.2 Implications

For IRDAI and state health departments: HIL programmes delivered through community health workers and local NGOs, in local dialects, should be built into the PM-JAY implementation framework in these districts. The two areas that need most attention, based on the lowest item scores in this study, are basic insurance terminology and awareness of preventive care benefits.

For insurance companies: The near-total overlap between high service quality and high satisfaction makes claims processing efficiency the most important operational target. At Mean = 3.86, it is the lowest-rated SQI item in this study, and slow claims handling has been identified as an existing problem in both districts. Addressing this would have a direct and measurable effect on satisfaction.

For district planners in Jalpaiguri: The weaker literacy–quality perception link in Jalpaiguri compared to Darjeeling, consistent with lower education levels and less information access in the region, points to general educational investment as an upstream driver of health insurance engagement.

For financial literacy programmes: Given that West Bengalis have low financial literacy (Hossain and Maji, 2021) and that financial literacy is an antecedent of HIL (O'Connor and Kabadayi, 2020), financial literacy programmes in the region have downstream benefits for health insurance engagement that are not often accounted for in programme design.

5.3 Limitations

A few limitations should be noted. The purposive sampling approach limits how far findings can be generalised. The sample is also predominantly male (81.5%) and relatively well-educated, so literacy scores may be higher than those of the general population in these districts. Future studies should use probability-based sampling and deliberately include more female and less-educated respondents. The cross-sectional design means the study describes associations rather than confirming causal order; a longitudinal

design would be needed to establish the direction of effects in the sequential model. Cronbach's alpha was unavailable for three indices due to missing responses on conditional items, a known limitation of mixed-mode surveys with condition-specific questions. Finally, all outcomes are self-reported; incorporating actual claims records or health system data in future studies would strengthen the evidence base. Structural equation modelling would also allow the mediation pathways in the model to be tested more formally.

References

- Abdollahipour, F., Rahimifroshani, A., & Jaafariipooyan, E. (2020). Insurance literacy and the affecting factors related to the insured of the health insurance organization in Ilam. *Iranian Journal of Health Insurance*, 3(3), 210–221.
- Adegboyega, A., Nkwonta, C., & Edward, J. (2020). Health insurance literacy among international college students: A qualitative analysis. *Journal of International Students*, 10(1), 50–68.
- Adepoju, O., Mask, A., & McLeod, A. (2019). Factors associated with health insurance literacy: Proficiency in finding, selecting, and making appropriate decisions. *Journal of Healthcare Management*, 64(2), 79–89.
- Bardy, T. L. (2023). The Swiss Health Insurance Literacy Measure (HILM-CH): Measurement properties and cross-cultural validation. *BMC Health Services Research*, 23(1), 85.
- Bardy, T. L. (2024). Assessing health insurance literacy in Switzerland: First results from a measurement tool. *European Journal of Public Health*, 34(2), 237–243.
- Bhojak, N., & Momin, M. (2024). Planned behavior theory: Exploring health risk, insurance literacy, and infrastructure effects. *International Journal of Healthcare Management*, 1–11.
- Edward, J., Wiggins, A., Young, M. H., & Rayens, M. K. (2019). Significant disparities exist in consumer health insurance literacy: Implications for health care reform. *HLRP: Health Literacy Research and Practice*, 3(4), e250–e258.
- Ghimire, S., Ghimire, S., Khanal, P., Sagtani, R. A., & Paudel, S. (2023). Factors affecting health insurance utilization among insured population: Evidence from health insurance program of Bhaktapur district of Nepal. *BMC Health Services Research*, 23(1), 159.
- Holst, L., Brabers, A. E. M., Rademakers, J. J. D. J. M., & de Jong, J. D. (2023). The role of health insurance literacy in the process and outcomes of choosing a health insurance policy in the Netherlands. *BMC Health Services Research*, 23(1), 1002.
- Hossain, M., & Maji, S. K. (2021). Antecedents of financial literacy: Evidences from West Bengal, India. *Business Insight: Journal of the Department of Commerce, BU*, 8.
- IRDA. (2021). Annual report 2020–21. Insurance Regulatory and Development Authority of India. <https://irdai.gov.in>
- IRDAI. (2023). Innovations and technological adoption in the insurance sector. IRDAI Publications. <https://irdai.gov.in>
- James, T. G., Sullivan, M. K., Dumeny, L., Lindsey, K., Cheong, J., & Nicolette, G. (2020). Health insurance literacy and health service utilization among college students. *Journal of American College Health*, 68(2), 200–206.
- Kakar, R., Combs, R. M., Hoepf Young, M., Ali, N., & Muvuka, B. (2022). Health insurance literacy perceptions and the needs of a working-class community. *HLRP: Health Literacy Research and Practice*, 6(2), e62–e69.

- Lee, M. K., Durani, U., Zhang, N., Hilal, T., Warsame, R. M., Borah, B., et al. (2023). Relationships among health insurance literacy, financial toxicity, and sociodemographic factors in patients with cancer. *JCO Oncology Practice*, 19(10), 888–898.
- Mamun, A. A., Rahman, M. K., Munikrishnan, U. T., & Permarupan, P. Y. (2021). Predicting the intention and purchase of health insurance among Malaysian working adults. *SAGE Open*, 11(4), 21582440211061373.
- NHA. (2018). National health accounts estimates for India 2015–16. Ministry of Health and Family Welfare, Government of India.
- O'Connor, G. E., & Kabadayi, S. (2020). Examining antecedents of health insurance literacy: The role of locus of control, cognitive style, and financial knowledge. *Journal of Consumer Affairs*, 54(1), 227–260.
- Paez, K. A., Mallery, C. J., Noel, H., Pugliese, C., McSorley, V. E., Lucado, J. L., & Ganachari, D. (2014). Development of the Health Insurance Literacy Measure (HILM): Conceptualizing and measuring consumer ability to choose and use private health insurance. *Journal of Health Communication*, 19(sup2), 225–239.
- Paul, S., & Sarkar, S. (2023). Factors affecting the purchase decision of private health insurance policy by the middle-income group in West Bengal: A logistic regression approach. *The Journal of Insurance Institute of India*, 10.
- Sharma, N. (2018). IRDAI and its impact on private sector insurance in India. *Insurance Studies Review*, 25(4), 102–120.
- Thakur, R., Shannawaz, M., & Saeed, S. (2023). An analysis of knowledge, attitude, and utilization of health insurance in India: A systematic review. *International Journal of Healthcare Management*, 1–14.
- Tipirneni, R., Politi, M. C., Kullgren, J. T., Kieffer, E. C., Goold, S. D., & Scherer, A. M. (2018). Association between health insurance literacy and avoidance of health care services owing to cost. *JAMA Network Open*, 1(7), e184796.
- Williams, C. P., Pisu, M., Azuero, A., Kenzik, K. M., Nipp, R. D., Aswani, M. S., et al. (2020). Health insurance literacy and financial hardship in women living with metastatic breast cancer. *JCO Oncology Practice*, 16(6), e529–e537.
- Yagi, B. F., Luster, J. E., Scherer, A. M., Farron, M. R., Smith, J. E., & Tipirneni, R. (2022). Association of health insurance literacy with health care utilization: A systematic review. *Journal of General Internal Medicine*, 37(7), 1786–1800.