

CHALLENGES OF RUBBER PLANTATION WORKERS IN KERALA: A GROUND-LEVEL PERSPECTIVE ON FINANCIAL HARDSHIPS AND QUALITY OF LIFE

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Abstract

This study explores the financial challenges and quality of life of rubber plantation workers in Kerala, focusing on systemic barriers impacting their economic stability and overall well-being. The analysis reveals persistent issues such as insufficient wages, dependency on high-interest loans, and rising education and healthcare costs. These challenges exacerbate cycles of debt and poverty, leading to substandard living conditions and psychological stress. Regression analysis underscores education costs and loan repayment difficulties as critical factors negatively affecting workers' quality of life. This research advocates targeted interventions, including debt restructuring, subsidized education, healthcare programs, and improved wages, aiming to mitigate hardships and enhance socio-economic conditions. The findings emphasize the need for collaborative policies to ensure sustainable livelihoods for this vulnerable workforce.

Keywords:- Financial Challenges, Socio- Economic Conditions, Quality of Life, Rubber Plantation Workers, Support.

*R*ubber plantation workers in Kerala are vital to India's rubber production but face severe financial hardships, job insecurity, and limited access to basic resources. Despite their essential role, they remain at the bottom of the economic hierarchy,

with limited influence over their working conditions and financial prospects. Their struggles are rooted in systemic inequalities within the rubber industry, where wages often fail to meet the rising costs of living. As a result, workers are forced to rely on loans to cover basic needs such as food,

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healthcare, and education, leading to cycles of debt and financial instability.

Additionally, global price fluctuations in rubber exacerbate their vulnerability, as plantation owners reduce wages or delay payments during market instability. Beyond financial challenges, workers' quality of life is compromised by poor housing, lack of access to clean water, and inadequate healthcare. Education costs also force many children to drop out or work to support the family (Ramana et al., 2024). Workers face occupational health risks without adequate medical support, and the psychological toll of living under such conditions worsens their mental health (Herawaty et al., 2024). This study focuses on the financial and socio-economic struggles of rubber plantation workers in Kerala, highlighting the systemic barriers that perpetuate their poverty. It emphasizes the need for policy interventions to address these issues, advocating for debt restructuring, improved wages, and targeted social programs to enhance workers' quality of life. Addressing these challenges is both an economic necessity and a matter of social justice, ensuring workers receive recognition and support for their contributions to the rubber industry.

2. Review of Literature

The financial challenges and quality of life of rubber plantation workers have not been adequately addressed in academic discourse, despite their critical role in the agricultural economy. A review of existing literature reveals a fragmented understanding of the socio-economic struggles faced by these workers, highlighting the need for a more focused

and detailed exploration of their plight. The rubber industry plays a significant role in the economy of Kerala, India, with the state accounting for over 90% of the country's natural rubber production. However, the plantation workers who are responsible for the cultivation and harvesting of rubber face a myriad of challenges that significantly impact their financial stability and overall quality of life (Huang et al., 2022). The floods of 2018 severely disrupted the plantation sector in Kerala, reducing yields and exacerbating financial strain on workers and farmers. Financial aid has been inadequate, leaving many in a cycle of poverty (Sabu & Greeshma, 2023). Rubber plantation workers frequently suffer from musculoskeletal disorders due to repetitive physical tasks. Studies conducted in 2024 reveal that chronic pain in the lower back and knees is prevalent among workers, underlining the urgent need for ergonomic interventions (Sharma & Thulaseedharan, 2022). A study on the socio-economic conditions of rubber farmers in Mokokchung District found that price instability and lack of market access were major constraints. While Kerala remains a leader in production, similar patterns of economic struggles are noted, with insufficient government support and training posing challenges (Longkumer & Sharma, 2023). A recent study emphasized the urgent need for sustainable livelihood strategies in the plantation sector. Strategic revamping of rubber production, through subsidized inputs and exploration of foreign markets, was suggested to ensure economic stability for workers and smallholders (Achoja & Akparobi, 2023).

3. Objectives of the Study

The study is done with the following specific objectives:

- To identify the key financial challenges faced by the rubber plantation workers in Kerala.
- To evaluate the severity of these financial difficulties and their relative impact on the lives of rubber plantation workers in Kerala.

4. Hypotheses

H1: There are no significant differences in the severity levels of the various financial problems faced by the rubber plantation workers in Kerala.

H2: There is no significant relationship between financial challenges and the quality of life of the rubber plantation workers in Kerala.

5. Database and Methodology

Both primary and secondary data sources were used for carrying out the Study. Primary data were collected with the help of a structured questionnaire. While, Secondary data obtained from periodicals, journals, magazines, newspapers, websites, books and other reference material. Purposive sampling, a type of non-probability sampling, was used to select rubber plantation workers from the available population in Kerala. A total of 384 respondents participated in the study, representing a diverse group of workers facing financial and social challenges. Descriptive statistics, including mean and standard deviation, were used to assess the severity of financial difficulties. Regression analysis was

performed to examine the relationship between financial challenges (independent variables) and quality of life (dependent variable). Z-scores were also calculated to standardize the severity of financial difficulties relative to the overall mean.

6. Results and Discussions

- **To identify the key financial challenges faced by the rubber plantation workers in Kerala.**

Hypotheses

Null Hypothesis (H0)

There is no significant difference in the severity levels of the various financial problems faced by the rubber plantation workers in Kerala.

Alternative Hypothesis (H1)

There is a significant difference in the severity levels of the various financial problems faced by the rubber plantation workers in Kerala.

The descriptive analysis of data from 384 rubber plantation workers reveals that education costs for children are the most severe financial challenge, followed by dependence on high-interest loans and loan repayment difficulties (Table 1). These issues have the highest mean scores, indicating widespread concern among respondents. Health care costs and daily expense management also contribute notably to financial strain, while forced reduction in consumption, though the least severe, shows varied impact across individuals. Overall, the results highlight multiple, overlapping financial burdens that call for comprehensive and targeted support measures.

Table 1
Descriptive Analysis of Constructs

Sl. No.	Variables	Mean	SD
1	Loan Repayment Difficulties	4.18	0.82
2	Daily Expense Management (Wage Insufficiency)	3.75	0.88
3	Education Costs for Children	4.47	0.71
4	Health Care Costs	3.97	0.84
5	Forced Reduction in Consumption	3.53	0.98
6	Dependence on High-Interest Loans	4.28	0.76

Source: Primary Data

The data analysis provides insights into the severity of financial problems faced by rubber plantation workers in Kerala, using Z-scores and P-values to evaluate differences (Table 2). The Z-scores reflect the relative severity of each construct, while the P-values indicate whether these differences are statistically significant. The Z-score analysis of financial issues faced by rubber plantation workers in Kerala shows that while education costs for children and dependence on high-interest loans appear to be the most severe problems, none of the factors analyzed—including loan repayment difficulties, healthcare costs, and daily expense management—are statistically significant, as all P-values exceed 0.05. This indicates that differences in the

severity of financial problems are not substantial enough to reject the null hypothesis. Overall, the financial challenges are relatively similar in impact, highlighting the need for a holistic policy approach to address the multiple, interconnected issues affecting workers' livelihoods.

- **To evaluate the severity of these financial difficulties and their relative impact on the lives of rubber plantation workers in Kerala.**

Hypotheses

Null Hypothesis (H0)

There is no significant relationship between financial challenges and the

Table 2
Z Score Table

Sl. No.	Variables	Mean	SD	Z - Score	P Value
1	Loan Repayment Difficulties	4.18	0.82	+0.43	0.682
2	Daily Expense Management (Wage Insufficiency)	3.75	0.88	-0.80	0.480
3	Education Costs for Children	4.47	0.71	+1.26	0.260
4	Health Care Costs	3.97	0.84	-0.17	0.860
5	Forced Reduction in Consumption	3.53	0.98	-1.43	0.200
6	Dependence on High-Interest Loans	4.28	0.76	+0.72	0.500

Source: Primary Data

quality of life of the rubber plantation workers in Kerala.

Alternative Hypothesis (H1)

There is significant relationship between financial challenges and the quality of life of the rubber plantation workers in Kerala.

Regression analysis can be used to determine the strength and nature of the relationship between financial challenges (independent variables) and the quality of life (dependent variable).

Methodology

Regression analysis was conducted using survey data from 384 respondents. The dependent variable was the self-reported quality of life score, measured on a scale of 1 (very poor) to 5 (excellent). The independent variables included:

1. Loan Repayment Difficulties
2. Daily Expense Management (Wage Insufficiency)
3. Education Costs for Children
4. Health Care Costs
5. Forced Reduction in Consumption
6. Dependence on High-Interest Loans

R^2 coefficient of determination 0.65 indicates that 65% of the variance in the quality-of-life scores can be explained by the independent variables included in the model (Table 3). Adjusted R^2 0.63 demonstrates a high explanatory power while accounting for the number of predictors. F-Statistic (Model Fit) 18.34 ($p < 0.001$) Confirms that the model is statistically significant.

The regression analysis highlights a significant relationship between financial challenges and the quality of life of rubber plantation workers in Kerala, supporting the alternative hypothesis (H1). The model is statistically significant, as indicated by an F-statistic of 18.34 ($p < 0.001$), with an R^2 value of 0.65, demonstrating that 65% of the variation in quality-of-life scores can be explained by financial challenges. The adjusted R^2 of 0.63 confirms the robustness of the model. Among the variables, education costs for children have the strongest negative impact on quality of life ($\beta = -0.421$, $p < 0.001$), followed by dependence on high-interest loans ($\beta = -0.338$, $p < 0.001$) and loan repayment difficulties ($\beta = -0.302$, $p < 0.001$). Daily expense management also significantly affects quality of life ($\beta = -0.195$, $p < 0.001$), while health care costs have a smaller but significant impact ($\beta = -0.125$, $p = 0.011$). Forced reduction in consumption, although marginally significant ($\beta = -0.085$, $p = 0.065$), has the least impact.

The negative coefficients for all variables indicate that financial challenges consistently reduce quality of life. These findings emphasize that education costs, high-interest loans, and loan repayment difficulties are the most critical issues, necessitating targeted interventions such as subsidized education programs, debt restructuring, and access to affordable credit to improve the financial stability and overall well-being of plantation workers.

7. Findings

- Education Costs emerged as the most significant financial challenge, with

Table 3
Regression Model Summary

Metric	Value
R ² (Coefficient of Determination)	0.65
Adjusted R ²	0.63
F-Statistic (Model Fit)	18.34
p-Value (Model Fit)	< 0.001

Source: Primary Data

Table 4
Regression Coefficients

Variables	Coefficient (β)	Standard Error	t-Value	p- Value	Significance
Loan Repayment Difficulties	-0.302	0.053	-5.7	<0.00 1	Highly significant
Daily Expense Management (Wage Insufficiency)	-0.195	0.047	-4.15	<0.00 1	Highly significant
Education Costs for Children	-0.421	0.06	-7.02	<0.00 1	Highly significant
Health Care Costs	-0.125	0.049	-2.55	0.011	Significant
Forced Reduction in Consumption	-0.085	0.046	-1.85	0.065	Marginally significant
Dependence on High-Interest Loans	-0.338	0.056	-6.04	<0.00 1	Highly significant

Source: Primary Data

the highest mean score of 4.47, followed by Dependence on High-Interest Loans (mean: 4.28) and Loan Repayment Difficulties (mean: 4.18).

- While Education Costs and Dependence on High-Interest Loans were perceived as more severe, the lack of statistical significance suggests that the financial challenges faced by workers are relatively comparable in severity.
- Regression analysis revealed a significant negative relationship between financial challenges and the quality of life of plantation workers.
- The model explained 65% of the variance in quality-of-life scores ($R^2 = 0.65$), with education costs having the most substantial negative impact ($\beta = -0.421$), followed by high-interest loans ($\beta = -0.338$) and loan repayment difficulties ($\beta = -0.302$).
- Healthcare Costs also had a significant impact on quality of life ($\beta = -0.125$), while Forced Reduction in Consumption was marginally significant ($\beta = -0.085$).
- Education Costs, High-Interest Loans, and Loan Repayment Difficulties were identified as the most pressing financial issues,

underscoring the need for targeted policy interventions such as subsidized education, debt restructuring, and access to affordable credit.

8. Suggestions

Based on the findings, addressing the financial challenges faced by rubber plantation workers in Kerala requires targeted policy interventions to improve their quality of life and financial stability. Plantation workers face severe financial challenges due to debt burdens, high-interest loans, and unstable incomes. Policies should prioritize debt restructuring through lower interest rates, extended repayment terms, and affordable credit schemes to reduce reliance on informal lenders. The high cost of children's education also impacts workers significantly; hence, subsidized education programs including scholarships and free supplies are essential. Inadequate wages further worsen financial instability—wage revisions aligned with inflation and additional benefits like health insurance and housing allowances are crucial. Accessible healthcare through subsidized services, mobile clinics, and preventive care can address both immediate and

long-term medical needs. Financial literacy programs can help workers better manage resources and access government welfare schemes. Finally, market stabilization measures like minimum support prices for rubber can protect wages from market volatility, ensuring greater economic security.

9. Conclusion

The study highlights the severe financial and socio-economic challenges faced by rubber plantation workers in Kerala, with key issues including low wages, high education and healthcare costs, and dependence on high-interest loans. Regression analysis identifies education costs, debt burden, and informal lending as the most critical factors affecting well-being. While aligning with existing research on agricultural workers, this study emphasizes the urgent need for targeted policies such as debt restructuring, subsidized education, improved wages, accessible healthcare, and financial literacy. A holistic, collaborative approach involving policymakers, plantation management, and social organizations is essential to ensure sustainable and equitable improvements in workers' livelihoods.

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