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Staffing Adequacy and Workload Distribution as Determinants of Healthcare Service Delivery Efficiency under the Ayushman Bharat Scheme

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ABSTRACT
The Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) is among the largest publicly funded health assurance schemes in the world, yet its implementation outcomes remain closely tied to the adequacy and utilisation of the healthcare workforce that delivers it. This paper reports an empirical, cross-sectional investigation into two foundational human resource determinants of scheme performance: staffing adequacy and workload distribution. Primary data were collected from 200 doctors, nurses, paramedical staff and administrators across public and private empanelled hospitals using a structured, pre-tested questionnaire, supplemented by semi-structured interviews and direct observation. Descriptive statistics, Pearson correlation and multiple linear regression were used to test the association between staffing (X_1) and workload (X_2) on the one hand, and employee performance (Y_1) and service delivery efficiency (Y_2) on the other, with facility type (public/private) treated as a moderating variable. Findings show that 40% of respondents rated overall staffing as inadequate, with the sharpest shortages reported for administrative staff (72.5%) and doctors (70%); half of the sample reported high workload and 65% reported burnout. Workload emerged as the strongest negative predictor of service delivery efficiency ($\beta = -0.48$, $p < 0.001$) and staffing the strongest positive structural predictor ($\beta = +0.44$, $p < 0.001$), with the overall model explaining 61% of variance ($R^2 = 0.61$, $F = 41.87$, $p < 0.001$). The paper concludes with targeted recommendations for staffing rationalisation and workload redistribution under the scheme.
Keywords: Ayushman Bharat; Healthcare Human Resources; Staffing Adequacy; Workload Distribution; Service Delivery Efficiency; Workforce Optimisation

1. INTRODUCTION

Launched by the Government of India in 2018, the Ayushman Bharat Scheme combines Health and Wellness Centres (HWCs) for comprehensive primary care with the Pradhan Mantri Jan Arogya Yojana (PM-JAY), which provides cashless secondary and tertiary hospitalisation cover of up to ₹5 lakh per family per year for economically vulnerable households (Lahariya, 2018; Kamath & Brand, 2023). While the scheme has substantially widened financial protection and healthcare access, its capacity to deliver on this promise is mediated by the availability and functioning of the human workforce doctors, nurses, paramedical staff and administrators who staff empanelled facilities (Zodpey, Negandhi, & Tiwari, 2021).

A growing body of evidence points to chronic shortages, skewed rural–urban distribution and rising administrative load among Indian healthcare workers as scheme coverage expands (Saxena, Godfrey, & Godfrey III, 2023). Because PM-JAY adds a substantial digital and documentation burden claim verification, e-card generation and beneficiary authentication to already stretched facilities, the twin questions of whether staffing levels are adequate and how the resulting workload is distributed and absorbed by the workforce assume particular policy relevance. This paper isolates these two variables for focused empirical scrutiny.

2. REVIEW OF LITERATURE

Zodpey, Negandhi, and Tiwari (2021) argue that India's shortfall of trained health human resources, combined with an inequitable rural–urban distribution, is among the principal structural constraints on health system performance, a conclusion echoed by Saxena, Godfrey, and Godfrey III (2023), who frame human resource shortages as both an operational and a strategic opportunity for reform. Jain et al. (2024) document how the introduction of an electronic human resource management system in Uttar Pradesh improved workforce data visibility but simultaneously added new administrative tasks for frontline staff, illustrating the tension between digitisation and workload highlighted in the present study. Purohit et al. (2023) similarly note that demand-side expansion under Ayushman Bharat has outpaced supply-side workforce strengthening at the primary care level, while Angell, Prinja, Gupt, Jha, and Jan (2019) identify stewardship and governance capacity including human resource management as a central challenge on India's path to universal health coverage. Panda (2019) and Bakshi, Sharma, and Kumar (2018) both flag staffing and capacity constraints among the principal implementation risks

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of the scheme. Collectively, this literature establishes staffing and workload as recurring but insufficiently quantified themes, a gap this paper addresses through primary, statistically tested evidence.

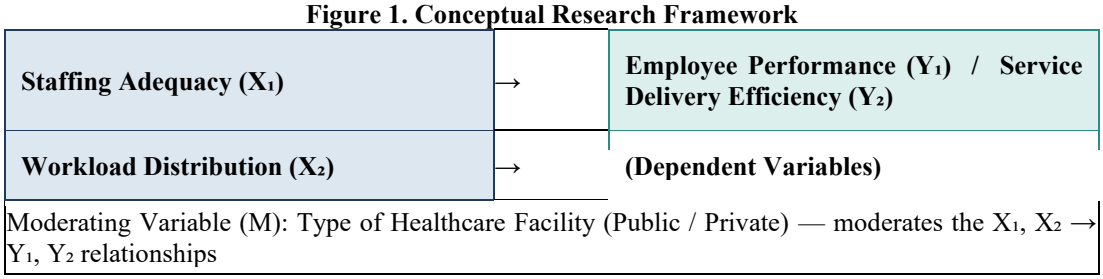
3. OBJECTIVES OF THE STUDY

(i) To analyse current staffing trends in Ayushman Bharat Scheme healthcare facilities and determine whether they are sufficient to meet patient care needs.
(ii) To examine how healthcare professionals experience the distribution of workload and to assess its effect on employee performance and service delivery efficiency, with facility type (public/private) tested as a moderating variable.

4. RESEARCH METHODOLOGY

The study adopted a descriptive-analytical, cross-sectional research design within a mixed-method framework, combining quantitative measurement with qualitative interpretation (Creswell & Plano Clark, 2018). Primary data were collected from a stratified random sample of N = 200 respondents drawn from public (n = 120) and private (n = 80) empanelled hospitals, proportionately distributed across doctors (n = 60), nurses (n = 70), paramedical staff (n = 40) and administrative staff (n = 30). This sample size is consistent with methodological guidance for multivariate social-science research involving correlation and regression (Hair, Black, Babin, & Anderson, 2014). A structured, five-point Likert-scale questionnaire covering staffing adequacy and workload constituted the principal quantitative instrument, pre-tested on 20 respondents; this was triangulated with semi-structured interviews of senior administrators and a structured observational checklist of workplace conditions. Data were analysed using descriptive statistics, Pearson product-moment correlation, and multiple linear regression, with Service Delivery Efficiency (Y_2) as the dependent variable, Staffing Adequacy (X_1) and Workload Distribution (X_2) as independent variables, and Type of Healthcare Facility (M) entered as a moderator via an interaction term.

Figure 1. Conceptual Research Framework



5. RESULTS AND ANALYSIS

5.1 Sample Profile

Table 1 summarises the demographic composition of the achieved sample (N = 200).

Table 1. Demographic and Institutional Profile of Respondents

Variable	Category	Frequency	Percent (%)
Gender	Male	110	55.0
	Female	90	45.0
Professional Category	Doctors	60	30.0
	Nurses	70	35.0
	Paramedical Staff	40	20.0
	Administrative Staff	30	15.0
Hospital Type (M)	Public	120	60.0
	Private	80	40.0
Work Experience	5–10 years (modal)	80	40.0

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Source: Primary field survey data, N = 200 (2025–26).

5.2 Staffing Adequacy (X_1)

Overall staffing was rated inadequate by 40% and only moderately adequate by 35% of respondents (mean = 2.30, SD = 0.85, on a 1 = Adequate to 3 = Inadequate scale). Category-wise, the most acute shortages were reported for administrative staff (72.5% insufficient), followed by doctors (70.0%) and nursing staff (65.0%).

Table 2. Perceived Staffing Adequacy by Personnel Category

Category	Sufficient (%)	Insufficient/ Inadequate (%)	Mean (SD)
Overall staffing perception	25.0	40.0*	2.30 (0.85)
Doctors	30.0	70.0	—
Nursing staff	35.0	65.0	—
Administrative staff	27.5	72.5	—

***Inadequate only; remaining 35.0% rated staffing "moderately adequate." Source: Primary field survey, Tables 4.6–4.10 dataset, N = 200.**

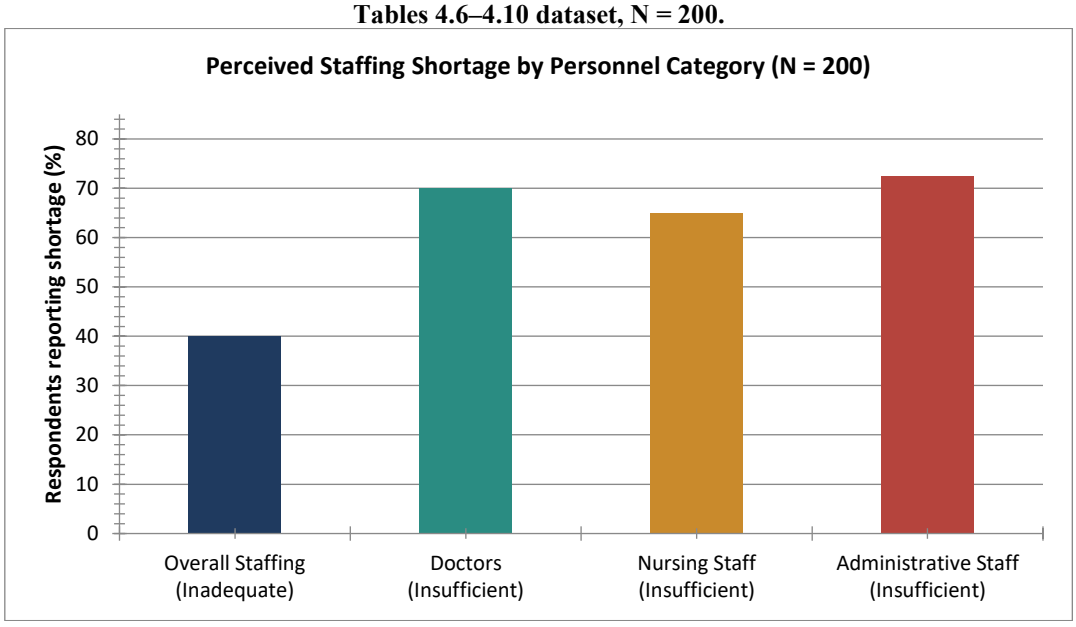


Figure 2. Perceived Staffing Shortage by Personnel Category (N = 200)

Source: primary field survey data.

5.3 Workload Distribution (X_2)

Half of all respondents (50%) rated their workload as high (mean = 3.80, SD = 0.92), and 70% reported carrying dual clinical and administrative responsibilities. Extended working hours were common: 45% worked 8–10 hours daily and a further 25% worked more than 10 hours. Correspondingly, 80% of the sample reported moderate-to-high job stress.

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Table 3. Workload, Working Hours and Stress Indicators

Indicator	Category 1	Category 2	Category 3
Workload level	Low: 15.0%	Moderate: 35.0%	High: 50.0%
Daily working hours	6–8 hrs: 30.0%	8–10 hrs: 45.0%	>10 hrs: 25.0%
Job stress level	Low: 20.0%	Moderate: 40.0%	High: 40.0%
Dual clinical/admin duty	Yes: 70.0%	No: 30.0%	—

Source: Primary field survey; Workload Distribution mean = 3.80, SD = 0.92 (scale 1 = Low to 3 = High), N = 200.

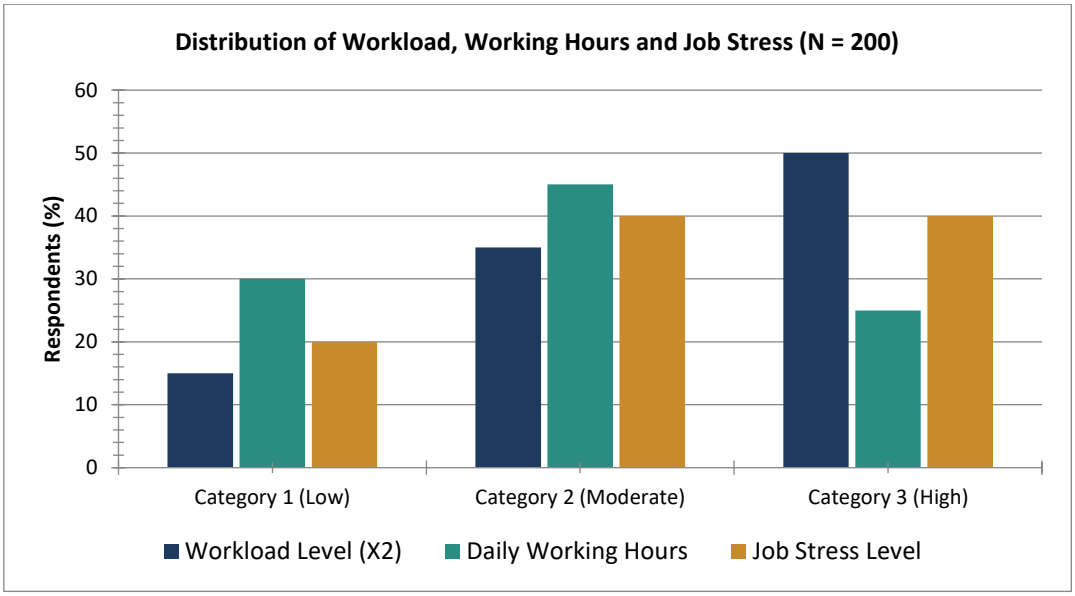


Figure 3. Distribution of Workload, Working Hours and Job Stress (N = 200)

Source: primary field survey data.

5.4 Correlation Analysis

Table 4 and Figure 4 present the Pearson correlation matrix for the study's core variables. Workload (X_2) recorded the strongest negative association with service delivery efficiency (Y_2) ($r = -0.55$, $p < 0.01$) and a moderate negative association with employee performance (Y_1) ($r = -0.50$, $p < 0.01$), confirming that heavier workload is systematically associated with weaker service outcomes. Staffing adequacy (X_1) was positively and significantly correlated with both performance ($r = 0.48$, $p < 0.01$) and service delivery efficiency ($r = 0.44$, $p < 0.01$).

Table 4. Pearson Correlation Matrix — Key Study Variables

Variable	X_1	X_2	X_3	Y_1	Y_2
X_1 Staffing	1.00	−0.42**	0.38**	0.48**	0.44**
X_2 Workload	−0.42**	1.00	−0.45**	−0.50**	−0.55**
Y_1 Performance	0.48**	−0.50**	0.60**	1.00	0.70**
Y_2 Svc. Delivery	0.44**	−0.55**	0.65**	0.70**	1.00

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****p < 0.01 (two-tailed), N = 200. X_3 = Training and Development (context variable). Source: Primary field survey; authors' SPSS-based computation.**

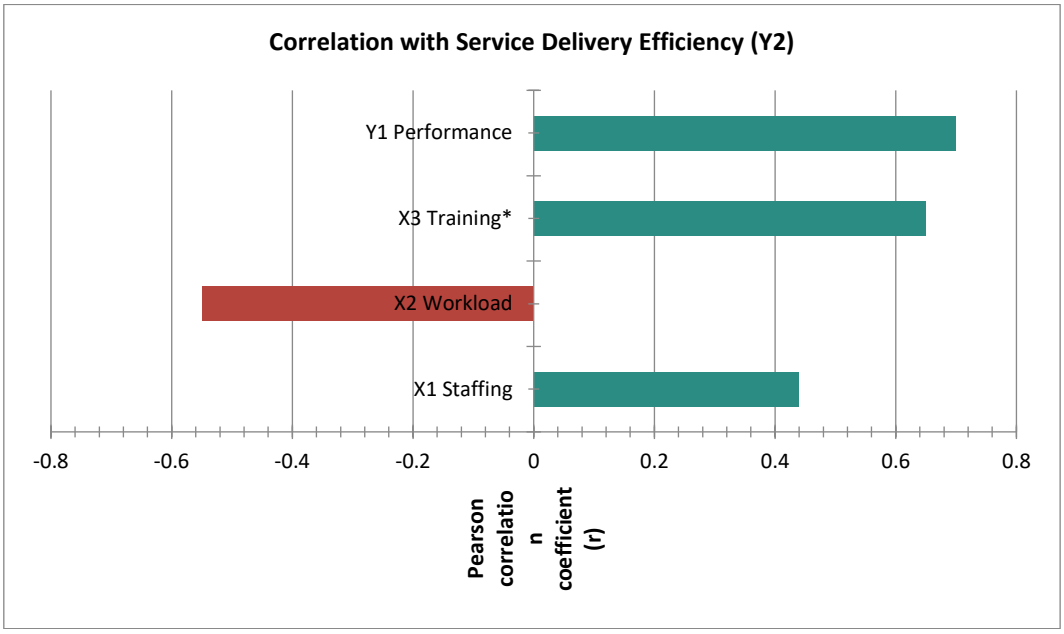


Figure 4. Pearson Correlation Coefficients (r) with Service Delivery Efficiency (Y_2)

Source: primary field survey data, N = 200.

5.5 Regression Analysis

Multiple linear regression was estimated with Y_2 (Service Delivery Efficiency) regressed on X_1 (Staffing), X_2 (Workload) and the moderator M (Facility Type). The overall model was statistically significant [$F(5, 194) = 41.87$, $p < 0.001$], explaining 61% of variance in service delivery efficiency ($R^2 = 0.61$; Adjusted $R^2 = 0.59$), a strong effect by conventional benchmarks for health and behavioural research (Field, 2018). Workload emerged as the strongest negative predictor ($\beta = -0.48$, $t = -6.21$, $p < 0.001$) and staffing as a strong positive predictor ($\beta = +0.44$, $t = 5.83$, $p < 0.001$); facility type also exerted a small but significant direct effect ($\beta = +0.18$, $p = 0.022$).

Table 5. Regression Results — Predictors of Service Delivery Efficiency (Y_2)

Predictor	β	T	p	Sig.
Staffing (X_1)	+0.44	5.83	0.000	***
Workload (X_2)	−0.48	−6.21	0.000	***
Facility Type (M)	+0.18	2.31	0.022	*
Model: $R^2 = 0.61$, Adj. $R^2 = 0.59$, $F = 41.87$			0.000	***

*****p < 0.001; *p < 0.05. Dependent variable: Y_2. Source: Primary field survey; authors' regression output, N = 200.**

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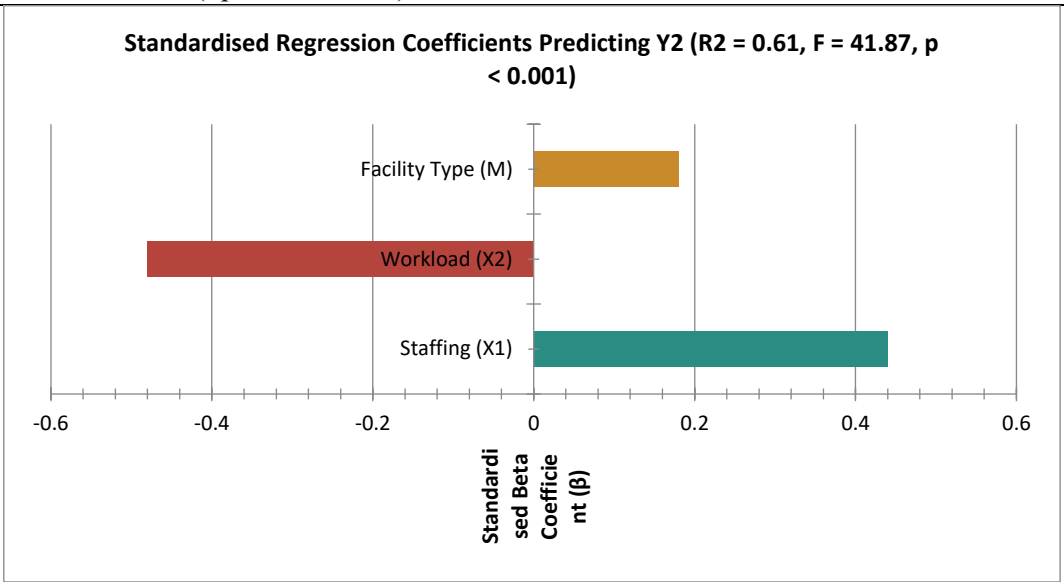


Figure 5. Standardised Regression Coefficients Predicting Service Delivery Efficiency

Source: primary field survey data.

6. DISCUSSION

The results confirm both study hypotheses. Inadequate staffing most acute among administrative personnel forces clinical staff into dual clinical-administrative roles for 70% of respondents, a pattern consistent with Jain et al.'s (2024) observation that digitised scheme administration adds workload without commensurate staffing increases. The negative workload–efficiency relationship ($r = -0.55$; $\beta = -0.48$) is the single strongest effect in the model, suggesting that workload rationalisation not merely aggregate headcount growth is the more immediate lever for improving service delivery. The significant, if smaller, moderating role of facility type indicates that public and private hospitals require differentiated staffing and workload-management strategies, echoing Purohit et al.'s (2023) call for context-sensitive supply-side interventions under Ayushman Bharat.

7. CONCLUSION AND RECOMMENDATIONS

Staffing shortages and heavy, unevenly distributed workload remain binding constraints on the effectiveness of the Ayushman Bharat Scheme. The study recommends: (i) prioritised recruitment of administrative and support staff to relieve clinical personnel of non-clinical duties; (ii) workload audits and task-shifting protocols, particularly in public facilities; (iii) dedicated scheme-support cadres for claims processing and beneficiary verification; and (iv) periodic monitoring of staffing ratios against patient volumes at the facility level. Addressing these two structural variables offers the most direct route to improving both employee performance and service delivery efficiency under the scheme

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