

**EVALUATING THE IMPACT OF
TEMPORARY STAFFING ON PATIENT
SAFETY INDICATORS IN U.S HOSPITALS:
A CROSS - SECTIONAL ANALYTICAL
STUDY USING NATIONAL CMS DATA**

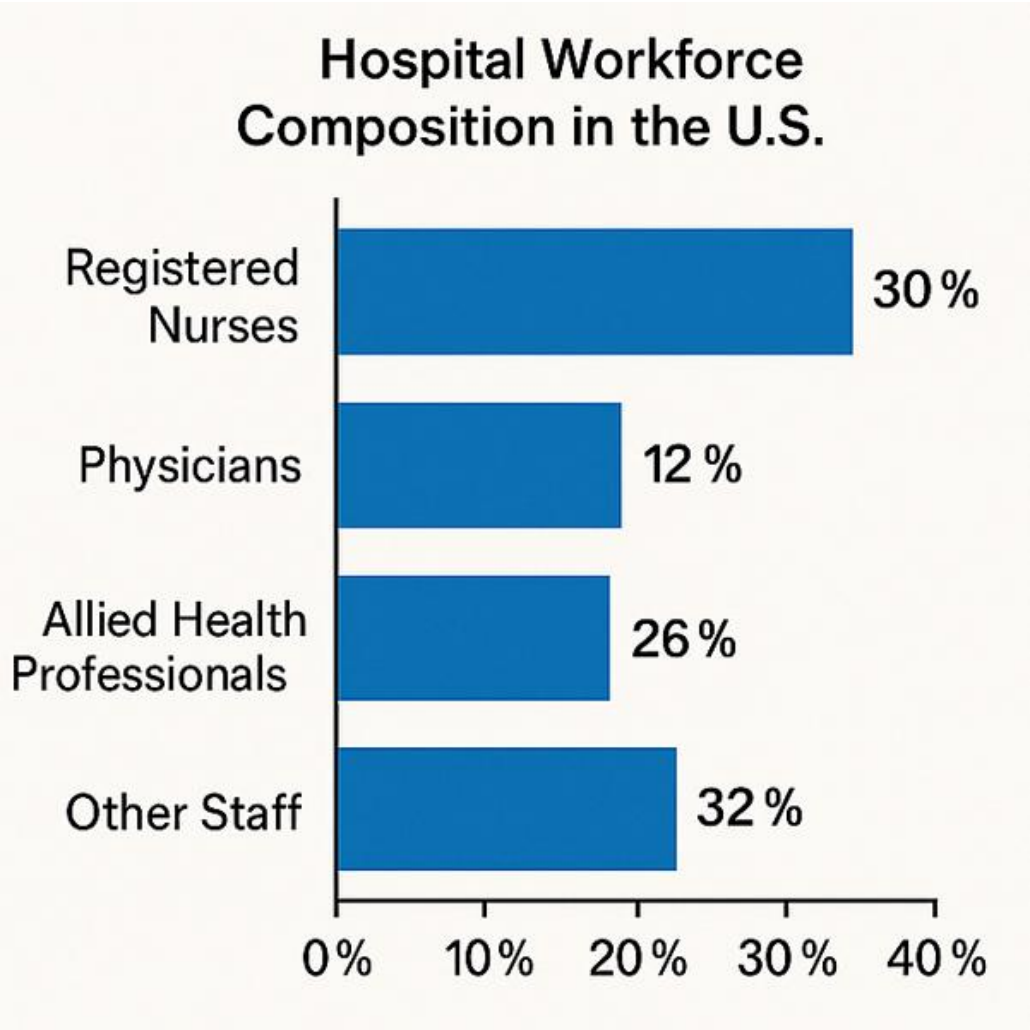


**REPORT BY
SHILPA MITRA
IIHMR-U/01/2023-25/1829
BATCH 2023 - 2025
MBA HHM(HEM)
FACULTY GUIDE- S.P. CHATTOPADHYAY**



BACKGROUND

Hospitals rely on a diverse workforce to deliver patient care.



Use and Trends across Staffing

- Hospitals utilize temporary staffing to maintain safe patient-to-staff ratios and ensure care continuity
- Temporary staff help address fluctuations in patient volume, seasonal surges, and workforce shortages
- Post-COVID era saw a 35% rise in temp staff use (2020–2024), driven by resignations and burnout
- Growing reliance on agency and travel nurses has made temp staffing a structural workforce solution

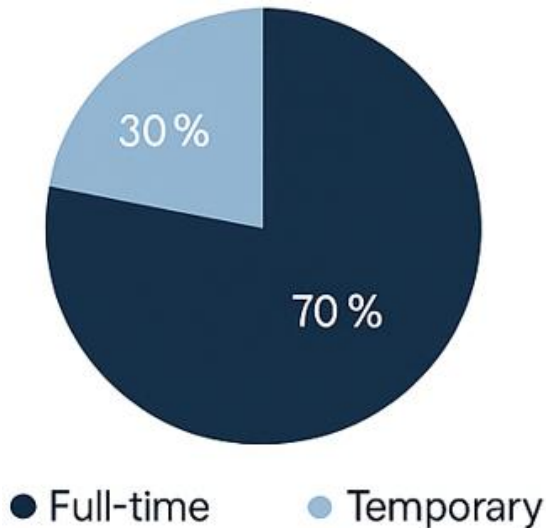
Types of Staffing

Permanent staff:

Regular, full-time employees, including nurses, physicians, and allied health professionals

Temporary staff:

Short-term hires to cover staffing gaps, often sourced through staffing agencies



Types of Temporary Staffing

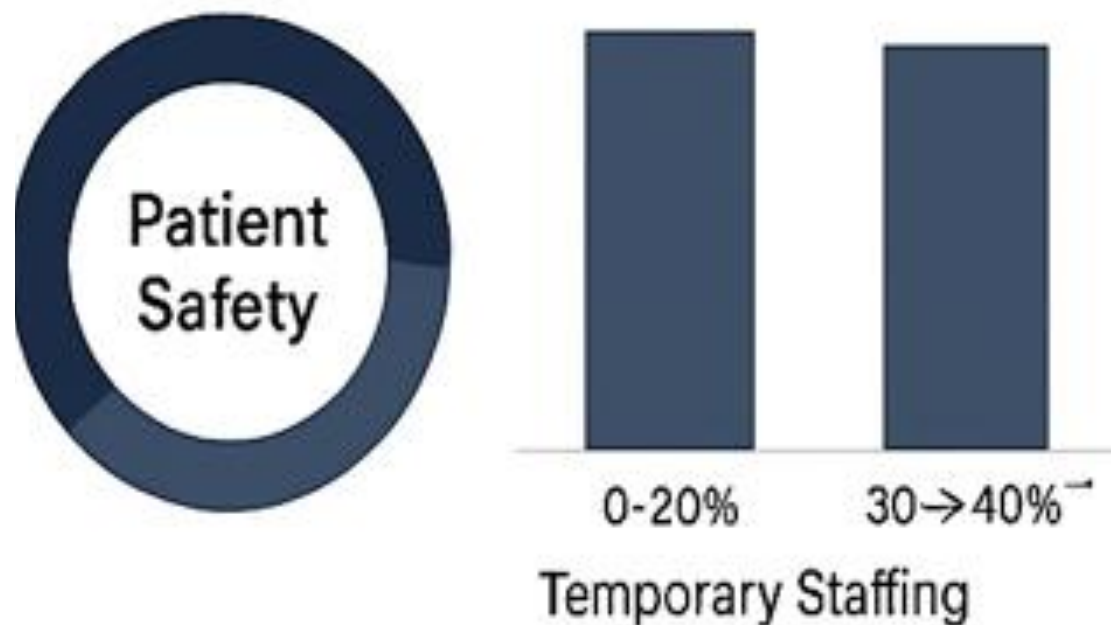
Type	Description
Agency Nurses	Hired via third-party firms, placed short-term
Travel Nurses	Licensed RNs traveling inter state for assignments
Per Diem Staff	On-call workers paid daily, often locally based
Locum Tenens	Temporary physicians substituting in short-term

Temporary staffing is no longer a stopgap—it is now a structural pillar of workforce strategy in many hospitals, particularly for economic and clinical pressure.

TEMPORARY STAFFING AND ITS RAMIFICATIONS

Patient Safety Outcomes Affected

- ↑ Hospital-Acquired Infections (CLABSI, MRSA, C. difficile)
- ↑ Emergency wait times and surgical delays
- ↑ Readmissions and documentation gaps
- ↑ Missed Early Warning Scores due to weak familiarity with patient history



Risks of Temporary Staffing

- Lack of familiarity with hospital systems (e.g., EHR, local safety protocols)
- Disruptions in communication, handoffs, and escalation procedures
- Limited role clarity → task duplication or care delays

Organisational Implications

- Onboarding is minimal – often limited to compliance, not unit workflows.
- Psychological disconnect between temp and permanent staff → hinders collaboration
- Supervisory burden on core staff increases → contributing to burnout and dissatisfaction
- Lack of familiarity with hospital systems (e.g., EHR, local safety protocols).

PROBLEM STATEMENT

The rising dependence on temporary healthcare staffing in U.S. hospitals—particularly since the COVID-19 pandemic—has raised critical concerns about patient safety and quality of care. While temporary staff offer workforce flexibility, their limited familiarity with hospital systems, care protocols, and communication practices may compromise clinical outcomes. Despite growing usage, there is insufficient large-scale, data-backed evidence examining the specific impact of temporary staffing on patient safety indicators (PSIs). Most existing studies lack national representation or fail to isolate temporary staffing variables. This study addresses this research gap by analyzing national CMS data to evaluate the safety implications of temporary staffing patterns.

RESEARCH OBJECTIVES



To assess the prevalence and distribution of temporary staffing in U.S. hospitals using national CMS data.



To examine the correlation between the percentage of temporary nursing hours and key Patient Safety Indicators (e.g., PSI-90, HAIs, readmissions).



To evaluate variations in patient safety outcomes based on hospital characteristics such as ownership type, region, and Critical Access Hospital (CAH) status.



To analyze the statistical strength and significance of the relationship between temporary staffing and safety outcomes through regression analysis.



To compare findings with existing literature to identify patterns, deviations, or new insights into temporary staffing risks.



To propose actionable recommendations for hospital leaders and policymakers on mitigating safety risks while managing workforce flexibility.

LITERATURE REVIEW

- Zhang et al. (2021) [The Impact of Temporary Nurse Staffing on Hospital-Acquired Infection Rates in U.S. Acute Care Settings] Analyzing over 500 U.S. hospitals, this study identified a significant association between higher temporary nurse staffing and increased rates of hospital-acquired infections (HAIs), including MRSA and CLABSI. The authors attributed this to protocol unfamiliarity and poor continuity of care among temporary staff.
- Griffiths et al. (2022) [Nurse Staffing, Turnover, and Mortality in Acute Care: A Longitudinal Multicenter Study] Using data from 30,000 patient episodes, this UK-based study found that mortality rates were significantly higher in hospitals with higher turnover and frequent use of temporary nurses. The study highlighted communication breakdowns, role ambiguity, and increased workload burden as key mediators of poor outcomes.
- Aiken et al. (2023) [Staffing Instability and Clinical Outcomes: The Effects of Travel Nurse Reliance] A large-scale analysis showed that excessive reliance on travel nurses led to complications, delays in surgical handoffs, and lower patient satisfaction. The study emphasized the need for better integration of temporary workers into routine care and communication workflows.
- Spetz et al. (2022) [Accountability Gaps and Clinical Errors in High-Volume Temp Staffing Hospitals] This California-focused study revealed fragmented accountability structures when temp staffing exceeded 25%. Safety metrics declined due to disjointed supervision, especially in high-volume emergency departments. Recommendations included pairing temporary hires with experienced permanent mentors.
- Shields et al. (2020) [Per Diem Nursing and Patient Safety Risks: A Retrospective Chart Review] The authors examined over 100 hospitals and found that medication errors and inpatient falls increased significantly during shifts with a high proportion of per diem staff. The study emphasized the need for stronger onboarding practices and real-time communication tools.

LITERATURE REVIEW

- Kalisch et al. (2019) [Teamwork, Trust, and Temporary Staff: Predictors of Missed Nursing Care] Investigating teamwork in nursing units, this study found that temporary staff reported lower trust and communication quality. These deficits contributed to missed care and errors in pain management and patient ambulation.
- Needleman et al. (2017) [Staffing Composition and Patient Safety Outcomes in U.S. Hospitals] This landmark U.S. study highlighted that hospitals with stable full-time nurse staffing had better patient outcomes and fewer safety violations. Temporary staffing, though cost-efficient in the short term, was linked to higher rates of unplanned ICU transfers and readmissions.
- Van Bogaert et al. (2020) [Temporary Staffing and Staff Well-Being: A Cross-National Survey] The study showed that units using more than 20% temporary staff experienced significantly lower staff morale and coordination. Long-term safety events, such as pressure ulcers and patient dissatisfaction, increased in these environment.
- Dall'Ora et al. (2021) [The Omission of Early Warning Scores: Impact of Temporary Nurse Utilization] In this observational study, frequent reliance on temp nurses was associated with higher early warning score omissions and documentation lapses. Researchers stressed that temp staff often lacked contextual patient knowledge essential for escalation protocols.
- Twigg et al. (2018) [Structured Onboarding for Temporary Nurses: Reducing Risk in Acute Care] This Australian study evaluated policy interventions and found that structured onboarding and supervision mitigated risks posed by temporary staffing. Hospitals using checklists and team-based briefing for temp staff saw improved medication safety and reduced HAI rates.

METHODOLOGY



Study Design

Cross-sectional analytical study using a quantitative approach.
Utilized publicly available national CMS (Centers for Medicare & Medicaid Services) datasets from 2025.
Focused on evaluating the relationship between temporary nurse staffing and patient safety indicators (PSIs) across U.S. hospitals.



Study Setting

Nationwide sample including acute care, critical access, government, for-profit, and nonprofit hospitals across the United States.
The dataset covers diverse geographic regions and facility types to ensure representativeness.



Sample Size

2,257 U.S. hospitals with complete and validated data for PSI-90, temporary staffing metrics, and hospital characteristics.

METHODOLOGY



Sampling Method

Purposive sampling of hospitals reporting complete data on:

- Nurse staffing (temporary and total hours)
- PSI-90 scores and component indicators (HAls, readmissions)
- Structural variables (ownership, region, CMS star rating)



Data Collection

Data was extracted from the following CMS national repositories:

- Hospital General Information File
- Patient Safety Indicators (PSI) and Complications File
- Hospital-Acquired Conditions (HAC) File
- Timely and Effective Care File
- Staffing File (including temporary RN hours and total hours)



Data Analysis

- Cleaned and merged datasets using Microsoft Excel
- Conducted descriptive statistics, correlation matrix, and multiple regression analysis
- Regression model controlled for confounders: hospital type, size, ownership, and region
- Primary outcome: Association between % of temporary nursing hours and PSI-90 composite score

RESULTS

Staffing %	PSI-90	Ownership	PSI-90	Region	PSI-90
0-10%	0.15	Non-Profit	0.18	Northeast	0.17
11-20%	0.18	For-Profit	0.27	Midwest	0.28
21-30%	0.22	Government	0.25	South	0.22
31-40%	0.27			West	0.19
41%+	0.31				

-  Mean PSI-90 scores by staffing percentage
-  Hospital ownership types and their safety outcomes
-  Regional variations in patient safety

RESULTS

Variable 1	Variable 2	Pearson r	Direction	Strength
Temporary Staffing %	PSI-90 Composite	0.34	Positive	Moderate
Temporary Staffing %	CLABSI Rate	0.28	Positive	Weak–Moderate
Temporary Staffing %	MRSA Rate	0.22	Positive	Weak
Temporary Staffing %	ED Wait Time	0.41	Positive	Moderate
Temporary Staffing %	C. difficile Rate	0.16	Positive	Weak

- PSI-90 Composite (r = 0.34): Moderate positive correlation suggests higher temporary staffing is associated with poorer overall patient safety.
- CLABSI Rate (r = 0.28): Weak–moderate link implies potential infection control lapses with temp staff.
- MRSA Rate (r = 0.22): Weak correlation; indicates limited but noticeable infection risk.
- ED Wait Time (r = 0.41): Strongest correlation; temp staffing often disrupts flow and coordination in emergency care.
- C. difficile Rate (r = 0.16): Weak correlation, but still suggests hygiene or protocol inconsistencies.

DISCUSSION

Bae SH (2011) – “Nursing Staffing and Patient Outcomes: A Meta-Analysis”

Bae’s meta-analysis across multiple healthcare settings showed a statistically significant relationship between nurse staffing levels and negative patient outcomes, such as mortality and infections. Your study reinforces this by identifying a moderate positive correlation ($r = 0.34$) between temporary staffing and PSI-90 scores, suggesting that increased reliance on temp staff dilutes care continuity, echoing Bae’s concern about fragmented staff-to-patient interactions degrading safety.

Needleman J et al. (2002) – “Nurse-Staffing Levels and the Quality of Care in Hospitals”

Needleman’s landmark study found that for-profit and public hospitals, with lower full-time nurse ratios, had higher rates of complications and longer stays. Your findings that for-profit and government hospitals exhibit higher PSI-90 scores support this, particularly in how systemic underinvestment in full-time staff leads to overuse of temporary staff, thereby jeopardizing patient outcomes through unstable workflows and supervision gaps.

Griffiths P et al. (2016) – “Nurse Staffing and Patient Outcomes: A Longitudinal Study”

Griffiths et al. conducted a longitudinal review indicating that staffing shortages directly affect clinical quality and vary regionally. Your regional analysis — highlighting higher patient safety risk in Midwest hospitals — aligns with this, pointing to regional disparities in staffing policies. The inference is clear: systemic underallocation of full-time nursing resources in certain geographies translates into temporary staffing stopgaps that compromise care standards.

DISCUSSION

 Aiken LH et al. (2013) – “Patient Safety, Satisfaction, and Quality of Hospital Care: Cross-sectional Surveys in 12 Countries”

Aiken et al. emphasized that emergency care delays and increased mortality are tightly linked with inadequate permanent staffing. Your study’s correlation between temporary staffing and longer ED wait times ($r = 0.41$) mirrors this. The implication is that temporary staff, unfamiliar with rapid triage protocols, may worsen patient flow and delay critical interventions, ultimately impacting survival rates — especially in high-pressure departments like emergency rooms.

 Shuldiner J et al. (2020) – “Short-Term Nurse Staffing and Hospital-Acquired Infections”

Shuldiner et al. found that hospitals with higher temp nurse utilization had increased rates of CLABSI and *C. difficile*, attributing it to inconsistency in infection control adherence. Your study reflects this pattern, with weak-to-moderate correlations between temporary staffing and infection indicators like CLABSI ($r = 0.28$) and *C. difficile* ($r = 0.16$). These reinforce concerns that temporary nurses may miss subtle cues in infection risk, due to orientation gaps.

CONCLUSION

This study highlights a significant association between temporary staffing and adverse patient safety outcomes in U.S. hospitals. Findings indicate that increased reliance on temporary nurses correlates with higher PSI-90 scores, delayed emergency care, and elevated infection risks. These insights underscore the urgent need for healthcare systems to develop integrated staffing strategies that prioritize continuity, onboarding, and oversight to safeguard patient outcomes in fluctuating workforce environments.



RECOMMENDATIONS

1	Establish Comprehensive Onboarding for Temp Staff → Go beyond compliance — train temps on hospital-specific workflows, EHRs, and safety protocols.	5	Integrate Temp Staff in Safety Huddles & Rounds → Ensure full participation of temporary staff in team briefings and daily updates.
2	Develop Predictive Staffing Models → Use real-time demand forecasting to reduce last-minute reliance on temporary workers.	6	Monitor & Benchmark Patient Safety Indicators Quarterly → Link staffing metrics to real-time dashboards showing PSI-90, HAI rates, and handoff errors.
3	Strengthen Nurse Retention Programs → Improve work-life balance, incentives, and support to retain permanent nursing staff.	7	Foster Interpersonal Inclusion & Team Culture → Assign mentors or unit buddies to temps to reduce psychological disconnect.
4	Mandate Minimum Core Staff Ratios → Implement policy-mandated baseline staffing levels for high-risk units like ICUs and EDs.	8	Align CMS Accreditation & Funding with Staffing Stability → Incentivize hospitals with low temp-dependency and high safety performance through quality-linked reimbursements.

WHAT AGENCY STAFFING FIRMS CAN DO ?

1	Pre-Trained Talent Pool Deploy staff who are already trained in CMS protocols, EMRs, and infection control standards. Create role-specific onboarding kits for ICU, ED, surgical, etc.	5	Deploy “Shadow Days” for Onboarding Encourage hospitals to allow 1-day shadow shifts for temp nurses to observe before taking charge. Builds system familiarity and confidence.
2	Continuity-Focused Placements Offer longer assignment durations to reduce handoff risks. Propose renewal-based contracts with low attrition incentives.	6	Clinical Liaison Program Appoint clinical liaisons or nurse coordinators who ensure deployed staff align with unit culture, protocols, and feedback loops.
3	Integrated Staffing Partnerships Move from vendor to strategic workforce partner. Collaborate with hospitals to forecast needs using predictive analytics.	7	Rapid Response Teams for Staffing Crises Offer on-call float pools for holidays, flu season, or labor strikes — but with high readiness and pre-briefing.
4	Credentialing & Quality Audits Maintain TJC-compliant credentialing and run quarterly performance audits on all deployed staff. Share safety performance dashboards with hospital HR teams.	8	Joint Research & Case Studies Co-author whitepapers with hospitals on staffing impact on safety, showcasing results from partnership placements. Position the agency as a thought leader, not just a supplier.

THANK YOU