Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 45 No. 04 (2024)

Impact of Nurse Turnover on Staffing Practices and Patient Outcomes

[1]Salha Saad Masaod Alzhrani, [2]Saidah Saad Masuod Al Zahrani, [3]Mona Saleh Almotery, [4]Bashayer Ahmad Ali Alasiri, [5]Yasmen Abdullah S Alanezi, [6]Tamany Rajah J Alroyle

[1]Nursing technician, Almuzylif General Hospital

[2]Nursing technician, Almuzylif General Hospital

[3]Nursing, PHC Alkhaildya

[4]Nurse specialist, Workplace: Abha Maternity Children Hospital

[5]Nursing Technician Clinic, Tabuk

[6]Nursing specialist, Al-Muzairaa Health Centre

Abstract

Aims: This study aims to assess the rates and financial implications of nurse turnover, examine the connections with staffing practices, and evaluate the effects on both nursing and patient outcomes.

Background: Given the ongoing nursing shortages, understanding the rates and costs associated with nurse turnover can enhance the management of nursing staff and the overall quality of care delivered.

Methods: Over a 12-month period, both quantitative and qualitative data were prospectively gathered. A subsequent analysis employed descriptive statistics and correlational analysis techniques to evaluate the data.

Results: The financial impact of turnover for each registered nurse approximates to half of an average salary. The most significant costs stemmed from temporary staffing solutions, followed by losses in productivity. Both of these factors were linked to negative patient outcomes. The flexible management of nursing resources, characterized by staffing levels below budget and increased reliance on temporary staff, along with the recruitment of new graduates and international nurses to fill vacancies, contributed to both turnover and associated costs.

Conclusions: Nurse turnover is closely linked to staffing levels and practices, with financial implications arising from both. A pervasive culture of turnover was identified, which contradicts the principles of nursing as a knowledge-intensive profession.

Keywords: *profession, international, contradicts, graduates, implications*

Introduction

Globally, there is a growing acknowledgment of the financial implications of nurse turnover and its effects on both nurses and patients (Jones, 1990a; Hayes et al., 2006; O'Brien-Pallas et al., 2006). Research conducted in Canada (O'Brien-Pallas et al., 2008, 2010), Australia (Duffield et al., 2009), and the USA (Jones, 2005, 2008) highlights concerns regarding the substantial costs associated with nurse turnover, its repercussions, and the prevalent use of temporary staffing solutions to address shortages.

In studies on nursing turnover were initiated in the context of persistent nursing shortages and a competitive labor market, which followed years of declining employment conditions and stagnant wages (North, 2010). A pilot study conducted in 2001 aimed to test a costing methodology (O'Brien-Pallas et al., 2006) and revealed that costs related to turnover were rarely documented (North & Hughes, 2006). The first significant investigation was a national survey conducted in 2002 among directors of nursing in public hospitals, aimed at determining turnover rates and workforce strategies. This survey indicated that, despite concerns regarding turnover and shortages,

actual turnover rates were seldom tracked (North et al., 2005). A subsequent national study assessing the costs of nurse turnover took place between 2004 and 2006, utilizing a research protocol similar to a pan-Canadian study (O'Brien-Pallas et al., 2010), albeit with a narrower focus. This study sought to establish turnover rates, both direct and indirect costs associated with turnover, the relationship between turnover costs and staffing practices, and the impact of turnover costs on outcomes for nurses and patients. Findings from various aspects of this research have been reported previously (North & Hughes, 2006; North et al., 2007). Recently, the data were re-analyzed to emphasize costs, staffing practices below budgeted levels, turnover, and the flexible management of nursing resources through temporary staffing, as well as the effects of these practices on nurses and patients.

During the course of this turnover study, a national employment agreement for nurses in public hospitals resulted in an average wage increase of 7%. According to Buchan & North (2009), there was an improvement in most labor market indicators for nursing in the four years following this agreement. However, beginning in 2008, amid economic recession and high unemployment rates, shortages in the nursing workforce almost entirely disappeared, leading to a resurgence of staffing practices that were previously considered efficient but may have contributed to earlier shortages. This article explores how staffing practices influence turnover, along with the related costs and impacts, thereby providing new insights into how turnover is interwoven with nurse management practices and organizational culture.

Nurse turnover has garnered increasing attention due to nursing shortages, an aging workforce, and concerns about workforce stability. As a result of its significant workforce size, nurse turnover incurs the highest total organizational costs, despite the cost per nurse turnover being lower than for higher-paid employees (Waldman et al., 2004). Data regarding nurse turnover rates and their associated costs are crucial for informing health organizations' strategies and management, yet such information is not consistently reported by these organizations (Jones, 1990a,b, 2004; Waldman et al., 2004).

A literature review on nurse turnover (Hayes et al., 2006) identified a substantial body of research examining turnover determinants and a growing interest in the economic and systemic impacts. However, methodological challenges impede comparisons across studies, including inconsistent definitions, varying inclusions and exclusions, and different costing approaches. While many methodologies have focused on direct turnover costs—such as recruitment, hiring, and temporary staffing to cover vacancies—some have also considered indirect costs, which encompass reduced productivity of new hires and challenges in maintaining service levels (Jones, 2005; O'Brien-Pallas et al., 2010). Some researchers have attempted to weigh costs against potential savings, such as those associated with vacancy (Buchan & Seccombe, 1991) or retention strategies (Jones, 2004).

The diversity in conceptualizing costs and employing different costing methodologies has led to significant variations in turnover cost estimates. For instance, two UK studies cited by Gray et al. (1996) estimated the costs of replacing a nurse during 1994–1995 to be £494 and £5,998, respectively. While administrative costs were relatively modest, they surged dramatically when factoring in temporary replacement expenses and the productivity losses of new employees. Reports by Jones (2004) indicated that turnover costs per nurse in the USA ranged from USSAR22,000 to USSAR64,000, with the variation attributed to differing costing methodologies. The most substantial costs were associated with temporary staffing solutions, followed by expenses for orientation and training and productivity losses (Jones, 2004, 2005, 2008).

Jones's costing methodology in 1988 calculated turnover costs at approximately USSAR10,000 per nurse. By 2002, with productivity losses included, costs rose to between USSAR62,100 and USSAR67,100 (Jones, 2005), and when adjusted for inflation, these figures translated to between USSAR82,032 and USSAR88,086 in 2007 (Jones, 2008). Notably, Jones (2005, 2008) did not account for the broader impacts of nursing turnover, particularly on patients, which he identified as a vital area for further investigation. Conversely, O'Brien-Pallas et al. (2010) addressed these impacts in a Canadian study conducted in 2005-2006, revealing that higher turnover rates correlated with a greater likelihood of medical errors. They determined the average cost per nurse turnover to be CANSAR25,000, with the highest expenses related to temporary replacements and initial productivity declines of those replacements. Hierarchical linear regression analyses (O'Brien-Pallas et al., 2010) demonstrated that elevated turnover rates were linked to declines in both mental health and job satisfaction among nurses.

Recent advancements in nurse turnover research frame the costs associated with turnover as human capital costs (Jones, 2004) and health systems costs (O'Brien-Pallas et al., 2006, 2010). Nurses represent a valuable pool of knowledge and skills that contribute to productivity; thus, human capital theory emphasizes the hidden costs associated with the loss of such capital and the diminished return on investment in departing nurses (Jones, 2004). Health systems costs are also incurred from closed hospital beds and postponed patient care, impacting both outputs and outcomes, which in turn affect patients (in terms of adverse events and satisfaction with care) and nurses (in relation to injury, illness, job satisfaction, and further turnover) (O'Brien-Pallas et al., 2010).

Waldman et al. (2004), Jones & Gates (2007), and Jones (2008) assert that since turnover typically represents a non-value-added aspect of organizational budgets, recognizing the costs associated with turnover could bolster arguments for improving retention strategies. Although there is a growing understanding of the overall costs and impacts of turnover, along with enhancements in research methodologies, further investigations are needed to explore the relationship between turnover costs and the work environments in which nurses operate, particularly regarding staffing practices.

Materials and Methods

Study Design

This study employed a prospective design to gather both quantitative and qualitative data. The research protocol had undergone pilot testing and was informed by the O'Brien-Pallas Patient Care System and Nurse Turnover model (O'Brien-Pallas et al., 2006). The primary unit of analysis for the study was the nursing unit (ward), with quantitative data collected over a 12-month period for each participating unit. Qualitative data focused on nursing workforce practices and work contexts were gathered at both the beginning and conclusion of the study.

Inclusion Criteria

Nurse turnover was defined as the process through which nurses exit or transfer from their primary employment positions within health services (Jones, 1990a). To reduce variability, the study exclusively included general medical and surgical units within public hospitals. Registered nurses (RNs) in staff roles were considered eligible, while nurse managers, specialists, second-level nurses, and unregulated assistants were excluded. Data were collected regarding all RNs associated with the participating units who left their primary positions for any reason, such as retirement, resignation, or internal transfers. Cost analysis utilized a modified turnover cost checklist (Buchan & Seccombe, 1991), which had been piloted by O'Brien-Pallas et al. (2006). This checklist categorized turnover costs into distinct items organized under four sequential processes: separation, temporary replacement, recruitment and selection, and induction and training.

Recruitment of Units and Completion Rate

A randomized selection from a pool of medical and surgical units (n = 156) resulted in a sample of 22 units (14% of eligible units).

Data Collection

Data were collected during the original study period : full-time equivalent (FTE) numbers of RNs; costs associated with temporary staffing; productivity losses of permanent staff attributed to temporary staff; overtime expenses; costs related to preceptors and the training of new RN employees; and estimated productivity losses of new hires until they reached the expected productivity level. Additional data included RN absenteeism, work-related incidents involving nurses (e.g., injuries), and adverse patient incidents sensitive to nursing care. Recognizing that turnover-related cost data were rarely available (North & Hughes, 2006), a series of electronic instruments were developed for data collection. Hospital staff (primarily charge nurses and also including new graduate coordinators and occupational health and safety/infection control personnel) were trained to use these instruments and provided data on a monthly basis. All data submitted via spreadsheets were independently verified for accuracy. Investigators systematically gathered qualitative data regarding organizational contexts and staffing practices both during the implementation of the study and after provisional results were presented to key informants for validation and feedback.

Data Analysis

The re-analysis aimed to uncover the relationships between variables associated with turnover, costs, and staffing practices, with an emphasis on explaining findings using qualitative data. All data underwent rigorous checking and were entered into SPSS version 17 (SPSS, IBM Corporation, Armonk, NY, USA). The results were analyzed both at the individual unit level and nationally. The turnover rate was calculated by dividing the annual FTE number of leavers by the actual annual FTE, then multiplying by 100. Quantitative data were subjected to descriptive statistical analyses and correlational techniques. Throughput variables examined included nursing staffing practices, deviations from budgeted RN levels, overtime use, temporary staffing, turnover rate, and productivity loss. Output variables considered were patient adverse events, nurse incidents, and sick leave. Variables were adjusted for resource availability in terms of beds where relevant. Spearman's rank order correlation was employed when the assumptions required for Pearson's product-moment correlation were not met, with all tests being two-tailed. Qualitative data were analyzed thematically to enhance and elucidate the quantitative findings.

Results

By the conclusion of the study, data collection was completed for 19 out of 22 wards, achieving a response rate of 86.4% and yielding a total of 228 data samples for analysis. Quantitative findings are presented in tables and numerically, while qualitative insights are detailed in text format.

Direct and Indirect Turnover Costs

Table 1 outlines the direct and indirect costs linked to registered nurse (RN) turnover as based on the work of O'Brien-Pallas et al. (2006). The average total cost per RN turnover is estimated at SAR23,800, which includes SAR3,878 for new hires and SAR19,922 for those leaving the position. Qualitative data provide context for some of these costs. Termination expenses, including management time and farewell activities, are relatively low . Similarly, recruitment and hiring costs are minimal, covering management time, uniform provision, and health screenings, with relocation expenses being rare. Orientation and training costs for new employees are higher, encompassing both organizational and unit-specific orientation, short courses for credentialing, and trainer fees. The most significant costs stem from temporary coverage and new employee onboarding, reflecting staffing practices discussed later.

Productivity Loss Costs

Table 2 presents the national average cost per category of new employees, which includes productivity loss and preceptor time until the new hires reach expected productivity levels, along with recruitment and hiring costs. Notably, 83% of replacement nurses are sourced externally, comprising new graduates, overseas-trained nurses, and other recruits . Orientation and training represent the highest indirect turnover costs, reflecting productivity loss until new hires achieve full productivity and the related loss attributed to preceptors. These costs vary significantly based on the new employee category, with new graduates and overseas-trained nurses incurring the highest productivity losses. The cost associated with hiring a new graduate is SAR4,804, while overseas-trained nurses cost SAR4,467. In contrast, trained nurses recruited from elsewhere in the country cost SAR3,019. The least expensive options were a nurse returning to a unit, at SAR941, and internal transfers, at SAR1,711, which helped avoid relocation costs such as uniforms, health screenings, and organizational orientation. However, internal transfers may simply transfer turnover costs elsewhere.

Temporary Coverage Costs and Staffing Practices

Temporary staffing emerged as the largest contributor to turnover costs, which encompasses expenses for temporary staff, overtime, clerical time, and the involvement of experienced staff in arranging coverage, along with productivity losses due to permanent staff aiding temporary workers. Temporary coverage is utilized not only to fill vacancies but also to address existing shortages, sick leave, and increased demand for various reasons. It was challenging to isolate costs specifically tied to turnover, as the reasons for using temporary staff were not consistently documented.

Data indicate a common practice of staffing below budgeted levels, which is employed to optimize the flexible and efficient use of nursing resources and budget. The average budgeted full-time equivalent (FTE) for RNs was closely aligned with the average number of resourced beds, averaging 25.57 beds per unit (ranging from 19.08 to 47.33). The mean occupancy rate was 91.8%. The average budgeted RN staffing per unit was 25.84 FTE; however, as shown in Table 3, the actual FTE was 24.07, reflecting a mean difference of -1.77 (ranging from -9.7 to 4.7). Baseline data indicated that 497.12 RN FTE were budgeted across 19 units, but only 450.91 were employed, resulting in an average of 2.43 RN vacancies per unit. Over the 12-month data collection period, 192.6 RN FTE departed their primary units, while 265 new RN FTE were brought on board. No new positions were created during the study, so some vacancies that existed at the study's start were filled during this period. The overall annual turnover rate for the participating units averaged 44.3%, with a range from 13.7% to 90.9%.

Significant Relationships Between Variables

Relationships among variables pertaining to staffing practices and the annual turnover costs were evaluated using Spearman's rank order correlation, as detailed in Table 4. Nurse outcomes were quantified through turnover, sick leave in days, and adverse incidents, such as injuries. Reported sick leave days per unit varied from 70 to 603, averaging 266 days per unit. A total of 210 nurse injuries were reported, averaging 11 per ward (ranging from 1 to 49 per year). Patient outcomes were assessed based on nurse-sensitive events, with a total of 993 adverse patient events reported, averaging 52.6 per ward. The most common adverse events included falls resulting in injury (319) and medication administration errors (222). Non-percentage variables were adjusted for the number of resourced beds within each unit to accommodate differences in unit sizes across the study.

Table 4 demonstrates a significant positive correlation between sick leave days and the costs of temporary cover, with 28% shared variance. Furthermore, the expenditure on temporary cover correlates with total patient adverse outcomes (27% shared variance). Adverse patient events also show a correlation with new employee productivity loss (31% shared variance). Conversely, the turnover rate exhibits a significant negative correlation with the percentage deviation from budgeted FTE (34% shared variance). The remaining 12 relationships analyzed did not yield significant results.

Table 1: Direct and Indirect Registered Nurse (RN) Turnover Costs

Cost Category	Per New Employee	Per Leaver	Totals per Turnover
Direct Costs			
Advertising/Recruitment	236		
Hiring Process	499		
Subtotal	**735**		
Indirect Costs			
Preceptor Costs	1,518		
Decreased Initial Productivity of New Employee	1,447		
Other Orientation/Training	177		
Subtotal	**3,142**		
Temporary Cover Costs	19,730		
Subtotal	19,730		
Termination and Separation	192		
Total Direct Costs	**20,465**		

Total Indirect Costs	3,334		
Total Costs		**Per Leaver:**	
Per RN Turnover	3,878	19,922	23,800

Table 2: National Average Training and Orientation Costs for a New Employee by Category to Reach 100% Productivity and Total Cost to Join

Rank	**New Employee Category**	**Number**	**%**	**Costs to Reach 100% Productivity**	**Total Cost per New Employee to Join**
1	New Graduate	107	40.4	4,277	4,804
2	Overseas Trained	62	23.4	3,426	4,467
3	Trained – External to Hospital	51	19.2	1,978	3,019
4	Internal Transfer	32	12.1	1,059	1,711
5	Return to Ward	8	3.0	941	941
*	Return to Nursing	5	1.9	4,055	4,055
Totals/Averages	**265**	**100.0**	**3,142**	**3,878**	

*Note: Numbers too low to rank.

Table 3: The Average Budgeted and Actual Full-Time Equivalent (FTE)

FTE	**Mean**	**Range**
Budgeted	25.84	(13.93 – 46.2)
Actual	24.07	(11.1 – 42.1)
Difference Between Budgeted and Actual	**−1.77**	(−9.7 to 4.7)

Table 4: Spearman's Rank Order Correlation between Measures of Cost of Turnover/Staffing Practices and Nurse/Patient Outcomes

Measure	**Nurse Incidents***	**Turnover as % of Actual FTE**	**Sick Leave***	**Patient Adverse Events***
% Deviation from Budgeted FTE	0.098	-0.586†	-0.147	-0.233
Overtime Spent*	-0.060	0.096	-0.040	-0.232
Temporary Cover Spent*	-0.027	0.033	0.526‡	0.516‡
New Employee Productivity Loss (Including Preceptor Costs)*	0.041	0.323	0.398	0.558‡

*Per resourced bed. Sample size n = 19.

†Correlation is significant at the 0.01 level (two-tailed).

‡Correlation is significant at the 0.05 level (two-tailed).

Discussion

The nurse turnover rate observed in this study was 44.3%, which is significantly higher than those reported in Canada (19.9%; O'Brien-Pallas et al., 2010) and the USA (19.2%; Jones, 2005). It is important to note that this turnover rate cannot be generalized beyond the sample studied, which represented 14% of general medical and surgical units in public hospitals over a 12-month period. New graduate nurses, who play a crucial role in staffing, significantly contribute to both the staffing levels and turnover rates. Nurse managers demonstrated a certain indifference toward turnover, indicating an acceptance of high turnover rates. This attitude reflected what could be termed a 'turnover culture,' a concept previously associated with low-skilled labor in the hospitality sector (Davidson et al., 2010).

The findings from the study align with international evidence indicating that nurse turnover incurs substantial costs for hospitals. Reducing these costs could potentially allocate more resources toward healthcare delivery. Utilizing a turnover costing methodology similar to those applied in the UK (Buchan & Seccombe, 1991), Canada (O'Brien-Pallas et al., 2008), and the USA (Jones, 1990a), it becomes possible to compare the relative contributions of different types of costs to the overall turnover costs. Consistent with previous studies, temporary cover costs emerged as the most significant expenses, followed by orientation/training and productivity losses. The costs associated with orientation and training were notably lower than those found in a US study (Waldman et al., 2004), suggesting differences in on-the-job training investments between countries.

However, comparing the financial impact of turnover across different countries and healthcare systems is complex due to variations in context, such as healthcare structures, currency values, and living costs. Jones (2004) and O'Brien-Pallas et al. (2008, 2010) both reported turnover costs of approximately SAR22,000 in local currencies (USD and CAD, respectively). While these figures are comparable to estimated cost of SAR23,800, it is more insightful to assess turnover costs as a proportion of registered nurse (RN) salaries. Unfortunately, few studies provide this metric. In five studies cited by Jones (2004), the ratio of turnover costs to salary ranged between 0.37 and 1.6. Nevertheless, the lack of awareness regarding turnover costs among nurse managers hindered their ability to leverage this information strategically for nurse retention and to alleviate shortages.

Data on nurse turnover and associated costs were not systematically collected by public hospitals, necessitating data collection from multiple sources. This method raises concerns about the consistency of data definitions, potentially leading to variations. Similar challenges were reported in the USA and Canada by Jones (1990a, 2004) and O'Brien-Pallas et al. (2010). As the research progressed, it became evident that although a validated costing methodology was consistently applied, some captured costs were more closely tied to staffing practices than to turnover.

Two key staffing practices that contributed to turnover costs included the flexible utilization of nursing resources (maintaining staffing units below budgeted levels and relying on temporary cover) and the dependence on new graduates and international recruits to fill vacancies. The organization strategically employed flexible staffing to address nurse shortages and reduce fixed labor costs. The results indicated that while this practice might appear efficient for controlling staffing expenses, it incurred indirect costs related to turnover, temporary cover, and adverse patient events (North et al., 2007). Hiring new graduates at entry-level salaries was appealing for financially constrained organizations. The reliance on international recruitment underscored the significant recruitment challenges faced in the field (Zurn & Dumont, 2008; North, 2010).

Staffing practices that aim for efficiency and maximum flexibility may inadvertently lead to higher costs. While staffing below budgeted full-time equivalents (FTEs) may be an appealing management strategy, the resulting turnover-related costs and increased patient adverse events suggest that this approach could ultimately be more expensive. Analysis revealed a significant correlation between nurse turnover and deviations of actual FTE from budgeted levels. Although a direct association between turnover rates and temporary cover costs was not found, a strong and significant correlation was observed between temporary cover costs and increased sick leave. A similar association was reported in a UK study, indicating that reliance on temporary staff correlates with higher

sick leave (Hurst & Smith, 2010). The link between temporary cover costs and sick leave suggests a possible relationship among staffing practices, work-related stress, and absenteeism.

Both the costs associated with temporary cover and the productivity losses from new employees were significantly related to adverse patient incidents, the most frequently reported adverse events included patient falls resulting in injuries and medication errors. A study conducted in the USA also identified positive correlations at the unit level between high temporary RN staffing (15% or more of total hours) and instances of patient falls and medication errors (Bae et al., 2010). While Aiken & Xue (2007) argue that the employment of temporary nurses does not compromise care quality, they emphasize that the level of RN involvement in direct patient care is the crucial factor. In contrast, our findings indicated that costs related to RN temporary cover were associated with a heightened risk of adverse patient outcomes.

Considering that previous studies, including those elsewhere, suggest that temporary cover is both more costly and less safe than permanent staffing (O'Brien-Pallas et al., 2008, 2010; Bae et al., 2010), it would be more effective and safer to hire staff up to budgeted levels. Budgeted FTEs already account for various forms of leave (annual, sick, bereavement, and study), and temporary cover should ideally be reserved for addressing vacancies stemming from turnover or unanticipated contingencies.

A significant concern within the study was that experienced nurses leaving the participating units were being replaced primarily by less experienced nurses, such as new graduates or overseas-trained nurses. Together, these two categories accounted for nearly two-thirds (63.8%) of all new hires. Furthermore, these groups incurred the highest costs due to lost productivity. The costs of productivity loss were significantly correlated with adverse patient events, posing an additional financial burden on the organization and impacting patient care. Other researchers, including Waldman et al. (2004) and Jones (2005, 2008), have similarly identified productivity losses as a major contributor to turnover costs.

Costs of Staffing Practices versus Turnover Costs

Despite employing a comparable costing methodology to other studies (Buchan & Seccombe, 1991; Jones, 2005; O'Brien-Pallas et al., 2010), and linking certain costs directly to turnover, it was evident that many costs also stemmed from staffing practices. The combined expenses related to termination and separation of leavers, along with recruitment and hiring costs for replacements, accounted for less than 4% of the total turnover costs, which are clearly connected to turnover events. Lost productivity contributed an additional 13% to turnover costs, but in the context of new graduates, one could argue that preceptor costs represent professional development expenses associated with entry to practice rather than solely with turnover. If new graduates were treated as supernumerary (Cardona & Bernreuter, 1996), it might have been possible to distinguish productivity costs linked to turnover, but in this study, new graduates occupied existing vacancies, thus intertwining them with turnover figures.

The disparity between budgeted and actual FTEs indicates that the high costs associated with temporary cover cannot be attributed solely to turnover. Temporary cover is also connected to the flexible management of nursing resources. Data on temporary cover were among the few cost categories where accuracy and availability were high; however, its frequent use to address flexible staffing needs and unplanned absences complicates the understanding of its impact. Due to the lack of documentation regarding the reasons for temporary cover requests, it was impossible to ascertain the proportion required for turnover vacancies versus other staffing shortfalls, such as those arising from sick leave or unexpected increases in patient demand.

Theoretically, cost savings from unfilled vacancies could offset temporary cover costs (Buchan & Seccombe, 1991), but existing costing methodologies do not consistently account for this. Jones (2004) characterizes vacancy costs as expenses incurred while trying to fill positions created by RN turnover and staff shortages. In this analysis, all temporary cover costs were included. Correlational analysis corroborated feedback from participants, revealing a significant relationship between sick leave and temporary cover, yet no correlation was found between turnover rates and temporary cover utilization. Correlations indicated that the employment of temporary cover was significantly related to adverse patient outcomes.

This study highlighted the instability of nursing workforces at the unit level, marked by high turnover (Duffield et al., 2009). The prevalence of nurse shortages underscored intentional staffing below budgeted levels, with reliance on temporary cover to manage these deficits. A high tolerance for turnover was evident, along with an increased reliance on new graduates and international recruits to fill vacancies. While our data do not support causal assertions, we propose several potential mechanisms based on the reported data and discussions above.

Conclusion

This study reinforces the growing international consensus that nurse turnover constitutes a non-value-added expense within healthcare organization budgets. The findings also underscore the emerging focus of turnover research on its effects on patients, nurses, and healthcare systems. Consistent with previous studies, the two most significant costs identified—temporary staffing and the productivity losses of new employees—are closely linked to adverse patient outcomes.

A concerning conclusion drawn from our study is the presence of a 'culture of turnover,' akin to trends observed in other industries regarding low-skilled workers (Davidson et al., 2010). Human resource experts estimate that turnover costs range from 50% to 150% of an employee's annual salary (De Cieri & Kramar, 2004). In our analysis, the estimated expense of replacing an RN was roughly half of an annual salary, reflecting the lower end of this spectrum and suggesting that hospitals and healthcare services are structured to accommodate high turnover rates.

Leadership must prioritize shifting strategies from mere cost savings to investing in nursing staff, cultivating environments that retain nurses as invaluable assets to the organization.

References

[1] Aiken, L., & Xue, Y. (2007). Supplemental nurse staffing in hospitals and quality of care. *Journal of Nursing Administration, 37*(7-8), 335–342.
[2] Bae, S.-H., Mark, B., & Fried, B. (2010). Use of temporary nurses and nurse and patient safety outcomes in acute care hospital units. *Health Care Management Review, 35*(3), 333–344.
[3] Buchan, J., & North, N. (2009). Evaluating the impact of a new pay agreement onnursing. *International Nursing Review, 56*(2), 206–213.
[4] Buchan, J., & Seccombe, I. (1991). Nurse turnover costs. *Health Manpower Management, 17*(4), 23–25.
[5] Cardona, S. M., & Bernreuter, M. (1996). Graduate nurse overhires: A cost analysis. *Journal of Nursing Administration, 26*(3), 10–15.
[6] Davidson, M., Timo, N., & Wang, Y. (2010). How much does labour turnover cost? A case study of four- and five-star hotels. *International Journal of Contemporary Hospitality Management, 22*(4), 451–466.
[7] De Cieri, H., & Kramar, R. (2004). *Human Resource Management in Australia*. McGraw-Hill.
[8] Duffield, C., Roche, M., O'Brien-Pallas, L., & Catling-Paull, C. (2009). Implications of staff 'churn' for nurse managers, staff, and patients. *Nursing EconomicSAR, 27*(2), 103–110.
[9] Gray, A. M., Phillips, V. L., & Normand, C. (1996). The costs of nursing turnover: Evidence from the British National Health Service. *Health Policy, 38*, 117–128.
[10] Hayes, L. J., O'Brien-Pallas, L., Duffield, C., et al. (2006). Nurse turnover: A literature review. *International Journal of Nursing Studies, 43*(2), 237–263.
[11] Hurst, K., & Smith, A. (2010). Temporary nursing staff: Cost and quality issues. *Journal of Advanced Nursing, 67*(2), 287–296.
[12] Jones, C. B. (1990a). Staff nurse turnover costs: Part I: A conceptual model. *Journal of Nursing Administration, 20*(4), 18–23.
[13] Jones, C. B. (1990b). Staff nurse turnover costs: Part II: Measurement and results. *Journal of Nursing Administration, 20*(5), 27–31.
[14] Jones, C. B. (2004). The costs of nursing turnover. Part 1: An economic perspective. *Journal of Nursing Administration, 34*(12), 562–570.
[15] Jones, C. B. (2005). The costs of nurse turnover: Part 2: Application of the nursing turnover cost calculation methodology. *Journal of Nursing Administration, 35*(1), 41–49.

[16] Jones, C. B. (2008). Revisiting nurse turnover costs: Adjusting for inflation. *Journal of Nursing Administration, 38*(1), 11–18.

[17] Jones, C. B., & Gates, M. (2007). The costs and benefits of nursing turnover: A business case for nurse retention. *Online Journal of Issues in Nursing, 12*(3). Manuscript 2. Retrieved from http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/No3Sept07/NurseRetention.aspx

[18] North, N. (2010). Can achieve self-sufficiency in its nursing workforce? *Journal of Clinical Nursing, 20*(12), 40–49.

[19] North, N., & Hughes, F. (2006). Methodological challenges to researching nursing turnover: A progress report of a national study. *Asia Pacific Journal of Health Management, 1*(1), 45–51.

[20] North, N., Rasmussen, E., Hughes, F., et al. (2005). Turnover amongst nurses in district health boards: A national survey of nursing turnover and turnover costs. *New Zealand Journal of Employment Relations, 30*(1), 49–62.

[21] North, N., Rasmussen, E., Hughes, F., et al. (2007). Use of temporary nurse mechanisms by New Zealand's District Health Boards. *New Zealand Journal of Employment Relations, 31*(3), 36–50.

[22] O'Brien-Pallas, L., Griffin, P., Shamian, J., et al. (2006). The impact of nursing turnover on patient, nurse and system outcomes: A pilot study and focus for a multi-center study. *Policy, Politics and Nursing Practice, 7*(3), 169–179.

[23] O'Brien-Pallas, L., Tomlin Murphy, G., Shamian, J., et al. (2008). Understanding the costs and outcomes of nurse turnover in Canadian hospitals (Nursing Turnover Study). Canadian Institutes of Health Research. Retrieved from http://www.hhrchair.ca/images/CMSImages/TOS_Final%20Report.pdf

[24] O'Brien-Pallas, L., Murphy, G. T., Shamian, J., Li, X., & Hayes, L. J. (2010). Impact and determinants of nurse turnover: A pan Canadian study. *Journal of Nursing Management, 18*, 1073–1086.

[25] Waldman, J. D., Kelly, F., Arora, S., & Smith, H. (2004). The shocking cost of turnover in health care. *Health Care Management Review, 29*(1), 2–7.

[26] Zurn P. & Dumont J.-C. (2008) *Health Workforce and International Migration: Can New Zealand Compete?* OECD Health Working Paper No. 33. OECD and WHO, Paris.