

The Rate and Cost of Nurse Turnover in Australia

Dr Michael A. Roche RN; PhD; MHSc; BHSc; DipAppSc; MH Certificate

Professor Christine Duffield RN; PhD; FAAN; Master of Health Planning; Diploma in Nursing Education; Bachelor of Science in Nursing.

Professor Caroline Homer RM; RN; PhD; MScMed(ClinEpi)

Professor James Buchan PhD; MIPD; MIHSM

Ms Sofia Dimitrelis MPhil; MPharm; BMedSci

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ABSTRACT

Nurse turnover is a critical issue facing workforce planners across the globe, particularly in light of protracted and continuing workforce shortages. An ageing population coupled with the rise in complex and chronic diseases, have contributed to increased demands placed on the health system and importantly, nurses who themselves are ageing. Costs associated with nurse turnover are attracting more attention, however existing measurements of turnover show inconsistent findings which can be attributed to differences in study design, metrics used to calculate turnover and variations in definitions for turnover. This paper will report the rates and costs of nurse turnover across three States in Australia.

Keywords: Nurse Turnover; Turnover Costs; Turnover Rates.

INTRODUCTION

Nurse turnover has recently gained greater attention due to strong correlations with patient outcomes (e.g. patient falls, infections), low staff morale, poorer job satisfaction and quality of patient care (Duffield, Roche, Blay, Thomas, & Stasa, 2011; Hayes et al., 2012; O'Brien-Pallas, Murphy, Shamian, Li, & Hayes, 2010). Higher rates of turnover also place considerable demands on hospital budgets. Estimates of the rate and costs of nurse turnover vary considerably between countries and studies, largely due to different conceptualisations of the term “turnover”. Turnover can be described as *any* job move, however a narrower definition involves leaving the organisation or profession entirely (Hayes et al., 2006). In a recent Canadian study, turnover was defined as the process whereby nursing staff *voluntarily* leave or transfer from their position, with an estimated mean turnover rate of 19.9% per year (O'Brien-Pallas et al., 2010). In contrast, a US study estimated the mean turnover rate at 13.9%, but included *all* employee terminations whether voluntary or involuntary, except movement of nurses within the hospital (Nursing Solutions Inc., 2011). In Jordan, the turnover rate has been estimated as high as 36.6%, with the authors using a broad definition as the *total number of leavers* (Hayajneh, AbuAlRub, Athamneh, & Almahzoomy, 2009). Providing further evidence of the variation, in England a turnover rate of roughly 10% has been reported (Morris, 2006), while figures have ranged from 12-21% across 10 European countries according to a review by Li and Jones (2013).

Similarly, estimates of turnover costs also vary widely, ranging from roughly \$25,000 up to \$88,000 in United States dollars (Jones, 2004, 2005, 2008). This is largely due to conceptual differences relating to cost categories included in the calculation, and methodological differences relating to study design. The type of costs included in the calculations is of particular importance. The Nursing Turnover Costs Calculation Methodology (NTCCM) based on the work of Hall in 1981 and Hoffman (1984; 1985), is commonly used to distinguish between *direct costs* and *indirect costs* (Jones, 1990a, 1990b, 2004, 2005, 2008). *Direct costs* are defined as those which relate to recruitment, temporary

replacement and hiring of a new employee, whilst *indirect costs* relate to time spent administering the turnover process relating to termination and separation, as well as the costs associated with orientation and training and productivity of new employees (Table 1; O'Brien-Pallas et al., 2006). It has been estimated that direct hiring costs of turnover comprise 21% of total costs, whilst indirect costs of lost productivity account for 79% of total costs (Nursing Executive Center, 2000; O'Brien-Pallas et al., 2006). A revised version of the NTCCM reconceptualises cost categories as *pre-hire costs* and *post-hire costs*, and includes additional items such as supervisor costs that account for more elements of turnover (Jones, 2004, 2005, 2008).

[INSERT TABLE 1 HERE]

To date in Australia, there is limited published information on nursing turnover rates and costs. The exceptions include studies undertaken in the Northern Territory and Queensland, as both regions have reported problems attracting and retaining nurses in rural and remote areas. Queensland has previously reported an annual turnover rate of 20.2% in the 1990s (Queensland Health, 1999), a figure not dissimilar to the recently reported rates of between 12% and 31.9% from that state, which varied according to nurses' age (Eley, Buikstra, Plank, Hegney, & Parker, 2007). Figures from the Northern Territory show a turnover rate of 38% and a mean turnover cost of \$10,734 (Australian dollars) per commencing nurse using the revised NTCCM (Garnett et al., 2008). This paper will report the rates and costs of nurse turnover across three States in Australia.

METHOD

This paper reports on the rate of nurse turnover and the associated costs in 11 hospitals across three states (New South Wales, Australian Capital Territory and Western Australia). It is part of a larger study that also explored the relationship between nurse turnover and patient outcomes (falls, medication errors, nurse sensitive outcomes), nurse outcomes (satisfaction, health, intention to

leave), and system outcomes (turnover costs) in Australia. Only data relating to turnover costs and rates are presented here.

Study Design

Data were collected from 62 general (medical, surgical or mixed) wards located within 11 hospitals across three Australian states. The study was conducted in two waves of three months each, over a two-year data collection period (September 2008 to August 2010) to collect sufficient turnover and cost data at each site. Costing and turnover data were gathered at the ward level from Nursing Unit Managers (NUMs) for each month during each data collection wave, with supplementary data obtained at the hospital or Area Health Service level where data were not available to NUMs. The study was approved by seven Human Research Ethics Committees representing the participating hospitals and the university.

The Instrument

The NTCCM is a highly regarded method that has been widely used (in the US, Canada and New Zealand) to measure turnover costs in the nursing context. In this study, cost and turnover data were collected using a Turnover Costs template with items from the original NTCCM as described above (Jones, 1990a, 1990b, 1992; O'Brien-Pallas et al., 2006). Direct costs of nursing turnover therefore included recruitment, hiring and temporary replacement costs, while indirect costs comprised orientation, termination and decreased productivity as newly employed nurses become fully productive. These data were collected for each full time equivalent position (FTE) turned over, for each of the 62 wards in the study. Turnover was defined as the *voluntary* transfer or resignation of registered nursing staff from their primary employment position (Jones, 1990a; North et al., 2013; O'Brien-Pallas, Murphy, & Shamian, 2008). Other data collected were the number of beds and patient occupancy for the ward.

Analysis

The turnover rate was calculated in accordance with previous studies (Jones, 1990b; North et al., 2013) with the six months of data for each ward converted to an estimated annual turnover rate, presented as a percentage (Equation 1). Costs were rounded to the nearest dollar and averaged across the data collected for each ward to provide an estimate of costs for each item for each ward. They are reported in Australian dollars as mean figures for each data element using the NTCCM structure (Table 1), with minimum and maximum figures included in order to indicate the range. The proportion of each data element, as a contributor to direct or indirect costs and to the overall turnover cost, was also calculated.

[INSERT EQUATION 1 HERE]

RESULTS

A total of 1673 nurse surveys were completed during the study period. The average age for nurses in the study was 39.2 years. The majority of nurses (~60%) worked on a full time basis, with roughly a third employed on a part-time basis and less than 10% working on a casual basis. The number of hospitals and wards across the three states is shown in Table 2. The majority of wards were surgical or medical, with only a small proportion of mixed medical-surgical or medical-rehabilitation wards. Across all states, occupancy levels were over 95%. The size of units ranged considerably, most notably in Western Australia (15-40 beds).

[INSERT TABLE 2 HERE]

The annual turnover rate per ward was 15.1% overall, ranging from 12.6% in NSW to 16.7% in WA. The total cost of turnover was highest in the ACT (\$68,621), followed by WA (\$58,260) and NSW

(\$26,199). There was also considerable variation across the 11 hospitals in regard to both total cost and turnover rates. Over the entire sample, the average total cost of turnover was calculated as \$49,255 per FTE. However, costs ranged from \$17,728 to \$104,686 across the hospitals (Table 3). 'Temporary replacement' costs for unfilled positions accounted for 44.4% of total costs, whilst 'Advertising and Training' contributed the least to turnover expenses (\$913; 1.9% of overall costs). Indirect costs (orientation and training; decreased new RN productivity; termination) amounted to \$24,910 (50.6%) of the mean turnover cost per nurse, while direct costs (advertising and training; temporary replacement; hiring) amounted to \$24,345 (49.4%) of the mean total cost. There was considerable variation across data elements for both direct and indirect turnover costs. Close to 90% (\$21,878) of direct costs were attributed to 'Temporary replacement', while 'Termination' made up the largest proportion of indirect costs (50%; \$12,457).

[INSERT TABLE 3 HERE]

Across the hospitals involved in this study, 'Temporary Replacement' was consistently the largest single cost, typically accounting for more than 80% of direct costs and more than one-third overall. 'Termination' was usually the largest indirect expense at around 40% of indirect costs and 15% overall. In contrast, costs for 'Advertising and Training', at approximately 5% of direct costs and less than 3% overall, were typically the lowest figures. Although these findings are consistent with the overall picture described above, there was some variation between states, with direct costs accounting for more than 55% of the total in NSW and the ACT, while indirect costs were higher (~55%) in WA.

DISCUSSION

This study provides data on annual rates of turnover and associated costs for nurses in three States in Australia. The nurse turnover rate is comparable to the 10-20% range documented in earlier

studies such as 10% in England (Morris, 2006); recent US estimates at 13.9% (Nursing Solutions Inc., 2011); 19.9% in Canada (O'Brien-Pallas et al., 2010). However the costs associated with nurse turnover are significantly higher.

The average total cost of turnover per FTE in Australia was two to five times higher than previously reported estimates that utilised the same costing methodology. The maximum cost in this study was more than ten times higher than the lowest rate reported in the US (\$10,198 per nurse; Jones 1990a,b). Figures from Canada and New Zealand were a little closer to current findings but higher than the minimum figure here, at approximately \$25,000 (North et al., 2013; O'Brien-Pallas et al., 2008). When costs are compared using the common format of United States dollars, accounting for inflation rates up to 2014, Australian turnover costs (\$48,790) are roughly two-fold higher than the US (\$20,561), Canada (\$26,652) and New Zealand (\$23,711), although this does not account for different industrial environments or relative salary rates. In addition, Strachota, Normandin, O'Brien, Clary, and Krukow (2003) identified that estimations varied depending on the ward specialty. They reported a total cost of \$64,000 in specialty wards and \$42,000 per turnover in medical-surgical wards (\$82,366 and \$54,046 in 2014 US dollars). The latter figure is similar to results from the present study. An examination of the components of the costs revealed that several components contribute a higher proportion of those costs.

In particular, the current study reported high temporary replacement costs as a major contributor to the higher overall costs. Temporary replacement costs specifically covered salary and on-costs of nursing personnel assigned to wards to fill vacancies including casual and agency nurses; additional expenses associated with on-call allowances, casual nurse allowance, agency booking fees and clothing allowance; salary and time associated with arranging temporary coverage; and salary and time associated with experienced staff instructing temporary staff. Temporary replacement costs made up close to 90% of direct costs and were notably higher compared to findings from the US

(62% of direct costs) (Jones, 1990a, 1990b), however were not quite as high as NZ (96% of direct costs).

Although the reason for this high cost of temporary replacement is not clear, it may reflect staffing or human resource practices in the study organisations, such as a 'staff freeze' where vacancies are not filled for lengthy periods with permanent employees. It should also be noted that temporary replacement costs are not easily distinguishable from vacant positions which could have contributed to the higher overall costs. This is because temporary replacement also accounts for sick leave, maternity leave and existing shortages in addition to vacancies (North et al., 2013). Temporary replacement nurses filling those vacancies may be sourced from agencies (labour hire firms) and could therefore be more expensive.

Earlier estimates reporting on the proportion of direct and indirect costs do not match with findings from the present study. The current study attributes roughly 50% of costs for both direct and indirect costs. Previous studies have indicated higher direct costs at 61% (Jones, 1990a, 1990b) and 86% (North et al., 2013). A potential reason for differences is that indirect costs are not as obvious to collect and calculate. In Canada, decreased productivity accounted for roughly 60% of indirect costs (O'Brien-Pallas et al., 2008), while in New Zealand and the US, orientation and training made up ~50-60% of indirect costs respectively (Jones, 1990a, 1990b; North et al., 2013). In Australia termination costs made up roughly 50% of indirect costs. Termination costs specifically cover expenses associated with: separation of employees including holiday pay and long service leave; nurse manager or registered nurse salary and time for the termination process (e.g. writing references, exit interviews, rescheduling roster); human resource and payroll staff time associated with termination processing (e.g. superannuation calculations, sick leave calculations, transfer of accrued leave, annual leave calculations and long service leave calculations).

Conclusion

Australia's health system is facing significant challenges as a result of an ageing population, the increased burden of chronically ill patients, inefficient training systems, poorly coordinated skilled migration, increasing workforce shortages and health expenditure costs associated with nurse turnover (Health Workforce Australia, 2012a). Turnover studies enable health planners to measure and predict stability in the workforce. The 'stability index', is another measure arguably as important as it assesses the proportion of staff remaining in post within a defined period, and can therefore be considered the reverse of turnover (Buchan, 2010). In order to ensure a sustainable health system for Australia's population, workforce planning and national reform targeting nurse retention strategies are critical.

The findings indicate that nurse turnover is a critical concern faced by health care organisations, particularly as turnover carries significant costs which impact hospital budgets and health expenditure costs. Greater attention needs to be placed on retention as projected workforce shortages are estimated to become highly significant for nurses by 2025 (109,000; 27%) (Health Workforce Australia, 2012a). Retention is part of Health Workforce Australia's (HWA's) objectives in 'building capacity' and 'improving distribution' (HWA, 2012b). Recent recommendations provided by HWA include a focus on building a greater and efficient workforce by creating a nationally coordinated approach to retention, and improving distribution through national marketing strategies for international recruitment (HWA, 2012a). Workforce reform and planning is therefore central to achieving these objectives and informing national policy (HWA, 2012b).

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Equation 1. Annual Turnover Rate

$$\text{Annual Turnover Rate} = \left(\frac{\text{Total FTE Terminations}}{\text{Budgeted FTE}} \right) \times 100$$

Table 1 Turnover Costs Data Elements

Category	Subcategory	Item
Direct Costs (Pre-hire*)	Advertising and Training	Recruitment Personnel salaries and expenses
		Supplies
		Job Fairs, seminars
		Student visitation days
	Vacancy*/ Unfilled Positions	Advertising
		Temporary Nurses
		Overtime
		Closed beds
		Productivity of unit staff*
		Patient deferrals*
Hiring	Adoption of new staffing programs*	
	Interviewing personnel time, salaries and expenses	
	Employment processing	
	Bonuses	
Indirect Costs (Post-hire*)	Orientation and Training	Search firm costs*
		Background checks*
		Training personnel salaries and expenses
		Supplies
	Decreased new nurse productivity	Equipment
		Preceptors
	Decreased pre-turnover productivity*	New nurse productivity during "learning" period
		Supervisor/co-worker productivity*
	Termination	Departing nurse*
		Co-workers*
Supervisor*		
Termination	Exit interview personnel time	
	Supplies and expenses	
	Unused vacation and sick time	
	Early retirement*	

**Revised NTCCM category/sub-category/item*

All other categories/sub-categories/items are included in both the original and revised NTCCM

Table 2 Hospitals and Wards

	Hospitals	Wards	Beds	Occupancy %	Turnover Rate
	N	N	Mean (Min-Max)	Mean (SD)	Mean
NSW	3	20	25.2 (19-30)	95.4 (1.0)	12.6%
ACT	1	8	28.8 (18-35)	98.6 (4.0)	14.5%
WA	7	34	27.9 (15-40)	95.2 (8.5)	16.7%
Overall	11	62	27.1 (15-40)	95.7 (8.9)	15.1%

Table 3 Turnover Costs per FTE

	Item/Data Element	Turnover Costs*	Average % of Costs	
		Mean (Min-Max)	Category	Overall
DIRECT COSTS	Advertising and Training	\$913 (\$149-\$2,505)	3.8%	1.9%
	Temporary Replacement / Unfilled Positions	\$21,878 (\$6,212-\$69,398)	89.9%	44.4%
	Hiring	\$1,554 (\$453-\$5,393)	6.4%	3.2%
	SUBTOTAL Direct Costs	\$24,345 (\$6,936-\$70,400)		49.5%
INDIRECT COSTS	Orientation and Training	\$5,072 (\$1,639-\$13,253)	20.4%	10.3%
	Decreased new nurse productivity	\$7,380 (\$840-\$18,461)	29.6%	15.0%
	Termination	\$12,457 (\$1,275-\$29,678)	50.0%	25.3%
	SUBTOTAL Indirect Costs	\$24,910 (\$9,214-\$52,955)		50.6%
Average Total Costs		\$49,255 (\$17,728-\$104,686)		

*Costs calculated using the original NTCCM; figures rounded to the nearest dollar