

## **Regional differences among employed nurses: a Queensland Study**

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## **ABSTRACT**

**Objective:** To ascertain differences in the working lives of geographically dispersed nurses.

**Design:** cross sectional.

**Setting:** Registered, enrolled and assistants-in-nursing members of the Queensland Nurses' Union employed in nursing in Queensland, Australia.

**Participants:** 3000 members of the Union, equally stratified by sector (public, private, aged care). 1192 responded and 1039 supplied postcodes matching the Australian Standard Geographical Classification.

**Main outcome measures(s):** Statistically significant differences in working lives of nurses employed in different geographical locations.

**Results:** Nurses in outer regional/remote/very remote localities are more likely to be employed as permanent full-time staff and self-report higher levels of work stress. These levels could be explained by: lack of replacement staff for leave; longer working and on-call hours; and lack of support for new staff. Distance remains a major barrier to accessing continuing professional education. However, outer regional/remote/very remote nurses were more likely to be provided employer support for professional education. Inner regional nurses were more likely to work part-time and would work more hours if offered. They were more likely to have taken a break from nursing due to family commitments.

**Conclusions:** The data confirm that current policies are not addressing the differences in the working lives of geographically dispersed nurses. Policies addressing orientation, mentoring and workloads should be implemented to address these issues.

**Key Words:** nursing, regional, rural, remote, working lives

### **1. What is already known on this subject?**

Rural and remote area nurses have a different scope of practice to nurses employed in metropolitan areas, mainly due to low population densities which impact on the economics of health service delivery.

Australian Institute of Health and Welfare report that inner regional, outer regional, remote and very remote area employed nurses have different working hours.

### **2. What does this study add?**

It provides Queensland data confirming that there are major differences in the working lives of nurses in major cities, inner regional and outer regional/remote/very remote localities.

### *Regional differences in employed nurses*

High self reported levels of work stress in outer regional and remote areas would be compounded by: the lack of replacement staff when taking leave; longer working hours; the time spent on call; and the lack of support for new graduates and new employees.

While distance is a major barrier to accessing continuing professional education (CPE), nurses in outer regional/remote/very remote areas are more likely to be fully or partially supported by their employer.

Nurses in inner regional areas are more likely to indicate they would work more hours if there were opportunities in their area of expertise.

## **INTRODUCTION**

In 2005, 37.5% of the 244,360 registered and enrolled nurses in Australia were employed outside major cities (MC). (1) The scope of nursing practice of rural and remote area nurses differs to nurses working in metropolitan areas. (2-5) In addition to longer working hours, (1) rural and remote differences are attributed to the generalist nature of this nursing work, and the lack of on-site medical and allied health support. (4, 6) However, little data are available investigating differences in the working lives of these nurses.

In 2007 the Queensland Nurses' Union (QNU) conducted a survey to investigate key factors impacting upon the working lives of their members. This data collection provided an opportunity to answer the research question: "What is the impact of geographical location upon the working life of nurses"? This study reports the findings, analysed using the postcode of the participant's main nursing job and the Australian Standard Geographical Classification (ASGC). (7)

## **METHOD**

### **Procedure and participants**

This prospective cross sectional designed study involved a questionnaire posted to registered, enrolled and assistant-in-nursing members of the QNU in October, 2007. Following stratification by sector (public, private, aged care), 1000 nurses per sector were randomly selected and invited to participate (n =3000). Of the 1192 respondents, 1039 supplied postcodes that matched the ASGC classification with 555 (53.9%), 313 (30.1%) and 171 (16.5%) individuals based in MC, Inner Regional (IR) and outer regional/remote/very remote (ORR) respectively (due to small numbers nurses classified as ORR were collapsed into one category).(7)

To ensure confidentiality, coded surveys were posted by the QNU to the participants, with completed surveys returned direct to the research team. The research team had no access to individual participant information and the QNU had no access to identifiable data. All data were scanned in by the software program Verity TeleForm (v9.0 Verity Inc, Sunnyvale, Ca, USA).

The study was approved by the University of Queensland's and University of Southern Queensland's Human Research and Ethics Committees.

### **The survey instrument**

Originally distributed in 2001, the survey titled "Your Work, Your Time, Your Life" contained 77 questions divided into eight sections. (8) The results of the 2001 and 2004 studies have been previously reported. (8-10) In 2007, the instrument underwent minor modifications, which were pretested by independent experts and potential respondents. Additionally, to fully measure the working lives of nurses, the Practice Environment Scale of the Nursing Work Index (PES – NWI) was included in the 2007 study. These results will be reported elsewhere. (11)

## **Data analysis**

Data were extensively reviewed and anomalies logged, checked and corrected, which included the elimination of outliers. All data were analysed using Version 16 SPSS (SPSS Inc., Chicago, IL, USA). Primarily, all comparisons were undertaken on an item-by-item basis and differences assessed by chi-squared ( $\chi^2$ ) testing. Where appropriate, a secondary analysis was undertaken using analysis of variance and Bonferroni post-hoc procedures to identify mean differences and their source. An alpha level of 0.05 was required for significance.

## **Limitations**

Individual data were pooled by postcode as per the ASGC. Unfortunately, some postcodes cross ASGC regions. Within these, the ASGC provides data on proportions of individuals in the major classification. To avoid misclassification, data were carefully scrutinized and a possible 196 individuals were identified as affected. When these were assessed by the associated ASGC ratio it was estimated that fewer than 10 individuals per region would be affected, thus any effect would be minimal. A limitation of all surveys is whether respondents are representative. The study response rate was 39.7% and comparison of the demographics of the respondents with those of the QNU members gives no evidence for bias. Furthermore, the number of respondents in each group is more than sufficient for a reliable statistical power of analysis.

## **RESULTS**

### **Current employment**

The majority of respondents were employed as Registered Nurses level one (43.2% MC, 36.3% IR and 35.2% ORR) ( $\chi^2 = 31.378$ , degrees of freedom [df] = 16,  $p = 0.012$ ).

Differences in employment sector were apparent with MC nurses more likely to work in the private acute sector ( $\chi^2 = 54.742$ , df = 14,  $p < 0.001$ ) (Table 1). ORR nurses were more likely to be employed in the public sector.

### **Work commitment**

ORR nurses were more likely to be permanently full-time employees ( $\chi^2 = 34.136$ , df = 8,  $p < 0.001$ ). In contrast, IR nurses were most likely to be permanent part-time employees (Table 2). This latter cohort indicated a preference to work more shifts ( $\chi^2 = 11.411$ , df = 4,  $p = 0.022$ ).

On average, respondents undertook  $31.0 \pm 8.8$  hours of work per week. While a difference in mean working hours approached significance ( $F = 2.872$ ,  $p = 0.057$ ), ORR nurses had the longest average working week ( $32.6 \pm 8.6$ ,  $30.8 \pm 9.0$  and  $30.4 \pm 8.5$  hours, ORR, MC and IR respectively) and were most likely to work greater than 37 hours per week ( $\chi^2 = 24.152$ , df = 6,  $p < 0.001$ ) (Table 3).

Significant regional differences emerged for total minimum minutes per shift (calculated as [reported hours \* 60] + reported minutes) ( $\chi^2 = 1.161$  E2, df = 88,  $p = 0.024$ ) but not total maximum minutes. When interpreted by quartile (< 200, 200-400, 400-600, > 600 minutes,

respectively), ORR nurses were most likely to work between 400 and 600 minutes in a minimum shift, with the majority of nurses having minimal shifts between 200 and 600 minutes long (90.2% MC, 86.9% IR and 92.7% ORR). For maximum length of shift, 25.5 % ( $n = 119$ ) of MC nurses reported shift lengths greater than 600 minutes. Between group analysis of the means revealed ORR nurses had significantly longer total minimum shifts than both MC and IR nurses ( $F = 5.980, p = 0.003$ ). In contrast, MC nurses had greater total maximum shifts ( $F = 10.725, p < 0.001$ ) (Table 4).

When asked how many times over the previous four weeks had they been on call and called out, significant regional differences were observed, ( $\chi^2 = 60.496, df = 40, p = 0.020$  and  $\chi^2 = 46.580, df = 28, p = 0.015$ , respectively). ORR nurses were on call significantly more than MC nurses ( $F = 4.121, p = 0.017$ ) and were predominantly on call two or four to six times during the previous four weeks.

### **Working conditions**

Significant regional differences appeared for staff replacement for; long service leave ( $\chi^2 = 16.010, df = 8, p = 0.042$ ), training/study leave ( $\chi^2 = 19.560, df = 8, p = 0.012$ ), time off in-lieu ( $\chi^2 = 15.574, df = 8, p = 0.049$ ) and professional development leave ( $\chi^2 = 17.475, df = 8, p = 0.026$ ). Overall, ORR nurses were least likely to report staff “always” replaced.

### **Professional development**

ORR nurses were most likely to identify distance as a barrier to continued professional development (CPE) ( $\chi^2 = 46.457, df = 2, p < 0.001$ ), but least likely to suggest that they could not afford the fees ( $\chi^2 = 7.401, df = 2, p = 0.025$ ). Additionally, ORR nurses were more likely to receive some employer support for attendance for CPE ( $\chi^2 \leq 20.442, df = 2, p < 0.050$  and  $\chi^2 \leq 14.388, df = 2, p < 0.050$ ) (Figure 1).

There was a strong difference across regions as to whether graduate nurses ( $\chi^2 = 20.454, df = 6, p = 0.002$ ) and nurses commencing in a new clinical area ( $\chi^2 = 24.112, df = 8, p = 0.002$ ) received sufficient workplace support. Overall, less than half of the respondents believed there was adequate support for new graduates (44.7% MC, 40.6% IR and 36.3% ORR) and orientation to new clinical areas (39.3% MC, 29.0% IR and 24.6% ORR).

In response to the opposing statement “work stress is high/work stress is low” the majority of nurses believed work stress was “extremely or quite” high ( $\chi^2 = 27.593, df = 12, p = 0.006$ ), with ORR nurses being most effected (82.0% ORR, 73.5% IR and 68.3% MC).

Regional differences existed for those who had taken a break from nursing ( $\chi^2 = 6.413, df = 2, p = 0.041$ ), with IR nurses significantly more likely to have taken a break than MC nurses ( $F = 3.234, p = 0.040$ ). When specific reasons were given for taking a break, further regional differences emerged ( $\chi^2 \leq 12.217, df \leq 2, p \leq 0.050$ ) (Figure 2).

## **DISCUSSION**

The results are consistent with AIHW nursing labour force data (1) and with previous work on the rural and remote nursing workforce in Queensland. (12, 13) As the major provider of health services in ORR is Queensland Health, nurses working in ORR areas are more likely to be employed in the public sector.

The data indicate that ORR nurses are more likely to work longer hours, be “on-call” and be called out. This may provide one explanation of why ORR nurses were more likely to report work stress as “high” than other nurses. (14) Compounding this issue is the lack of replacement for ORR nurses who take leave, thus contributing to high levels of work stress and eventually burn out. (12, 14) If nurses are not replaced when on leave, then work is not undertaken. This has occupational health and safety implications for the nurse who has an increased workload on return to work (15), and will contribute to high turnover and decreased workplace tolerance. (14, 16) Moreover, the lack of replacement staff also has implications for health service delivery within the community. If nurses are not replaced when on leave, then continuity of care declines. (17)

Nurses in ORR areas reported distance as a major barrier to accessing CPE. (12, 13, 18) The higher level of employer support for ORR nurses’ CPE activities could be explained by the higher proportion of nurses employed in the public sector and the changes within this sector’s award that have increased funding for CPE. This finding is new and requires exploration in other Australian States/Territories.

Lack of preparation for the role, including adequate orientation to rural and remote nursing practice, has been the subject of many studies. (14, 19, 20) There have been several programs (e.g. mentoring) established to increase the support for student nurses, (21) newly graduated nurses and nurses commencing for the first time in rural or remote areas. (22) The data suggest that support is still inadequate. Novice nurses who are not supported in their workplace are more likely to leave, thus increasing the cycle of recruitment, lack of retention and need for further recruitment. (19, 23, 24)

Nursing is a predominately female workforce and many of the respondents have taken a break from nursing due to family commitments. Nurses from IR areas were more likely to have taken a break and state that this break was for family reasons. The higher level of part-time nurses in IR areas may be explained by those who indicated they wished to work more hours, and that there were “no jobs in their preferred area of nursing”.

The outcomes of this study highlight the need for an increased level of support for ORR nurses. This paper adds emphasis to Peake and Judd’s (25) identification of the need for strategies to improve medical and nursing staff retention in rural hospitals due the increased service demand. In addition, the study adds valuable knowledge to a previously understudied area, that of the variance between remote, rural and metropolitan nursing. Comparing QNU membership for 2007 with the latest AIHW workforce figures (2005) 68.4% of RNs and ENs in Queensland are QNU members (1). It should be noted there are some inaccuracies in this direct comparison owing to a) data from different years, b) incomplete AIHW returns and c) complete lack of AIN data collected by AIHW. However despite these potential errors the QNU members do represent

about half of the workforce and the data may be viewed in that light. Nevertheless, the high level of self-reported work stress and difficulties experienced warrants broader investigation of the entire workforce to better identify specific causes in the ORR environment.

## **CONCLUSION**

These data indicate differences in the working lives of nurses in geographically dispersed areas. The investigation highlights that ORR nurses work longer hours, are more likely to be on-call and be called out, see distance as a major barrier to CPE and are less likely to be replaced when they take leave. It is not surprising that these nurses report higher levels of work stress. It is apparent that Queensland Health and other employers need to review their workplace workload policies especially the provision of locum support. One positive in the data is the higher level of employer support for CPE activities provided to ORR nurses. These findings may suggest that the recently introduced funding for CPE activities in the Queensland industrial award has had some effect, albeit with local differences rather than an overall improvement. The data also indicate that preparation for practice in ORR areas remains inadequate, suggesting a need for strengthening orientation/mentoring programs for newly employed rural and remote area nurses. In times of workforce shortages, data that indicate nurses would work greater hours if offered are significant.

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Table 1. Regional nurses by place of employment.

	MC		IR		ORR		QLD	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Public acute	148	27.2	72	23.5	61	36.3	314	27.7
Private acute	198	36.3	94	30.7	26	15.5	365	32.2
Community	28	5.1	14	4.6	17	10.1	64	5.6
Private domcare	1	0.2	2	0.7	2	1.2	6	0.5
Public aged	17	3.1	14	4.6	17	10.1	51	4.5
Private aged	137	25.7	10	33.7	43	25.6	304	26.8
Agency	4	0.7	2	0.7	1	0.6	10	0.9
Other	12	2.2	5	1.6	1	0.6	19	1.7
Total	545	100.0	306	100.0	168	100.0	1133	100.0

*n* – Number, % - As a percentage of the region.

MC = major city

IR = inner regional

ORR = outer regional, remote, very remote

QLD: Represents the state outcomes generated from the 2007 Queensland Nurses' Union survey.

Table 2. Employment status of nurses by region.

	MC		IRR		ORR		QLD	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Permanent full-time	187	34.1	63	20.3	70	41.7	347	30.2
Permanent part-time	300	54.6	221	71.3	84	50.0	687	59.9
Casual	53	9.7	23	7.4	11	6.5	98	8.5
Temporary full-time	5	0.9	2	0.6	2	1.2	11	1.0
Temporary part-time	4	0.7	1	0.3	1	0.6	6	0.5
Total	549	100.0	310	100.0	168	100.0	1149	100.0

*n* – Number, % - As a percentage of the region.

MC = major city

IR = inner regional

ORR = outer regional, remote, very remote

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Table 3. Average paid ordinary working hours per week by region.

	MC		IR		ORR	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1 – 12 hours	14	3.3	3	1.3	5	3.9
13 – 24 hours	109	25.6	58	25.2	17	13.3
25 – 36 hours	147	34.6	107	46.5	47	36.7
> 37 hours	155	35.5	62	27.0	59	46.1
Total	425	100.0	230	100.0	128	100.0

*n* – Number, % - As a percentage of the region.

MC = major city

IR = inner regional

ORR = outer regional, remote, very remote

Table 4. Minimum and maximum shift lengths by hour and total minutes in nurses by region.

	MC		IR		ORR		QLD	
	<i>n</i>	minutes	<i>n</i>	minutes	<i>n</i>	minutes	<i>n</i>	minutes
Minimum (total)	432	372.1 ± 5.8	235	358.1 ± 7.9	131	402.6 ± 9.0	798	373.0 ± 0.1
Maximum (total)	463	576.0 ± 5.8	254	548.8 ± 6.3	144	528.7 ± 9.7	861	560.1 ± 4.0

Data are mean ± standard error.

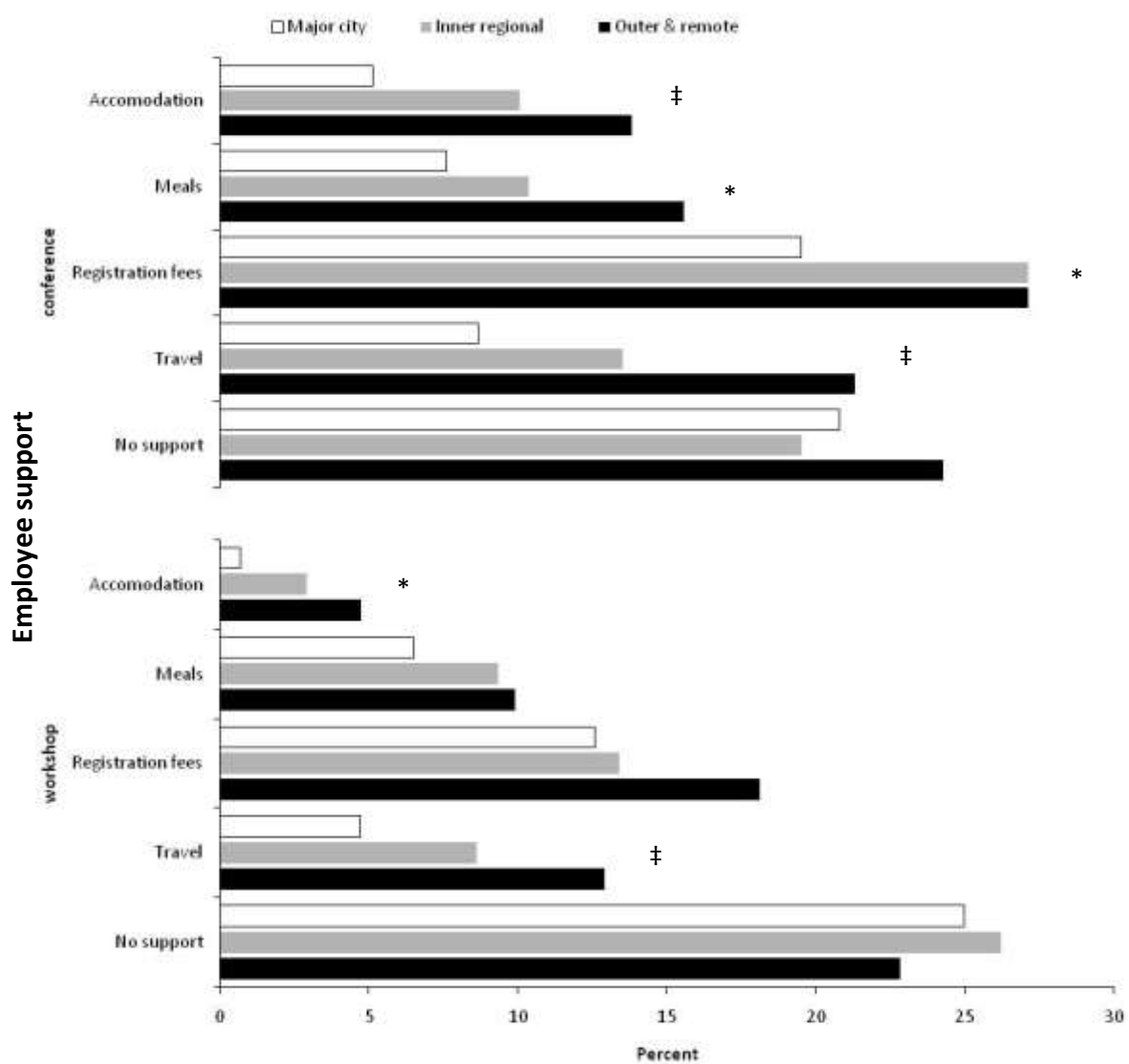
*n* – Number,

MC = major city

IR = inner regional

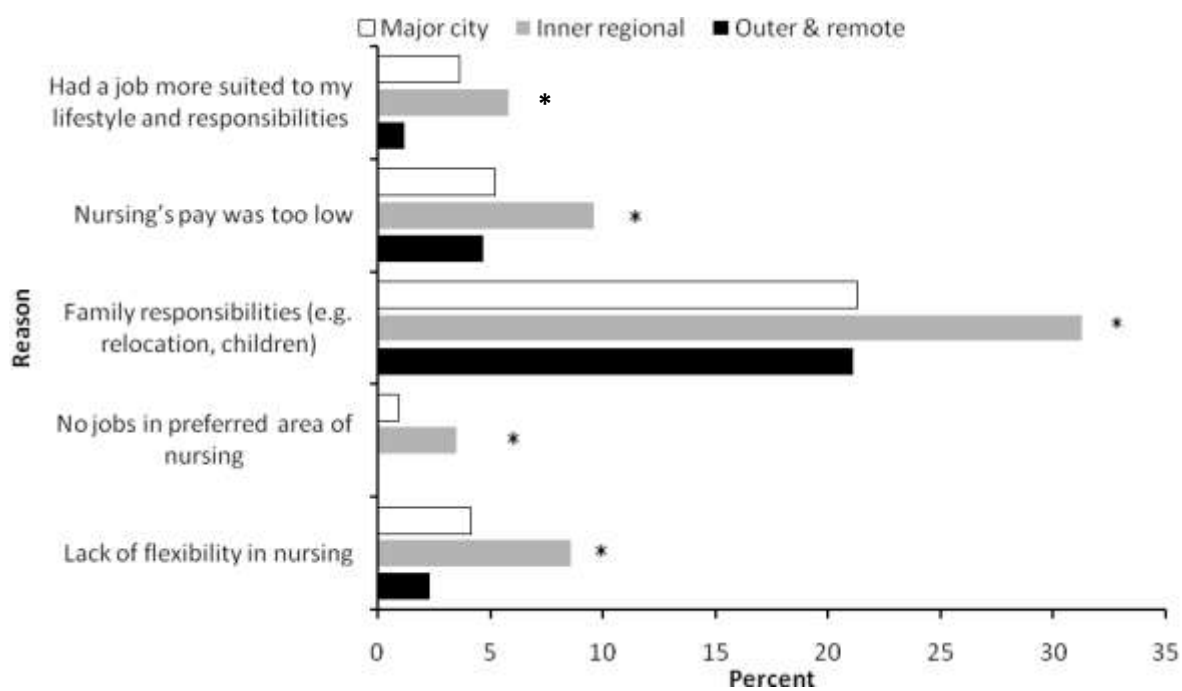
ORR = outer regional, remote, very remote

QLD: Represents the state outcomes generated from the 2007 Queensland Nurses' Union survey.



**Figure 1.** Figure 1. Employee support by region for nurses undertaking continued education.

Values are  $\chi^2$  between group difference \*  $p < 0.050$ , ‡ $p < 0.001$ .



**Figure 2.** Reason for taking a break from nursing that returned regional significance.

Values are  $\chi^2$  between group difference \*  $p < 0.050$