Comparison of research experience and support needs of rural versus regional health professionals.

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Abstract

Introduction: Queensland Health has employed three Research Fellows to increase research use and output by allied health practitioners (HPs) in northern Queensland. The HP Research Fellows are based in six Hospital and Health Services including three regional cities and some of the remotest parts of Queensland. However, it is unknown whether HPs' research experience or support needs are the same or different in rural versus regional areas. This paper aims to address this gap.

Methods: A survey was sent to all northern Queensland HPs in May-June 2011. Questions in the survey identified demographics, research experience, need for research support, research knowledge and beliefs about research. Data were compared using Chi-square and t-tests.

Results: A response rate of 54.5% with 18% rural HPs was achieved. Rural HPs had less research experience in most research activities than regional HPs and showed a trend of greater need for research support to be proficient in research. Rural HPs have a higher level of qualitative research experience than regional HPs and research was perceived positively by all HPs. Barriers to conducting research were similar for rural and regional HPs and included insufficient time, lack of staff and no statistical support to conduct research.

Conclusion: Rural HPs greater experience of qualitative research may be reflective of the type of service delivery in rural communities. Building research capacity among rural HPs may be limited by lack of research facilitators such as the Research Fellows.

Introduction

Rural health research is still an emerging field [1]. Sparse populations and diversity of rural communities means rural health research encounters difficulties planning [2] and conducting research [3]. Efforts have been made to stimulate health research activity in rural areas including research education workshops [4]. However, research education alone is insufficient to increase research engagement but requires education, workforce development and organisational change to create a research focussed workplace in rural areas [4, 5].

The rural health workforce comprises medicine, nursing, health workers and health practitioners. Current Australian health reforms are placing more emphasis on primary health and multidisciplinary care, both of which require input from health practitioners. Therefore, the role of health practitioners in health service delivery is increasingly important, and we suggest, their research profile should be commensurate with the increasing involvement of health practitioners in practice.

However, HP research activity is low compared to other disciplines such as nursing or medicine [6] and also low in rural areas. Reasons for the low levels of rural HP research activity may be the additive effect of low numbers of HPs in rural areas combined with low levels of rural health research.

A research capacity building program has been established in northern Queensland to promote the use and production of allied health research. The collaborative program between James Cook University and Queensland Health employed 3 full-time and 1 part-time Research Fellows. The six northern Hospital and Health Services (HHS) include Townsville, Cairns, Mackay, Mount Isa, Cape York and Torres Strait and the Northern Peninsula Area. The latter three HHSs include some of the most remote parts of Queensland which have lower health status and higher proportions of Indigenous people than other HHS in Queensland (ref).

There is no existing research about whether differences in research experience or support needs between rural and regional HPs exist. Cuisak and Lannin (2008) found that the role change from clinician to researcher was observed for a remote allied health practitioner compared to her metropolitan counterparts but rurality dominated access to resources, lack of research policy, and the need for a high level of social support [7].

No previous research capacity initiative had been developed in northern Queensland specifically for Health Practitioners. This paper describes how we measured HP experience and what their research support needs were so that an education and support program could be developed to match their needs. The Research Fellows were based in regional cities with populations of >100,000,but had a brief to support the HPs working in rural centres as well. The Research Fellows conducted a survey early in the program to gather baseline data to plan for research capacity building. This paper aims to identify if research support needs of rural HPs are similar or different to their regional counterparts.

Method

Design

A cross-section of Health Practitioners from the six northern districts of Queensland Health was surveyed between May and June 2011.

Survey Instrument

The survey instrument was developed by the authors and included questions, derived from the 'research spider' [8], about research experience and support needs. Additional questions identified HPs' knowledge of research methods and factors that influenced research engagement and participation. The survey also identified perceived barriers and enablers to using or producing research and anxiety about conducting research. The survey was sent via email with a link to a 'SurveyMonkey' questionnaire. Completion time for the survey was approximately 30 minutes.

Both open and closed questions were included. Most closed questions required categorical responses with answers selected from a 5-point ordinal scale. The response choices for questions examining experience were: no experience; little experience; some experience; moderately experienced; and very experienced. Response choices for research support need questions were: no support; a little

support; some support; a moderate amount of support; and a lot of support. Response choices for attitude to research questions were: Strongly disagree; agree; neither agree nor disagree; disagree; and strongly disagree.

Participants and Recruitment
Health Practitioners were identified through the Queensland Health payroll system. HP is a staff category at Queensland Health which includes all clinical disciplines other than medicine or nursing (for example the allied health therapies, pharmacy, radiation therapy, social work, public health and medical imaging staff). All HPs were invited to participate by email. Regular emails, phone calls or visits with management and staff were conducted to increase the response rate. To protect privacy, surveys were de-identified and only aggregated data were presented. Ethical clearance was given by Townsville Human Research Ethics Committee (HREC/11/QTHS/93).

Data Analysis
Online responses were stored automatically in the SurveyMonkey database. Paper based responses were entered manually. The data were subsequently transferred to SPSS for analysis (Version 19). All data were categorical; therefore, comparisons between rural and regional staff were performed using chi-squared tests. For the purpose of this study, regional centres were cities with a population >100,000 and all other centres were considered rural.

Rural and regional HP responses were compared using the Kappa statistic to measure agreement of responses between the two HP populations. The Altman interpretation of the Kappa statistic was used for analysis and is as follows: Poor (K=0.1-0.2); Fair (K=0.21-0.4); Moderate (K=0.41-0.6); Good (K= 0.61-0.8); and Very good (K=0.81-1.0) [9].

Within group comparisons of research experience and support needs were performed using paired t-test on a split file to isolate rural HP from regional.

Results
The survey response rate was 54.5% (723 out of 1326) of which 18% were rural HPs (n=131). Seventy-seven percent of respondents in rural areas were female compared to 81% in regional centres. More Indigenous HPs were located in rural centres (4.2%) compared to regional centres (1.8%) and HPs were significantly younger ($p<0.000$) in rural centres with a median age of 33 years (range: 22 to 67) compared to regional centres (median 36 years, range: 22 to 67). Educational qualifications were similar in both rural and regional centres except there were no rural PhD or Doctoral graduates compared to 3.1% (n=16) in regional centres. Research was part of either undergraduate or post graduate qualification for 35% of the Health Practitioners in rural centres and 45% in regional centres.

Work setting and team composition differed between rural and regional HPs. Rural HPs were significantly more likely to perform outreach services ($p=0.008$), work as a sole practitioner ($p=<0.001$) and as part of a multi-disciplinary team ($p=0.001$). There were more discipline specific Clinical Educators in regional centres (4.7%) compared to rural centres (0.8%) ($p=0.001$).

Research experience

Rural HPs had low levels of experience ('some', 'little' or 'none') in most of the listed research tasks (Table1). Exceptions were: 51% had 'moderate' experience finding literature; 26.2% had 'moderate' experience reviewing literature; and 26.0% had 'moderate' experience writing a literature review. Most rural HPs had 'little' or 'no' experience in tasks associated with getting started in research such as applying for funding (58.7%) and writing ethics applications (50.0%). Modest numbers had 'moderate' experience of: using qualitative methods (17.3%); quantitative methods (16.7%); analysis (16.5%); and report writing (15.7%).

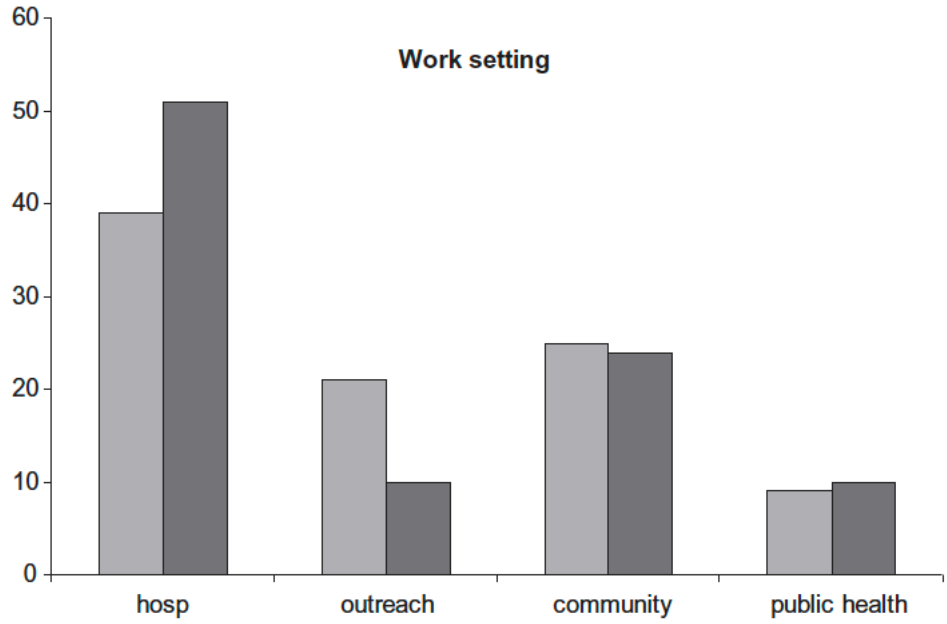

FIGURE 1: *Distribution of rural and regional city centre staff work setting.*

Agreement, as measured by the Kappa statistic, was good, fair or moderate for approximately half of the 14 research tasks (Table 1). There was poor agreement on: reviewing literature (K=0.144); generating research ideas (K=0.077); writing proposals (K=0.057), qualitative research (K=0.047); quantitative research (K=0.181); and publishing research (K=0.172). In all tasks, except qualitative research methods, rural HPs had less research experience than regional HPs.

Table 1

	Rural (Regional)					Kappa value
	A lot of experience	Moderate experience	Some experience	Little experience	No experience	
Finding literature	12.5 (13.5)	51.0 (47.4)	23.1 (27.9)	8.7 (10.5)	4.8 (0.7)	Moderate Agreement (0.545)
Reviewing literature	3.9 (6.3)	26.2 (37.8)	37.9 (32.3)	24.3 (18.1)	7.8 (5.5)	Poor Agreement (0.144)
Writing literature review	4.8 (4.2)	26.0 (22.7)	23.1 (37.9)	26.0 (21.4)	20.2 (13.9)	Good Agreement (0.618)
Generating research idea	1.0 (2.9)	18.3 (12.7)	30.8 (41.2)	31.7 (29.4)	18.3 (13.8)	Poor Agreement (0.077)
Developing questions	1.0 (2.6)	14.4 (12.5)	29.8 (35.2)	34.6 (30.2)	20.2 (19.5)	Fair Agreement (0.375)
Writing proposals	0.0 (2.6)	12.5 (8.4)	22.1 (22.4)	28.8 (30.1)	36.5 (36.5)	Poor Agreement (0.057)
Applying for funding	0.0 (1.1)	2.9 (3.9)	7.7 (10.9)	30.8 (23.0)	58.7 (61.1)	Good Agreement (0.986)
Writing ethics	1.0 (1.5)	6.7 (7.9)	16.3 (17.5)	26.0 (23.0)	50.0 (50.1)	Good Agreement (0.857)
Qualitative methods	1.9 (2.9)	17.3 (10.3)	25.0 (25.4)	34.6 (29.8)	21.2 (31.6)	Poor Agreement (0.047)
Quantitative methods	2.0 (2.6)	16.7 (11.8)	26.5 (26.7)	29.4 (29.5)	25.5 (29.3)	Poor Agreement (0.181)
Analysis	3.9 (3.3)	16.5 (11.8)	27.2 (32.5)	31.1 (30.3)	21.4 (22.1)	Fair Agreement (0.339)
Report writing	3.9 (3.3)	15.7 (11.8)	22.5 (27.0)	24.5 (26.1)	33.3 (31.8)	Moderate Agreement (0.451)
Presenting research	1.0 (3.9)	8.7 (9.4)	15.5 (21.0)	25.2 (24.7)	49.5 (40.9)	Moderate Agreement (0.549)
Publishing	0.0 (0.7)	0.0 (3.3)	9.7 (10.7)	20.4 (15.6)	69.9 (69.6)	Poor Agreement (0.172)

Need for research support

Rural HPs need high levels of support in 11 of the 14 listed tasks to consider they were proficient in research (Table 2). Lower levels of support were required for finding literature (36.9% required 'little' support) and reviewing literature (29.1% require 'some' support). Respondents reported that they required a lot of support to write proposals (37.9%), apply for funding (47.1%), write ethics (45.6%), present (37.9%) and publish (57.8%).

Both rural and regional HPs required high levels of research support (Table 2). 'Very good' agreement, as measured by the Kappa statistic, was seen between the two groups for: writing literature reviews (K=0.856); presenting (K=0.903); and publishing research (K=0.822). The lowest level of agreement between groups was 'fair' (K=.21-0.40) for tasks such as: finding literature (K=0.335); reviewing literature (K=0.341); generating research ideas (K=0.296); and using quantitative methods (K=0.364).

Table 2

	Rural (Regional)					Kappa value
	A lot of support	Moderate support	Some support	Little support	No support	
Finding literature	12.6 (7.1)	14.6 (13.7)	27.2 (33.0)	36.9 (35.0)	8.7 (11.3)	0.335 (Fair agreement)
Reviewing literature	19.4 (11.8)	19.4 (17.6)	29.1 (36.1)	29.1 (26.9)	2.9 (7.6)	0.341 (Fair agreement)
Writing literature review	23.5 (17.3)	24.5 (34.0)	24.5 (32.2)	22.5 (23.3)	4.9 (7.8)	0.856 (Very good agreement)
Generating research idea	23.3 (34.0)	34.0 (24.0)	28.2 (35.6)	11.7 (18.2)	2.9 (3.1)	0.431 (Moderate agreement)
Developing questions	28.4 (20.3)	29.4 (29.4)	28.4 (29.6)	11.8 (17.6)	2.0 (3.1)	0.296 (Fair agreement)
Writing proposals	37.9 (32.5)	30.1 (31.0)	22.3 (24.5)	8.7 (9.6)	1.0 (2.4)	0.478 (Moderate agreement
Applying for funding	47.1 (46.0)	37.3 (28.5)	11.8 (17.3)	2.9 (6.6)	1.0 (1.5)	0.415 (Moderate agreement)
Writing ethics	45.6 (42.4)	33.0 (25.8)	12.6 (18.0)	6.8 (11.6)	1.9 (2.2)	0.652 (Good agreement)
Qualitative methods	25.2 (28.4)	30.1 (29.3)	31.1 (27.5)	9.7 (12.0)	3.9 (2.9)	0.631 (Good agreement)
Quantitative methods	28.2 (30.2)	35.0 (29.3)	25.2 (27.1)	8.7 (12.0)	2.9 (1.6)	0.364 (Fair agreement)
Analysis	30.1 (30.0)	35.9 (30.0)	24.3 (27.1)	6.8 (10.7)	2.9 (2.2)	0.495 (Moderate agreement)
Report writing	33.3 (29.8)	35.3 (27.1)	16.7 (27.7)	10.8 (13.2)	3.9 (2.2)	0.581 (Moderate agreement)
Presenting research	37.9 (29.5)	31.1 (23.7)	18.4 (25.4)	9.7 (15.6)	2.9 (5.8)	0.903 (Very good agreement)
Publishing	57.8 (54.1)	25.5 (23.8)	12.7 (13.8)	2.9 (7.38)	1.0 (0.4)	0.822 (Very good agreement)

Research beliefs

Rural HPs research beliefs about qualitative research are mainly positive (Table 3). No rural HPs strongly agreed that "qualitative research is biased" or that "sample

sizes used in qualitative research are too small". Most agreed (46.7%) or strongly agreed (12.2%) that "qualitative research can study the real life context". Slightly less rural HPs wre "comfortable doing quantitative" (32.6% agree) compared to those who were "comfortable doing qualitative (34.8% agree) research". Twenty percent agreed that "statistics were beyond them" and 33% agreed that "quantitative research can isolate an effect" in a study.

There was poor agreement, as measured by the Kappa statistic, for comfort doing qualitative research and the belief that it is biased. (Table 3). Good agreement is noted for comfort doing quantitative research (K=0.792), quantitative research is too rigid (K=0.616) and that statistical significance implies clinical significance (K=0.729).

Table 3

	Rural (Regional)					
	Strongly agree	**Agree**	**Neither agree or disagree**	**Disagree**	**Strongly disagree**	**Kappa value** Level of agreement
Comfortable doing qualitative	4.3 (5.5)	34.8 (29.2)	29.3 (25.7)	27.2 (28.5)	4.3 (11.2)	0.071 poor
Qualitative is biased	0.0 (0.0)	8.7 (3.6)	50.0 (47.4)	34.8 (38.1)	6.5 (11.0)	0.038 poor
Qualitative sample size too small	0.0 (1.0)	12.0 (10.0)	54.3 (46.4)	26.1 (34.0)	7.6 (8.6)	0.482 moderate
Qualitative studies real context	12.2 (12.3)	46.7 (55.5)	40.0 (28.9)	0.0 (2.6)	1.1 (0.7)	0.571 moderate
Qualitative cant be generalised	1.1 (0.7)	14.1 (16.2)	59.8 (54.7)	25.0 (26.5)	0.0 (1.9)	0.285 fair
Comfortable doing quantitative	3.3 (2.6)	32.6 (33.0	29.3 (26.6)	28.3 (25.9)	6.5 (11.9)	0.792 good
Statistics are beyond me	6.5 (9.6)	20.7 (24.6)	33.7 (29.7)	29.3 (33.3)	9.8 (2.9)	0.374 fair
Quantitative is too rigid	1.1 (0.7)	9.9 (4.1)	35.2 (38.8)	49.5 (48.9)	4.4 (7.5)	0.616 good
Significance implies clinical significance	30.8 (26.4)	0.0 (0.0)	47.3 (42.4)	16.5 (26.1)	5.5 (5.0)	0.729 good
Quantitative can isolate effect	2.2 (1.4)	33.0 (34.2)	61.5 (58.4)	3.3 (5.3)	0.0 (0.7)	0.394 fair
Insufficient statistical support	3.3 (5.9)	30.0 (20.4)	45.6 (49.9)	17.8 (20.7)	3.3 (3.1)	0.139 poor

Enablers and barriers to research

Rural HPs indicated there were several barriers for them to conducting research (Table 4). For example, 42.7% 'strongly agreed' there was insufficient time and 30.0% 'strongly agreed' there was insufficient staff to conduct research. Conversely, enablers to conducting research included: 50.5% who 'agreed' that research was relevant to their job; 42.9% 'agreed' that their manager supported research. Respondents 'agreed' that they were comfortable using qualitative (34.8%) and quantitative (32.6%) research methods. Interestingly, 32.2% 'neither agreed nor disagreed' that research made them anxious.

Comparison of rural and regional HP responses showed poor agreement in some identified research enablers and barriers. Rural HPs were more likely than regional HPs to 'strongly agree' they had insufficient time to conduct research (K=0.038) and were more likely to 'agree' they had no statistical support (K=0.139). Conversely, they were less likely than regional HPs to 'agree' that: their colleagues were supportive (K=0.139); that research was part of their work plan (K=0.071); and that funding was available to conduct research (K=0.060).

Discussion

The research experience and support needs of rural HPs were mostly similar to regional HPs. Differences were that responses from rural HPs indicated higher levels

of experience in qualitative research methods, although responses to questions about research beliefs did not suggest a high level of qualitative research knowledge. There was a trend for more rural than regional HPs needing research support for almost all research tasks. Rural HPs were younger, had fewer postgraduate degrees, and had less experience in publishing.

An aim of the research capacity initiative, for which the current survey was conducted, was to increase HPs' consumption and production of research. Using and producing research requires a continuum of skills with evidence-based practice skills at one end and skills to conduct research at the other end [10]. Our results demonstrate rural HPs possess the skills for evidence-based practice but require high levels of support to acquire the skills to conduct research. There are many barriers to allied health professionals conducting research [11] including lack of skills and training [10, 12, 13]. Barriers particularly relevant in rural areas include lack of time and inability to backfill clinical researchers [14].

Health status worsens in proportion to distance from metropolitan areas in Australia [15]. The poorer health status has been partially attributed to lower numbers of health professionals in rural and remote areas with numbers of HPs per 100,000 decreasing with rurality [16]. Strategies to improve rural health have focused on increasing medical staff [17] despite allied health and nursing staff [18] being easier to recruit. Building rural HP research capacity may further increase recruitment and retention to rural areas [19]. However, our study shows rural HPs will require a lot of research support which is not currently available in rural communities.

The northern Queensland Research Fellows are located in three cities in the region with little opportunity to travel to rural communities. Co-location of HP researchers with the Research Fellows may be a factor contributing to increases in research activity, or conversely inhibiting research activity in rural centres. Access to experts for research advice has contributed to improvements in research skill ratings in a metropolitan city [20] suggesting co-location with a Research Fellow may improve research activity. Identified barriers to rural HP research include a limited research tradition in HPs [6, 21] and less funding for rural health in general. Professional issues for remote practice such as outreach service delivery and high clinical case load [22] may contribute to the paucity of rural HP research.

Rural HPs are more likely to deliver outreach services and work in multidisciplinary teams. Regional HPs, on the other hand, mostly deliver hospital-based services and work in a team with HPs of the same discipline. A focus of rural health research is health services rather than clinical research due to low participant numbers and geographic isolation [23]. Another focus of rural health research is access to primary and hospital care [24]. The focus on access and health services for rural research may contribute to higher level of experience in qualitative research methods by rural HPs as these topics are often investigated using qualitative research methods.

The success of HP research capacity building initiatives is difficult to assess. Previous research capacity building initiatives conducted research education workshops then measured their effectiveness [26] showing tangible outputs can be achieved from motivated and interested clinicians. The way research capacity is currently measured is unsuitable for emergent researchers [23] because novice researchers are unlikely to

achieve outcomes, such as publications and successful grant applications, in the short term. Future research capacity building in northern Queensland should target motivated rural staff as better outcomes are achieved from motivated clinicians [6, 28] and rural staff need additional research support. Approximately 70% of north Queensland HPs considered they did not have the time or staffing resources to conduct research. One solution may be to build research capacity initiatives specifically for teams as team projects increase research capacity more than individual projects [18]. Beneficial factors in team projects include critical mass of research experience and an encouraging work environment [12]. Furthermore, team projects may result in improved planning, management and delivery of health services. [23]

Comparing rural and regional HP research experience and support needs has identified subtle differences not previously considered when developing research capacity initiatives. Differences such as younger staff, lower levels of research experience and less staff with post graduate research degrees may inhibit research building activity in rural settings. The effect of having no Research Fellows located in rural communities and limited access for rural staff to the existing Research Fellows may also limit research capacity building among rural HPs.

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