Assessing Research Capacity in Victoria's South West Health Service Providers

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Author contributions

FQ conceived the study. FQ, SG, SL, RO and GF designed the study. SL and SMG conducted the quantitative statistical analysis, SG and RO conducted the content analysis. All authors

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assisted with data interpretation, manuscript drafting and approved the final version of the manuscript.

Disclosures and competing interests

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TITLE

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ABSTRACT

Objective: To investigate the research interest, capacity and culture in individuals, teams and health organisations across south-western Victoria.

Design: Cross-sectional survey.

Setting: Eight public health services in the south-western region of Victoria.

Respondents: All staff were invited to participate.

Main outcome measure: The validated Research Capacity and Culture tool.

Results: The survey was completed by 776 staff including nurses (34%), allied health (26%) and doctors (24%). Half the respondents (52%) were currently involved in research, while most (73%) wanted to be more involved. Respondents reported having moderate research skills and success at individual, team and organisation levels. Females and nurses reported having lower skills than comparable groups. Motivators for undertaking research were: skill development (72%), increased job satisfaction (61%) and brain stimulation (52%), while the most commonly selected barriers were lack of time (77%), other work taking priority (72%) and lack of funding (49%).

Conclusion: Health organisations in regional and rural Victoria could harness opportunities to enable staff participation in research by supporting identified strengths, addressing barriers and providing 'permission' for staff to get involved in research. Efforts to improve research capacity among females and nurses could lead to the greatest overall improvement in organisations' research capacity and output – and translation of evidence into practice.

Key words: research translation, research culture, research barriers, research enablers, health service research

What is already known on this subject

Participation of health professionals in research improves research quality and translation into practice. Staff require appropriate skills and supportive organisational environments to enable participation in research. The research capacity and culture of health staff and services in regional and rural Australia is largely unknown as most studies have been conducted within metropolitan health services.

What this paper adds

Respondents from health services in regional Victoria described a willingness to undertake research, although they reported having only moderate skills and success in doing so. Females and nurses reported lower skills than comparable groups. Major barriers to research participation include lack of time and funding, and other tasks being given higher priority. These findings indicate that provision of organisational support would enable growth in research capacity and culture.

INTRODUCTION

When health professionals are directly involved in research, translating evidence into clinical practice is accelerated and enhanced.¹⁻³ However, barriers to health professionals' involvement in research exist, including lack of research skills, time, funding and institutional support.^{2 4-6} Addressing these barriers by improving research capacity and culture remains a challenge.^{1 2 6}

Research capacity is the ability and skill required by individuals and organisations to perform research.⁷ Research culture refers to the environment in which the research is conducted, including the extent to which the organisation values research, and the leadership, resources and technologies available to support research.⁷ Few studies have specifically investigated research capacity and culture in regional and rural health services. Evidence

suggests that non-metropolitan Allied Health staff often have lower levels of research capacity than their metropolitan counterparts.^{8,9}

Measuring, evaluating and understanding the research capacity and culture of health services and health professionals in regional and rural Australia is a necessary prerequisite for increasing research literacy and engagement. Initiatives to improve the research capacity of staff will help health services to understand and address the healthcare needs of the one-third of Australia's population that live in non-metropolitan settings and contribute to bridging the gap in health outcomes between metropolitan and non-metropolitan populations.¹

The aim of the current study was to provide a benchmark assessment of research capacity and culture in regional and rural healthcare services in western Victoria, including the identification of actual and perceived barriers and facilitators to staff participation in research.

METHODS

Design and setting

This observational study administered a survey to a potential sample of 14,630 health organisations staff in the western region of Victoria, Australia to assess research capacity and culture. Staff were from eight of the 11 health service partners in the Western Alliance, an academic health science centre and network (www.westernalliance.org.au) covering the region. The participating health services provide a range of acute, subacute and community based services, and range in size from 450 to 6500 staff. All staff were invited through an email sent from their own organisation.

Data collection

Data were collected using an online version of the validated Research Capacity and Culture (RCC) tool, which assesses research capacity and research culture at individual (14 items), team (19 items) and organisation levels (18 items).⁷ The questionnaire included both open-ended and closed questions. In the latter, respondents were asked to rate each item on a 10-point scale, from 1 (no success/skill) to 10 (highest possible success/skill). We defined

scores 1–3 as low success/skill, 4–7 as moderate and 8–10 as high. In addition, respondents were asked about the greatest barriers and motivators to engagement in research.

All survey data were collected and stored using REDCap, a web-based, password-protected data management system.¹⁰ Data were collected in June and July 2015.

Analysis

The 51 success/skill items were summarised using medians with their interquartile ranges (IQR, reporting the 25th and 75th percentiles). Between-group comparisons were conducted using non-parametric k-sample tests on the equality of medians. Categorical data were summarised using frequencies and percentages, and between-group comparisons were conducted using the Pearson Chi-squared statistic. Median regression was used to assess the differences in research capacity across departments, accounting for age and gender. Data analyses were performed using Stata Statistical Package version 14.¹¹

Responses from the open-ended questions were analysed using content analysis.

Ethics

The relevant Human Research Ethics Committee approved the study (ref. 14/136).

RESULTS

Demographic characteristics

Seven hundred and seventy six staff responded (5.3%). Three-quarters of respondents were clinical staff from Nursing, Allied Health and Medical Departments (see Table 1 for respondent characteristics). The age distribution for respondents from Nursing, Medicine and Allied Health differed with 51%, 25% and 20% respectively aged 50-70 years ($p<0.001$). Similarly, more respondents were females in Nursing (90%) and Allied Health (88%) compared to Medicine (43%). When males and females were compared, the age distribution ($p=0.19$) and number of years in his/her current profession ($p=0.90$) were similar.

Research involvement

Almost three-quarters of respondents were previously or currently involved in research (n=570, 73%) (Table 1). More males than females (64% versus 44%, respectively) were currently involved in at least one research activity.

Close to a third of respondents (n=236, 30%) had research as part of their job role, of whom almost all (95%) had already been involved in research. Research-related job provisions for these employees included library access (53%), time away from clinical or other duties (42%), software (30%), training (28%), research supervision (25%), administrative support (21%) and research funds (15%). Just under two-thirds (63%) of the 401 respondents whose job role did not include research had been involved in research. Among those working in the Medical Sciences, 71% had research-related activities as part of their job role, and this was about twice as high as in the other disciplines ($p=0.005$): Mental Health (38%), Medical (36%), Administration and Clerical (33%), Allied Health (28%), Corporate (28%) and Nursing (26%).

Close to three-quarters of respondents (n=567, 73%) indicated they would like to have more involvement in research, with collecting data or writing research reports, presentations or publications being the most sought after activities (Table 1).

Individual research capacity

The most highly rated skills were finding relevant literature and critically reviewing the literature (median 7), whereas the lowest scored skill was securing research funding (Table 2). Males rated their skill level higher ($p<0.05$) than females on most tasks (see Supplementary Table 1). For most skills, ratings also differed by years in current profession, with median ratings decreasing with increasing years ($p<0.05$) (see Supplementary Table 2).

Skills ratings significantly differed ($p<0.05$) across departments, except for skills in 'finding relevant literature' ($p=0.06$) and 'critically reviewing literature' ($p=0.29$). Nurses rated their research skills as low for most tasks, when compared to other professions, whereas Medical Scientists consistently rated their research skills moderate or high (Figure 1). These differences persisted even after accounting for age and gender with the exception of using a

computer referencing system ($p=0.108$), designing questionnaires ($p=0.299$) and collecting data ($p=0.074$).

Team research capacity

Respondents rated their teams' success and skill level in research as moderate across all 18 items (median scores 4–6) (Table 2). There were significant differences in ratings across teams from different departments, with highest scores among respondents from Medical Science (data are presented in Supplementary Table 3).

Organisational research capacity

Respondents rated their organisation's success and skill level in research as moderate across the 15 items (median scores 4–7) (Table 2). The highest-rated success was for promotion of evidence-based clinical practice (median=7) and the poorest-rated item was provision of research-related career pathways (median=4).

Motivators for research participation

The most commonly selected motivators for participating in research were skill development (72%) and increasing job satisfaction (61%) (Figure 2). Significantly more women than men indicated being motivated to do research for the following reasons: availability of research scholarships (17% vs 10%; $p=0.02$), skill development (74% vs 64%; $p=0.01$), or because it provided opportunities to participate in research led by others (43% vs 34%; $p=0.04$). However, significantly more males were motivated to participate in research for job satisfaction (69% vs 59%; $p=0.03$). No other gender differences were observed. Individuals' motivators for research varied significantly between professions for most of the pre-defined motivators (see Supplementary Table 4). Comparing the professions with the largest number of respondents, nurses were less motivated to do research for career advancement, job satisfaction and increased credibility than Medical or Allied Health professions.

Free-text responses, from 529 respondents, regarding motivators for team participation indicated three main themes: improving clinical care processes and patient outcomes;

developing and implementing evidence; and career advancement and professional development.

Barriers to research participation

The most commonly selected barriers to research were lack of time (77%), other roles or tasks taking precedence (72%) and lack of funding (49%) (Figure 2). A small proportion of respondents were not interested in research (6.7%); almost three-times as many females selected 'no interest in research' than males (8% vs 3%; $p=0.049$). The other gender differences in barriers to research participation were that more females than males reported lack of research skills (40% vs 25%; $p<0.001$), felt intimidated by research language (21% vs 10%; $p=0.001$) or being intimidated by the thought of not doing research 'correctly' (33% vs 16%; $p<0.001$). Individuals' barriers for research also varied significantly between professions for most of the pre-defined barriers (see Supplementary Table 5). In this instance, nurses indicated that disinterest in research and desire for work/life balance were greater barriers than Medical or Allied Health professions.

Respondents' free-text responses ($n=529$) regarding barriers to the teams' participation in research indicated three main themes: inadequate organisational resources and infrastructure (lack of time, funding, leadership support, staff, equipment); lack of individual research capacity; and research being of lower priority than other work.

DISCUSSION

Summary of findings

Most staff who responded to the survey indicated prior involvement in research; however, three-quarters indicated that they wished to be more involved. Individual, team and organisational research skills were rated as moderate for most skills. Ratings for many research skills were lower for females, nurses and staff who had been in their current position for more than 10 years. The most common motivators for undertaking research were skill development, increased job satisfaction and keeping the brain stimulated. The most common barriers to research were lack of time, lack of funds and other work taking priority.

Interpretation of results and comparison with literature

Respondents were motivated to participate in research for 'intrinsic factors', similar to what has been found in other studies.⁶ Our qualitative data also indicated altruistic motivations, such as to improve clinical care and patient outcomes. For healthcare services to yield these benefits, staff motivation for research must be accompanied by organisational support.^{12 13}

Major barriers to participation in research were extrinsic factors such as lack of time, resources and management support. These barriers are consistent with other studies.^{6 14-16}

Research is sometimes not prioritised due to the necessary and immediate demands of clinical practice. Organisational support and infrastructure are needed to address these barriers and enable staff to participate in research as part of their day-to-day activities. For example, research was infrequently included in our respondents' job descriptions, thus preventing them from participating in research in a formal sense. Traditionally, research has not been considered a core component of many healthcare professions.¹⁷ Yet, if the benefits of staff participation in research are to be realised, the importance of research must be recognised in staff job descriptions. In our study, respondents with research in their job descriptions were highly likely to participate in research. Including research in employees' position descriptions, and subsequently including research participation as a performance indicator, is suggested as a fundamental steps towards healthcare organisations prioritising and enabling greater participation in research by staff.

We found gender imbalances in several barriers to research participation, with more females feeling intimidated by research and reporting lower skills than males. This might explain why proportionately fewer females were involved or interested in research. Nurses, who are predominantly female and older, also reported having lower research skills than other professions. These older nurses were unlikely to have received research training during their initial clinical training. Research also appears to be less important for a nurse's job satisfaction and career advancement, which highlights an opportunity to inspire nurses to participate in research by providing specialisation pathways and promotion for research achievements. Given that more than three-quarters of hospital-based staff are female, and nurses are the largest professional group, targeted efforts towards addressing barriers to female and nurse participation in research seems justified.

In addition to reducing barriers to research participation, initiatives to improve staff research skills appears necessary; respondents indicated moderate research skills at individual, team and organisational levels. Similar to others,¹⁸ and as expected, we found that skills were rated higher for relatively simple tasks such as finding relevant literature, and lower for relatively difficult tasks such as writing for publication in peer-reviewed journals and securing research funding. However, empirical evidence of effective interventions to improve research capacity in health professionals within health settings is sparse.^{2 19-21} Didactic education or one-off education sessions are ineffective.^{2 20} Instead, multi-modal, integrated and iterative approaches are recommended that include, but are not limited to mentoring, training programs, funding, protected time and group-based research.^{16 20} Embedding dedicated research facilitators within health services influences research skills and participation,²² and this has led to their introduction in health services in Australia.²³ Increasing opportunities to develop research skills as part of pre-employment training, such as during university education, could lead to junior staff with greater research skills.

Commonwealth initiatives to increase research capacity in regional and remote Australia are also underway. For example, the two National Health and Medical Research Council accredited Centres for Innovation in Regional Health represent the necessary prioritisation of research in non-metropolitan regions.²⁴ By enabling collaboration between health services, universities and research organisations, the Centres are part of a broader strategy of embedding research within health services, building the research capacity of health care providers and accelerating translation of evidence into practice.¹

Limitations of research

The response rate in the current study was low which may constrain the generalizability of the findings. However, this rate was similar to that of urban studies.¹² We expect that respondents were more motivated towards participating in research than non-respondents and hence are more likely to share their research skills and knowledge with other staff. Therefore, harnessing the motivation of a small number of staff might still be sufficient to influence organisational culture towards greater research engagement and translation.²⁵

Respondents' perceptions of their skills, and their teams' and organisations' skills may be different from actual skill levels, but direct assessment of these skills was beyond the scope of the study. We did not investigate research capacity at both metropolitan and non-metropolitan health services and therefore cannot compare skills by these geographical locations.

Conclusions

The current study fills a knowledge gap by reporting the research capacity and culture of staff from a range of professional groups in regional and rural Australian health services. The study can be used as a benchmark against which research capacity building initiatives can be assessed. Investment in efforts to improve research capacity among females and nurses could facilitate the greatest overall improvement in organisations' research capacity and output.

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Table 1: Description of respondents and their research involvement

Characteristic		Respondents (n=776 ^a)	
		n	%
Gender:	Male	161	20.7
	Female	598	77.1
	Prefer not to say	17	2.2
Age:	20–29	97	12.5
	30–39	205	26.4
	40–49	205	26.4
	50–59	203	26.2
	60+	50	6.4
	Prefer not to say	16	2.1
Employment status:	Full-time	421	54.3
	Part-time	355	46
Department:	Nursing	261	33.6
	Medical	127	16.4
	Allied Health	205	26.4
	Mental Health	42	5.4
	Medical Science	21	2.7
	Administration and Clerical	61	7.9
	Corporate	29	3.7
	Other	30	3.9
Years in current profession:	< 5	160	20.6
	5–10	160	20.6

>10	456	58.8
Total years participating in research: < 5	314	40.5
5–10	103	13.3
≥ 10	98	12.6
Never done any research	206	26.6
Not stated	55	7.1
Current research involvement	n=570^a	
Writing a research report, presentation or paper for publication	172	30.2
Writing a research protocol	86	15.1
Submitting an ethics application	112	19.7
Collecting data e.g. surveys, interviews	265	46.5
Analysing qualitative research data	88	15.4
Analysing quantitative research data	127	22.7
Writing a literature review	92	16.1
Applying for research funding	65	11.4
Other	48	8.4
Not currently involved in research	181	31.8
Desire to increase research involvement	N=776^a	
No	209	26.9
Yes	567	73.1
Research activities respondents aspire to be involved in	N=567^a	
Writing a research report, presentation or paper for publication	341	60.1
Writing a research protocol	211	37.2
Submitting an ethics application	186	32.8
Collecting data e.g. surveys, interviews	353	62.3
Analysing qualitative research data	281	49.6
Analysing quantitative research data	273	48.2
Writing a literature review	247	43.6
Applying for research funding	232	40.9
Other	26	4.6

^a Responses from those who indicated they are currently involved in research.

^b Responses from those who indicated they desired more research involvement.

Table 2: Respondent-rated individual, team and organisational research capacity

Characteristic	All respondents n=776
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	Median	IQR
Individual capacity		
Finding relevant literature	7	5-8
Critically reviewing the literature	7	5-8
Collecting data e.g. surveys, interviews	6	4-8
Using a computer referencing system	5	3-8
Writing a research protocol	5	2-7
Designing questionnaires	5	3-7
Using computer data management systems	5	2-7
Analysing qualitative research data	5	2-7
Analysing quantitative research data	5	2-7
Writing a research report	5	2-7
Submitting an ethics application	4	2-7
Writing for publication in peer reviewed journals	4	2-6
Providing advice to less experienced researchers	4	2-6
Securing research funding	3	1-5
Team capacity		
Conducts research activities relevant to practice	6	3-8
Supports a multidisciplinary approach to research	6	3-8
Has team leaders that support research	6	4-8
Does planning that is guided by evidence	6	4-8
Has consumer involvement in research activities/planning	5	2-7
Has applied for external funding for research	5	2-7
Supports applications for research scholarships/ degrees	5	3-7
Has mechanisms to monitor research quality	5	2-7
Has identified experts accessible for research advice	5	2-7
Disseminates research results at research forums/seminars	5	2.5-7
Has external partners (e.g. universities) engaged in research	5	2-7
Supports peer-reviewed publication of research	5	3-8
Does team-level planning for research development	5	2-7
Ensures staff involvement in developing that plan	5	2-7
Provides opportunities to get involved in research	5	2-7
Has incentives & support for mentoring activities	4	2-6
Has software available to support research activities	4	1-6
Has adequate resources to support staff research training	4	2-7
Has funds, equipment or admin to support research activities	4	2-6
Organisational capacity		

Promotes clinical practice based on evidence	7	6-8
Has senior managers that support research	6	4-8
Ensures organisation planning is guided by evidence	6	4-8
Has consumers involved in research	6	3-7
Encourages research activities relevant to practice	6	4-8
Engages external partners (e.g. universities) in research	6	4-8
Has adequate resources to support staff research training	5	3-7
Has funds, equipment or admin to support research activities	5	2-6
Has a plan or policy for research development	5	3-7
Accesses external funding for research	5	3-7
Has software programs for analysing research data	5	2-6
Has identified experts accessible for research advice	5	3-7
Supports a multidisciplinary approach to research	5	3-7
Has regular forms/bulletins to present research findings	5	3-7
Supports applications for research scholarships/degrees	5	3-7
Supports the peer-reviewed publication of research	5	3-7
Has mechanisms to monitor research quality	5	3-7
Ensures staff career pathways are available in research	4	2-6

FIGURE LEGENDS

Figure 1: Dot plot illustrating the median ratings for self-rated success/skill level in research

Figure 2: Individual motivators/facilitators and barriers to doing research

Figure 1: Dot plot illustrating the median ratings for self-rated success/skill level in research

Figure 1: Individual motivators/facilitators and barriers to doing research

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