AUSTRALIAN PHYSIOTHERAPY ASSOCIATION

29 June 2012

Our ref: QON - AUS

Committee Secretary
Senate Community Affairs References Committee
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Secretary

Re: Supplementary Submission from Australian Physiotherapy Association to the Senate inquiry into "The factors affecting the supply of health services and medical professionals in rural areas'.

Thank you for providing us with opportunity to present at the recent Committee hearing in Albury of 'The factors affecting the supply of health services and medical professionals in rural areas'. I am writing on behalf of the Australian Physiotherapy Association (APA) to respond to the Committee's questions specific queries which are outlined below:

- Current activities to address some of the issues faced by rural practitioners;
- Areas currently not addressed, and what should be happening;
- Data to show links between regional schools where physiotherapy is offered and where their graduates work.

While we had stated that there has been a lack of support for physiotherapists working in rural and remote regions of Australia, and a lack of incentives in encouraging them to work in these areas, we acknowledge that there are federal and state programs that are beginning to address some of these issues. One such example is the federal Nursing and Allied Health Rural Locum Scheme, which has had limited success in encouraging rural physiotherapists to engage in professional development by funding and providing for locums to fill the vacancies these physiotherapists create while they are away on courses and training. The uptake of the scheme has so far been low – there are less than 40 physiotherapists placed to date – however we believe that this is probably due to a lack of awareness of the relatively new scheme.

The APA has sought data from universities offering physiotherapy education and the Physiotherapy Registration Board of Australia to assist us in providing the Committee with data showing links between regional schools and graduate employment. However, the Board has indicated that this data is not available, and universities have indicated that their graduate data would be of limited use due to the low response rates.

Data in a report provided by Monash University however concurs that there is little interest amongst graduates to work in a rural setting. For example, it is revealed that only an estimated 3 to 5 graduates per cohort of 60 students commence employment in regional or remote areas. Some of the concerns raised by graduates for not wanting to practice rurally are the lack of professional support and high staff turnover.

At Monash University, a number of strategies have been employed to encourage the retention of graduates in the rural setting, including locating the campus in outer south eastern Melbourne and requiring students to undertake at least one placement in a non-metropolitan area. This report has been included in Attachment A.

I have also attached two additional documents:

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- A Rural Allied Health Workforce Study (RAHWS) conducted in NSW by the University Departments of Rural Health at Northern Rivers and Tamworth and published in 2009 (Attachment B). It includes some concerning data on rural allied health workforce attrition – for example, 18 per cent of rural physiotherapists had intended to leave their jobs in 2 years, and 42 per cent of the entire allied health workforce had intended to leave in five years. It will also provide the Committee with some insight on rural allied health workforce recruitment and retention.

- A 2011 report by Chisholm et al, published in the Australian Journal of Rural Health (Attachment C) provides data to suggest that a significant issue needing to be addressed is the lack of career advancement faced by allied health professionals working in rural and remote areas. It also proposes that the first 12 months of a practitioner commencing employment in a rural or remote location would be opportune to implement comprehensive strategies to improve retention.

In addition to the specific queries answered in this document the APA would like to highlight critical services gaps for to access specialised physiotherapy services in rural areas for conditions such as continence management and lymphedema treatment:

Lymphoedema
Lymphoedema is typically a swelling of the limbs that affects those who have received cancer treatment. There is no known cure for lymphoedema. But minimising the effects of lymphoedema, through timely access to physiotherapy services, reduces the risk of resultant cardiovascular complications, including ulcers and infections.

These services are almost non-existent in rural areas. When they are available the cost of the service put them out of reach of many people as it is a very time intensive physiotherapy treatment. As an indicative cost the Department of Veterans Affairs will pay physiotherapists up to an annual limit of $2,473.90 per patient (see Attachment D).

Stress urinary incontinence
Stress urinary incontinence (SUI) or urinary incontinence during physical exertion, commonly affects women and some men. Research shows physiotherapy is effective, cost-efficient and risk-free treatment, which should be recommended as a first-line approach for women with SUI, before surgical options are considered. (Attachment E and F).

Compared to physiotherapy, surgical management has inherent risks and requires a substantially greater workforce contribution not easily accessible in rural and remote areas: a surgeon with a sub-specialty of urology, a specialist anaesthetist, plus nursing and health support workers. It is often necessary for patients from rural and remote regions to travel vast distances to receive the required treatment and management.

Despite the positive patient outcomes and the potential savings to the health system, there is no Medicare rebate for physiotherapy management of incontinence, and many patients end up being significantly out of pocket.

I hope the Committee will find this information useful in its consideration of this matter. If the Committee has any further enquiries, regarding the points above or in the attachments, or on any other related matters, please feel free to contact Jonathon Kruger, General Manager, Advocacy and International Relations Division at email jonathon.kruger@physiotherapy.asn.au or phone (03) 9092 0808. I look forward to further discussion with the Committee in the future.

Yours faithfully,

Melissa Locke
President

MONASH University
Medicine, Nursing and Health Sciences

Issues relating to rural and remote physiotherapy workforce

Prepared by Prue Morgan, Specialist Neurological Physiotherapist, Head of Department, Physiotherapy, Monash University

1. Overview of rural and remote physiotherapy workforce

Staff of the Physiotherapy Department of Monash University are very aware of the current labour force distribution and challenges within physiotherapy across Victoria (and comparative data nationally).

Main workplace of physiotherapists according to local government area is illustrated in Figure 1 below.

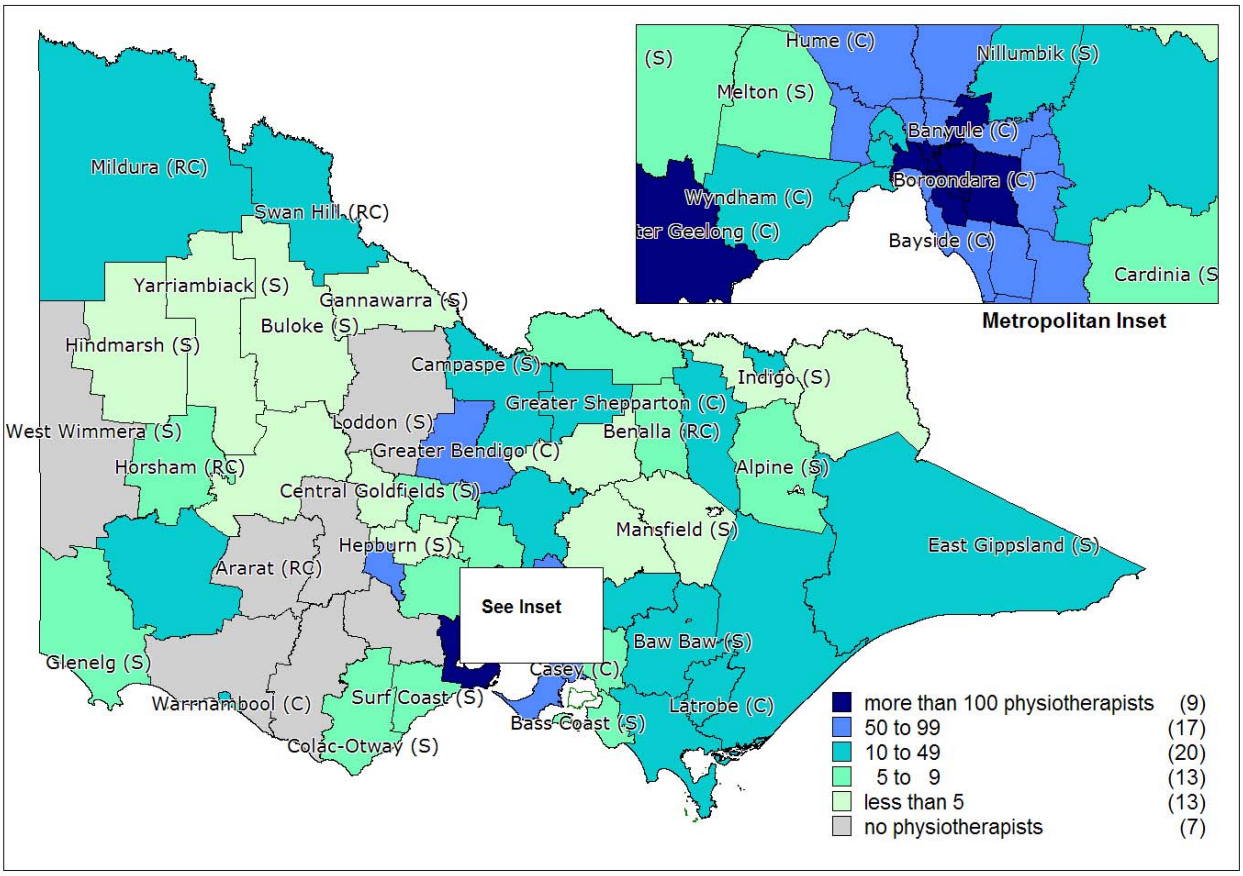

Figure 1. Top 10 metropolitan and rural local government areas, by number of physiotherapists (main job location)[1]

Of the physiotherapists that provided the location of their main employment, 80% work in metropolitan areas, and 20% in rural areas of Victoria (DHS 2007).

Metropolitan Local Government Area	Number of physiotherapists	Rural Local Government Area	Number of physiotherapists
Melbourne (C)	275	Greater Geelong (C)	134
Boroondara (C)	154	Ballarat (C)	62
Glen Eira (C)	148	Greater Bendigo (C)	59
Banyule (C)	146	Wodonga (RC)	36
Stonnington (C)	139	Greater Shepparton (C)	31
Monash (C)	130	Wangaratta (RC)	31
Whitehorse (C)	124	Latrobe (C)	29
Yarra (C)	120	East Gippsland (S)	18
Frankston (C)	95	Baw Baw (S)	17
Kingston (C)	91	Mildura (RC)	16

2. Graduate opportunities in rural and remote areas

Few graduates take up employment opportunities in rural and remote areas, with some preferring to accept underemployment in a metropolitan setting to full employment in rural/remote.

To illustrate the critical staffing situation within rural areas:

At a major regional provider in Gippsland 75% of grade 1 physios have been in their position for less than one year and there are currently 2 vacant positions, another provider has not been able to recruit to a new grade 1 position at all. Today across Gippsland there are currently 9 physiotherapist vacancies advertised spread across 7 facilities (6 hospitals and one community health service)[2]

It is estimated (from informal feedback from graduates) that only 3-5 per graduating cohort of 60 students of Monash University take up employment in regional/remote areas.

Possible reasons for this (informal feedback from graduates and published reports) are:

- Family/friend/sporting or other leisure ties to metropolitan region
- Concerns regarding senior supervision available in rural/remote areas and high staff turnover[3]
- Concerns regarding opportunities for professional development available in rural/remote areas

3. Undergraduate physiotherapy clinical training placements in rural/remote area

To address the challenges in attracting and retaining physiotherapy staff within rural and remote regions of Victoria, the following strategies are implemented:

- Location of our university campus in outer south eastern Melbourne (Frankston) facilitates access and engagement with outer urban and rural locations
- Location of our university campus in outer south eastern Melbourne (Frankston) attracts students from the rural corridors
- Location of our university campus in south eastern Melbourne (Frankston) facilitates job opportunities for our graduates within rural corridor

All our students must undertake at least **one** four or five-week placement in a rural or remote regional facility, during their clinical placement units (years 3 and 4). Some students elect to take up to three, four or five week placements (e.g. students from Tasmania elect to return to Tasmania for their placements). The numbers and locations of these placements are indicated below for 2010 and 2011.

Year level, total no. placements	Tasmania	Gippsland	Barwon/ Geelong	Mildura	Hamilton	Ballarat	Other
2010 Year 3 N=144	4	6	1				
2010 Year 4 N=363	13	17	7	3	2	4	1 Goulburn
2011 Year 3 N=183	4	7	4				
2011 Year 4 N=300	13	16	7	2	1	1	1 Warnambool 1 Horsham 1 Alexandra

Placing students within rural and remote areas for some portion of their clinical training is considered important by Monash University to

- Educate students about the nature of health care within a rural/remote environment
- Educate students about unique challenges and rewards of working within a rural setting
- Familiarise students with the rural environment which may translate to greater willingness to return as a graduate

4. Challenges for Physiotherapy student clinical training placements in rural/remote area

However, despite these facilitators to addressing the workforce challenge, the following barriers have been encountered:

- *Accommodation:* The current cluster model review (Higher Education Funding review commissioned by DEEWR) disappointingly did not accurately identify the true costs of clinical placement training in physiotherapy that must be borne by the university. This has made some students reluctant to undertake an extended period of training in rural and remote regions due to additional costs imposed. For example, students must contribute to the cost of

their accommodation when undertaking placements in rural and remote areas as the government funding for university training in physiotherapy is insufficient. In 2012 the cost of accommodation for students undertaking placements with our Gippsland clinical partners rose from $55/week (2011) to $140/week. Understandably, many are reluctant to take on these additional costs in addition to loss of regular earnings from part time metropolitan employment.[4]

- *Workforce shortage:* Some rural/remote placements have been cancelled due to loss of staff able to supervise students and inability to recruit to positions which carry clinical supervision roles. Unfortunately this becomes a self fulfilling prophecy i.e. if insufficient clinical staff are available within a rural location to provide clinical education to students, students may be less likely to return to a location as a graduate.

References

1. Department of Human Services, 2007, Physiotherapy Labour Force, Victoria 2006: A report by Service and Workforce Planning. Downloaded from http://docs.health.vic.gov.au/docs/doc/509075D0D40C2027CA2578520003D45E/$FILE/physio-report-2007-final.pdf

2. Personal communication 6/12: A/Prof Helen McBurney, Physiotherapy, Monash University and Latrobe Regional Hospital.

3. Minisini, M., Sheppard, L. A., Jones, A. (2010). Self-efficacy beliefs and confidence of rural physiotherapists to undertake specialist paediatric caseloads. International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy.

4. Department of Education, Employment and Workforce Relations (2011). Higher Education Base Funding Review: Final Report. Canberra.

NSW Institute of Rural Clinical Services and Teaching

NSW HEALTH

The NSW Rural Allied Health Workforce Study (RAHWS)

a collaborative project between

The University Departments of Rural Health at Northern Rivers and Tamworth

University Department of Rural Health
& Rural Clinical School
Northern New South Wales

NORTHERN RIVERS
University Department of Rural Health

The NSW Rural Allied Health Workforce Study (RAHWS)

Final Report - May 2009

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Introduction

Allied Health professionals make up a substantial proportion of the health workforce and make a significant contribution to the health and wellbeing of the Australian population. About 18% of the Australian health workforce are Allied Health professionals (AIHW, 2008).

Allied Health professionals provide a broad range of diagnostic and therapeutic services in both the public and private health care systems. For example in aged care, Physiotherapists, Occupational Therapists and Social Workers contribute to speedy discharge from hospital and to the prevention of readmissions. Podiatrists, Exercise Physiologists and Dieticians are key team members in managing chronic conditions such as diabetes. Audiologists and Speech Pathologists provide screening and therapy to children with developmental disabilities. Medical Laboratory Scientists and Radiographers provide essential diagnostic services, and Psychologists help to address the rising prevalence of depression. Allied Health professionals often work in multidisciplinary models of care, with an emphasis on preventive services and are well placed to provide interprofessional health education and health promotion services.

Workforce data are robust for Medical practitioners (AIHW, 2008) and Nurses (AIHW, 2008) including many peer reviewed publications and major governmental reports (DoHA, 2008). In contrast there is remarkably little information detailing the existing Allied Health workforce, particularly in rural areas. Available studies are dated, based on a small sample size, geographically limited or report important inconsistencies (Smith et al, 2008).

It is well known that there is a national shortage of Allied Health professionals and that this problem is worse in rural areas (SARRAH, 2004). As the population density diminishes, the per capita reduction of Allied Health services also reduces. This reduction in Allied Health workforce with increasing rurality has implications for the health care needs of rural and regional residents. In particular, the ageing population could stretch the already sparse Allied Health workforce beyond the ability to cope with the expected increased demand for services.

In 2006, the Australian Health Workforce Official Committee advised that new projects must take into account future workforce requirements, the distribution and work contexts of existing workforce, training arrangements and workforce roles and scope of practice. The absence of data profiling the existing Allied Health workforce renders such analysis impossible.

This Rural Allied Health Workforce study (RAHWS) undertook to identify the characteristics of the entire rural Allied Health workforce in New South Wales including all service sectors. While NSW Health funds a majority of Allied Health services in rural NSW, the private sector, federally funded and NGO services also account for a substantial portion of Allied Health service delivery. Service sectors have interactive effects, particularly in rural areas where practitioners can work in more than one health sector and where limited access in one sector can sometimes be compensated or supplemented through service provision in a different sector.

Methods

Survey design

The RAHWS survey instrument was designed in consultation with clinicians in the public and private health care system, as well as Allied Health academics from 3 Australian universities and public health care administrators. The survey includes questions about demographics; information about respondents' work settings and professional education; and a range of attitudes that are relevant to exploring factors in recruitment and retention of rural Allied Health practitioners. Questions targeting research on recruitment and retention were derived through a review of the literature in rural health settings including Nursing, Medical and Allied Health practitioners (Stagnitti et al, 2005; Stagnitti et al, 2006; McCarthy et al 2007).

The face validity of the RAHWS questionnaire was evaluated by Allied Health clinicians who volunteered to complete it and provide feedback. Generally, they took about 15 minutes to complete the questionnaire and reported that the questions were relevant to their concerns. Concurrent validity was assessed by comparing the content of the RAHWS survey items to that of the 1999 SARRAH survey (SARRAH, 2000). Items on the RAHWS survey matched 89% of the content covered in the SARRAH survey, with 38 added items in the RAHWS questionnaire that were not included in the SARRAH data (Keane et al 2008).

A copy of the RAHWS survey is attached.

Survey implementation and subject recruitment

Allied Health professionals are both widely dispersed and difficult to locate. The RAHWS survey distribution was therefore done through a number of overlapping recruitment strategies and response methods.

As most of the questionnaire's 76 questions can be answered by selecting from a menu of 'tick box' choices, we were able to develop an option for online response. The convenience and cost advantages of the online response option are considerable: online responses are immediately entered into a database and the cost of administrative support is considerably reduced.

Electronic distribution was implemented through professional associations and through the Allied Health Advisors in the North Coast, Hunter-New England, Greater Southern and Greater Western Area Health Services. Private practitioners were located through yellow pages search, and those with no email contact were sent a hard copy of the survey with a reply paid envelope.

Hard copies of the survey were distributed through licensing boards and regulatory bodies. These included the Environment Protection Authority as well as the Chiropractic, Osteopathy, Pharmacy, Physiotherapy, and Psychology Boards. To reduce postage and administrative costs, each professional registry was sorted to include only rural postcodes.

A final reminder was widely broadcast through contacts made during the recruitment process with a request for additional distribution through informal networks and word of mouth.

Survey data were entered onto a secure electronic database either by direct online responses from participants or by administrative staff in the case of returned hard copy surveys.

We used the Rural, Remote and Metropolitan Areas (RRMA) classification system to define rural areas by postcode. RRMA classifications are:

RRMA 1 = A Capital City
RRMA 2 = Other Metropolitan (>100,000)
RRMA 3 = Large Rural Centre (25,000-99,999)
RRMA 4 = Small Rural Centre (10,000 – 24,999)
RRMA 5 = Other Rural (<10,000)
RRMA 6 = Remote Centre (5,000 – 9,999)
RRMA 7 = Other Remote Area (<5,000)

A total of 2165 records were entered in the database. Data were subsequently cleaned of 16 records entered for purposes of server testing and 10 duplicate records were identified and merged into 5 eligible records. Ineligible records were eliminated including 3 nurse respondents, those working outside NSW (49) or in RRMA 1 metropolitan centres in NSW (43), as well as 18 records where rurality could not be determined from one of the two relevant questions affirming the rural location of the respondent. Incomplete records were identified and where possible missing data were imputed from existing data.

A total of 134 records were eliminated, leaving a sample size of 2031 respondents. It could be argued that respondents from RRMA 2 locations surrounding Tweed, Newcastle and Wollongong provide outreach services to surrounding rural regions and should be included. However, a conservative approach was taken for this analysis and an additional 168 respondents were excluded as being from RRMA 2 outer metropolitan regions.

Statistical analysis was conducted using Microsoft Excel 2007.

Results

After data cleaning, a total of 1863 respondents were included in the sample for analysis. The total number of respondents listed by occupation is shown in Table 1.

Table 1: All respondents listed by occupation

Occupation	Number
Audiologist	13
Chiropractor	81
Dental Therapist	16
Diagnostic Radiographer	194
Dietician	66
Medical Laboratory Scientist	30
Nuclear Medicine Scientist	4
Occupational Therapist	143
Optometrist	72
Orthoptist	3
Osteopath	21
Pharmacist (Community)	221
Pharmacist (Hospital)	54
Physiotherapist	414
Podiatrist	67
Prosthetist	4
Psychologist	147
Radiation Therapist	11
Social Worker	104
Sonographer	29
Speech Pathologist	88
Other	70
Occupation not specified	11
Grand Total	**1863**

Response rate

Because of multiple, overlapping recruitment strategies, the response rate could only be estimated. Two methods were undertaken to estimate the response rate.

First, a total of 2581 hard copy surveys were mailed to licensed Allied Health professionals in rural NSW. There were 1135 surveys returned, giving a response rate of 44%.

A second method of response rate estimation made use of the 2006 ABS census data which describes the distribution of some of the Allied Health professionals in rural NSW. Not all Allied Health professions are described in the ABS census data. However, all licensed as well as some non-licensed professions are included, enabling an estimation of response rate for these specific professions. Using this alternate method of population estimate, the response rate was 31% (Table 2).

Table 2: Response rates based on available 2006 ABS census data

Occupation	Total	ABS (RRMA 3-7)	Response Rate
Chiropractor & Osteopathy	102	244	42%
Dietician	66	178	37%
Occupational Therapist	143	475	30%
Optometrist & Orthoptist	75	240	31%
Pharmacist	275	986	28%
Physiotherapist	414	800	52%
Podiatrist	67	121	55%
Psychologist	147	747	20%
Social Worker	104	675	15%
Speech Pathologist & Audiologist	101	319	32%
TOTAL	**1494**	**4785**	**31%**

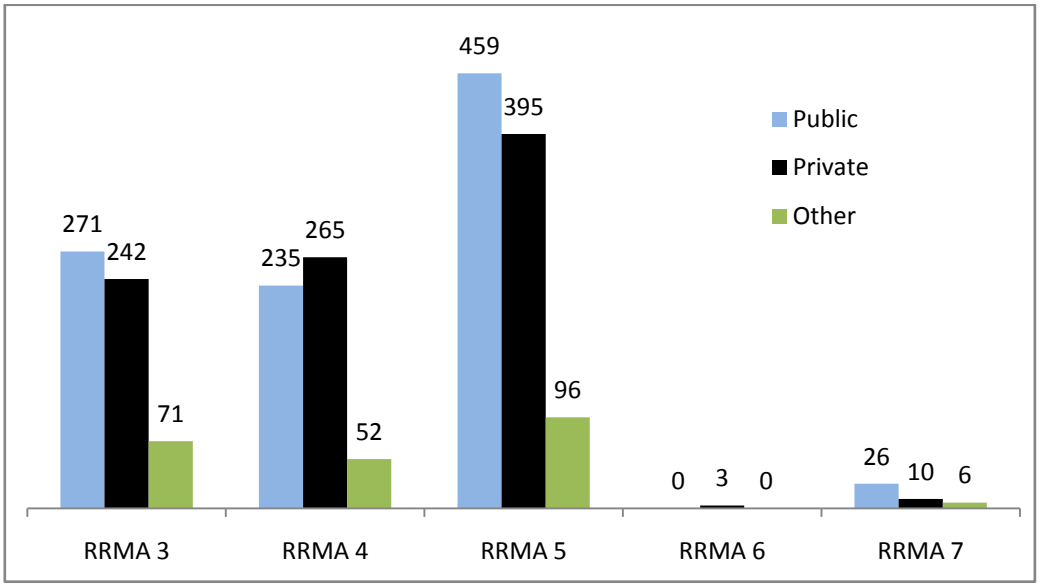
As Pharmacists, Psychologists and Social Workers had response rates below 30%, any conclusions reached on the basis of RAHWS data for these professions would need to be verified by further studies. Furthermore, the sample of Psychologists was biased toward public health and did not well represent the private sector.

All Allied Health professions have been included in this report analysis, not just those professions listed in the ABS data. While there can be no specific estimate of response rate for those professions not listed in the ABS census, the overall response rate may give some confidence in the validity of these results. The results of analysis for occupations with low response rates should be treated with considerable scepticism.

Geographic distribution of the sample

The sample's rural distribution by RRMA classification is described in Figure 1.

Figure 1: Distribution of respondents by RRMA classification



Other work sectors included federally funded programs, non-government organisations and higher education.

Based on postcodes, geographic regions were also assigned according to the footprint of the four rural NSW Area Health Services. The distribution of respondents by region is shown in Table 3.

Table 3: Distribution by Area Health Service (AHS) region

AHS Region	Total	Public
Greater Southern	504	219
Greater Western	365	232
Hunter New England	385	243
North Coast	525	253
Not specified	84	44
Grand Total	**1863**	**991**

Demographic distribution

The demographic descriptors for each profession are reported in Table 4. The mean age of the sample was 43 years, with ages ranging from 21 to 81 years. Only 11 respondents (less than one percent) of the sample were of Aboriginal background.

Table 4: Demographic descriptors by occupation

Occupation	Female		Married		Dependents	
Audiologist	10	77%	7	54%	7	54%
Chiropractor	27	33%	62	77%	43	53%
Dental Therapist	15	94%	11	69%	11	69%
Diagnostic Radiographer	128	66%	152	78%	111	57%
Dietician	61	92%	46	70%	28	42%
Medical Laboratory Scientist	23	77%	26	87%	17	57%
Nuclear Medicine Scientist	1	25%	3	75%	0	0%
Occupational Therapist	132	92%	101	71%	64	45%
Optometrist	28	39%	62	86%	48	67%
Orthoptist	2	67%	3	100%	2	67%
Osteopath	11	52%	15	71%	4	19%
Pharmacist (Community)	110	50%	195	88%	85	38%
Pharmacist (Hospital)	38	70%	41	76%	25	46%
Physiotherapist	319	77%	350	85%	264	64%
Podiatrist	46	69%	49	73%	40	60%
Prosthetist	2	50%	2	50%	2	50%
Psychologist	98	67%	106	72%	53	36%
Radiation Therapist	5	45%	6	55%	4	36%
Social Worker	83	80%	68	65%	44	42%
Sonographer	21	72%	26	90%	20	69%
Speech Pathologist	84	95%	56	64%	28	32%
Other	50	71%	42	60%	32	46%
Occupation not specified	4	36%	6	55%	4	36%
Total (N=1863)	**1298**	**70%**	**1435**	**77%**	**936**	**50%**

Of the 1435 married respondents, 850 (59%) of their partners were employed full time, with a further 366 (26%) being employed on a part time or casual basis. The presence of dependents did not substantially change the proportion of respondents' partners working full time or part time.

The distribution of age and experience by profession is shown in Table 5. Respondents' age was calculated as the current year (2008) minus the year of birth. Years of experience were similarly calculated as the current year minus the year qualified. Speech Pathologists, Dieticians and Occupational Therapists were among the youngest while Pharmacists and Chiropractors were both the oldest and most experienced professionals of the group.

Table 5: Age and years experience by professional discipline

Occupation	Average Age (SD)	Average Years Experience (SD)
Audiologist	45 (10.2)	18 (8.9)
Chiropractor	45 (11.3)	19 (10.7)
Dental Therapist	47 (4.9)	26 (4.6)
Diagnostic Radiographer	43 (11.4)	21 (11.7)
Dietician	32 (8.6)	9 (8.1)
Medical Laboratory Scientist	45 (10.6)	20 (11.6)
Nuclear Medicine Scientist	28 (7.9)	7 (6.8)
Occupational Therapist	36 (9.8)	13 (9.4)
Optometrist	43 (10.5)	21 (9.9)
Orthoptist	50 (2.6)	30 (3.5)
Osteopath	44 (13.6)	13 (11.2)
Pharmacist (Community)	52 (14.9)	29 (15.7)
Pharmacist (Hospital)	46 (11.5)	23 (13.1)
Physiotherapist	44 (10.6)	21 (11.1)
Podiatrist	41 (9.4)	16 (10.0)
Prosthetist	39 (15.3)	14 (13.7)
Psychologist	45 (12.2)	13 (10.9)
Radiation Therapist	33 (10.9)	12 (11.5)
Social Worker	45 (11.1)	16 (11.6)
Sonographer	40 (10.6)	12 (7.6)
Speech Pathologist	33 (8.6)	9 (8.1)
Other	48 (11.2)	15 (11.6)
Occupation not specified	46 (16.5)	24 (15.0)
Grand Total	**43 (12.3)**	**19 (12.6)**

Service delivery

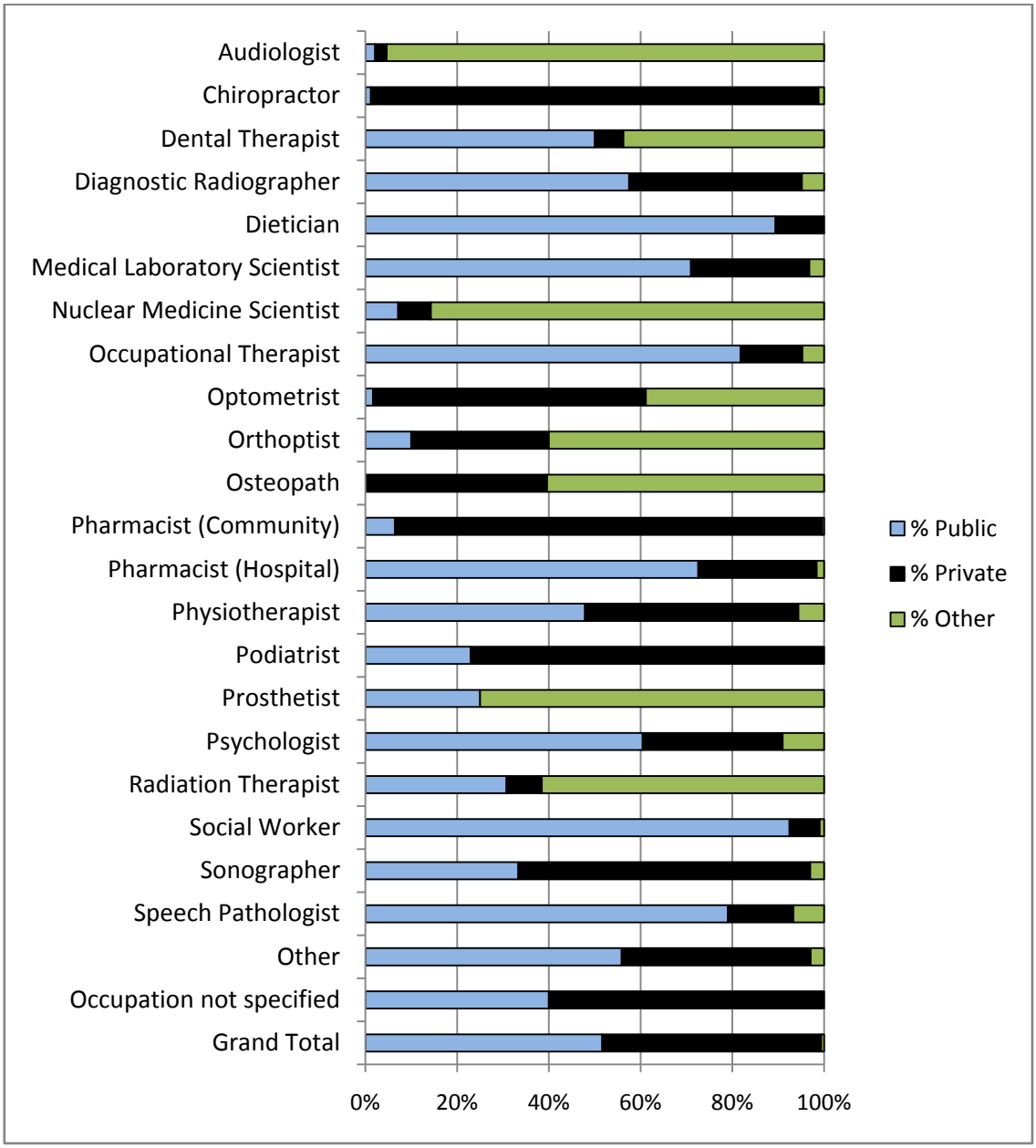
While Allied Health professionals as a group worked across public, private and other health service settings, the distribution across sectors differed by profession. Speech Pathologists worked primarily in the public sector, while Chiropractors worked exclusively in private practice. In contrast Physiotherapists were equally likely to be practicing in public or private settings (Figure 2).

There were 709 respondents working exclusively in the private sector while 803 worked only as public employees. A further 124 respondents worked in both the public and private sector. Thirty five respondents worked in federally funded programs, 19 worked in non-government organisations and 5 respondents worked in higher education. Less than one

percent of respondents worked in the disability sector, the most frequent being Audiologists, Dieticians, Occupational Therapists, Physiotherapists and Social Workers.

A total of 179 (9%) of all respondents were working in multiple sectors.

Figure 2: Distribution by service delivery sector



Outreach, home visits and on-call service delivery

About one third of those surveyed provided sessional outreach services to other communities.

Over half of Dieticians, Speech Pathologists and Audiologists provided services in more than one location, as did 3 of the 4 Prosthetists in this sample.

Allied Health professionals requiring immobile equipment (e.g. Radiographers) and those working primarily in the private sector (e.g. Chiropractors) were unlikely to be doing outreach service. Nineteen percent of Physiotherapists provided outreach services.

About one third of the workforce in each of the RRMA 3 to RRMA 6 regions provided outreach services while over 50% of practitioners in RRMA 7 regions provided services in multiple locations.

The professions doing the majority of on call work were Medical Laboratory Science, Medical Radiation Science and Hospital Pharmacy (Table 6).

Table 6: Number (percent) of professionals engaged in outreach, on-call and home visit service delivery

Occupation	Home Visits		On Call		Outreach	
Audiologist	10	(77%)	0	(0%)	9	(69%)
Chiropractor	34	(42%)	18	(22%)	12	(15%)
Dental Therapist	0	(0%)	0	(0%)	10	(63%)
Diagnostic Radiographer	2	(1%)	117	(60%)	32	(16%)
Dietician	39	(59%)	2	(3%)	39	(59%)
Medical Laboratory Scientist	6	(20%)	21	(70%)	6	(20%)
Nuclear Medicine Scientist	0	(0%)	0	(0%)	0	(0%)
Occupational Therapist	128	(90%)	2	(1%)	66	(46%)
Optometrist	34	(47%)	5	(7%)	21	(29%)
Orthoptist	1	(33%)	0	(0%)	1	(33%)
Osteopath	6	(29%)	1	(5%)	3	(14%)
Pharmacist (Community)	63	(29%)	50	(23%)	15	(7%)
Pharmacist (Hospital)	6	(11%)	26	(48%)	16	(30%)
Physiotherapist	206	(50%)	45	(11%)	78	(19%)
Podiatrist	47	(70%)	0	(0%)	26	(39%)
Prosthetist	0	(0%)	0	(0%)	3	(75%)
Psychologist	53	(36%)	20	(14%)	64	(44%)
Radiation Therapist	0	(0%)	1	(9%)	0	(0%)
Social Worker	71	(68%)	11	(11%)	51	(49%)
Sonographer	0	(0%)	13	(45%)	5	(17%)
Speech Pathologist	69	(78%)	2	(2%)	56	(64%)
Other	35	(50%)	8	(11%)	30	(43%)
Occupation not specified	5	(45%)	1	(9%)	3	(27%)
Total (N=1863)	**815**	**(44%)**	**343**	**(18%)**	**546**	**(29%)**

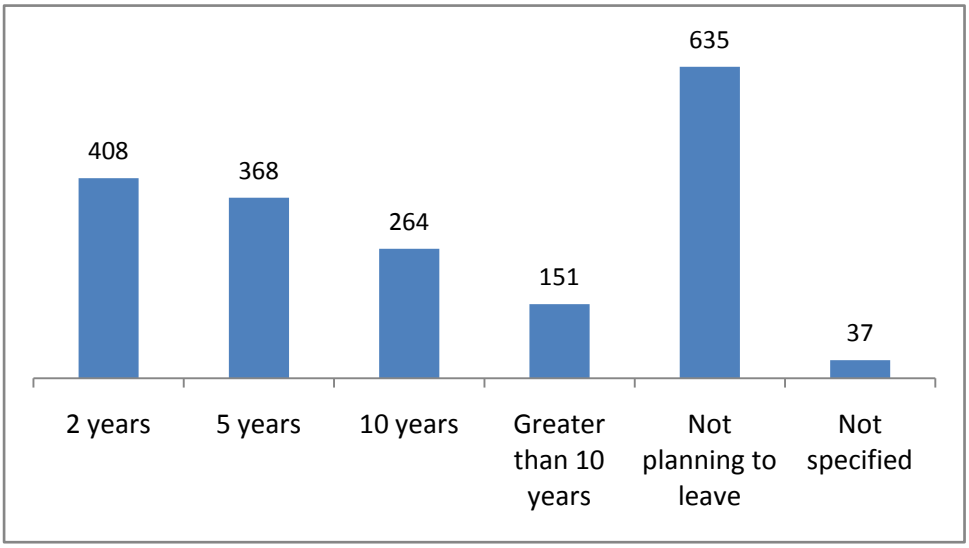
Most Allied Health professionals provided treatment for patients at home as a routine part of clinical practice. Professionals infrequently providing home visits were Chiropractors, Osteopaths, community Pharmacists and those engaged in hospital based services such as diagnostic testing.

Five hundred and nineteen (28%) of respondents reported that they supervise a therapy aide or assistant. However, as terminology varies across disciplines, the question may have been poorly understood and this result may not accurately represent the use of clinical support workers.

Intention to leave

Seven hundred and seventy six (42%) of respondents intended to leave their current position within the next 5 years (Figure 3).

Figure 3: Number of respondents intending to leave their current job



As could be expected, the intention to leave varied across professions (Table 7). Three of the 4 Prosthetists in this sample and 45 (51%) of Speech Pathologists intended to leave their jobs in the next 2 years. Work related concerns (e.g. remuneration, career prospects, and job dissatisfcation) dominated Speech Pathologists' reasons for leaving.

Overall 63% of those intending to leave their jobs within the next 2 years worked in the public sector as compared with 37% of practitioners in non-public sectors.

Table 7: Intention to leave job within 2 years by occupation

Occupation	Number	Leave in 2 years	Percent
Audiologist	13	2	15%
Chiropractor	81	7	9%
Dental Therapist	16	0	0%
Diagnostic Radiographer	194	28	14%
Dietician	66	20	30%
Medical Laboratory Scientist	30	4	13%
Nuclear Medicine Scientist	4	0	0%
Occupational Therapist	143	48	34%
Optometrist	72	9	13%
Orthoptist	3	0	0%
Osteopath	21	2	10%
Pharmacist (Community)	221	53	24%
Pharmacist (Hospital)	54	15	28%
Physiotherapist	414	74	18%
Podiatrist	67	7	10%
Prosthetist	4	3	75%
Psychologist	147	40	27%
Radiation Therapist	11	3	27%
Social Worker	104	29	28%
Sonographer	29	5	17%
Speech Pathologist	88	45	51%
Other	70	11	16%
Occupation not specified	11	3	27%
Grand Total	**1863**	**408**	**22%**

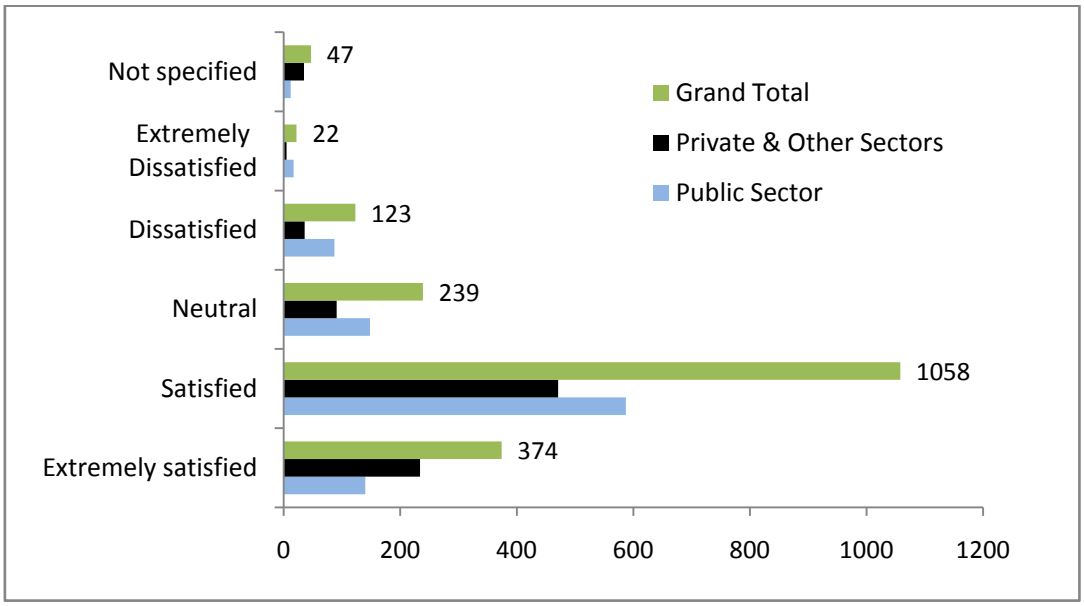
Reasons cited for leaving work in the next 5 years were (in order citation frequency):

retirement (237)
better career prospects (181)
moving to a preferred location (142)
to earn a better income (115)
never intended to stay (76)
relocation of partner (54)
extended family commitments (40)
child(ren)'s education (36)
job dissatisfaction (32)
other (74)

Job satisfaction

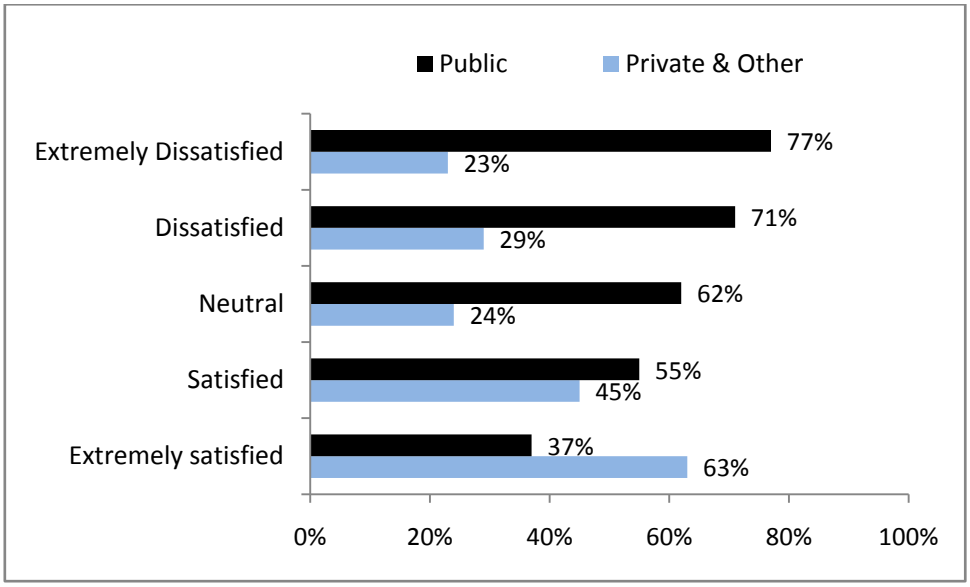
Seventy seven percent of respondents were satisfied or extremely satisfied with their jobs (Figure 4). Consistent with the literature, there was a strong relationship between job satisfaction and intention to leave in the short term (Hegney & McCarthy, 2000; Meyer 2006; Stagnitti et al, 2005; Allen, 2005). A larger proportion of clinicians with high job satisfaction ratings planned to remain in their current jobs as compared with those with low job satisfaction .

Figure 4: Number of respondents and job satisfaction ratings



Job satisfaction in the public sector was proportionately lower as compared with other service sectors within each category of job satisfaction. For example, seventeen (77%) of the 22 respondents who were extremely dissatisfied with their jobs were public employees (Figure 5). The number of persons intending to leave their jobs in the next 2 years was 257 (26%) in the public sector, and 151 (17%) in the private sector.

Figure 5: Job satisfaction in the public and non-public sectors as a proportion within each response category



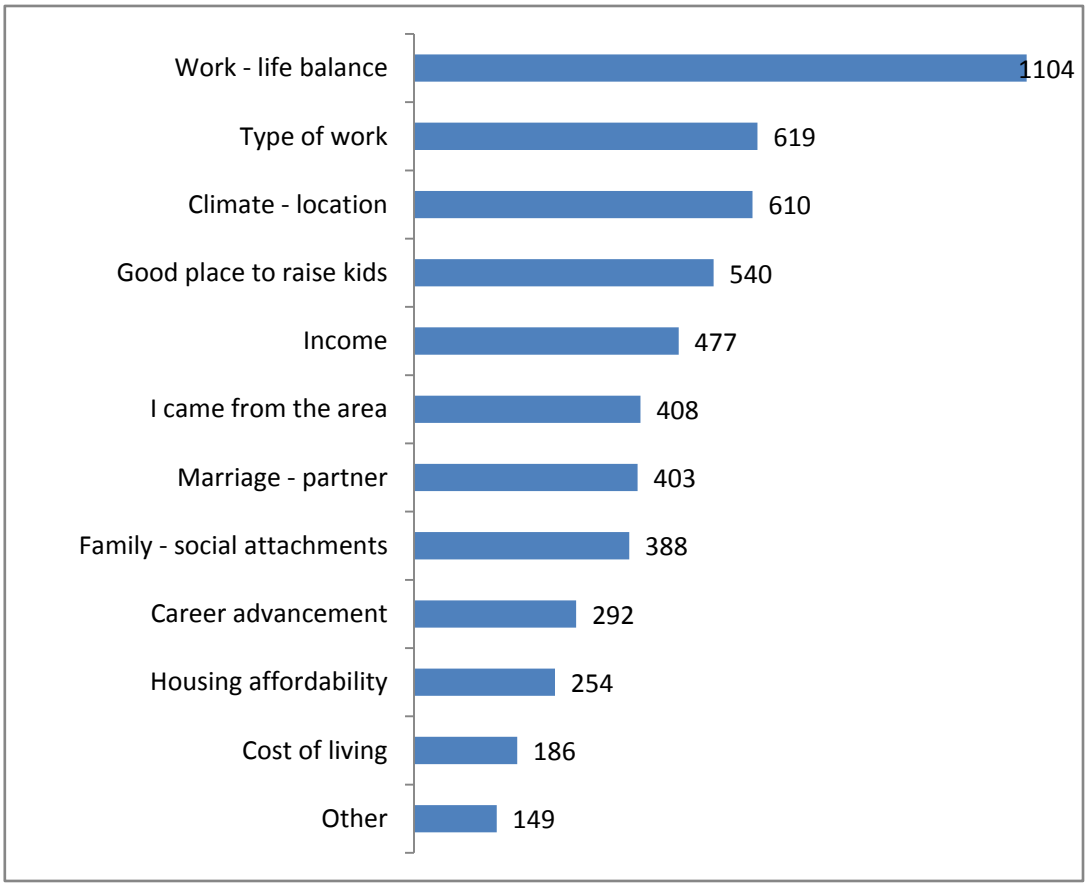
Recruitment

Confirming the literature on recruitment to rural areas 749 (40%) of these rurally employed respondents grew up in a rural area, and 888 (48%) undertook rural clinical placements (Playford, 2006).

One survey item gave a range of tick box options in response to the question, "What most attracted you to your current position?" Respondents were limited to five responses out of eleven choice options. The frequency count of each response is given in Figure 6.

A further option was provided for narrative responses. Of the 149 narrative respondents 29 indicated the availability of employment as a reason for taking up their current position.

Figure 6: Frequency of reasons cited why attracted to current position



Retention – work/ life balance

While the most frequently cited reason for recruitment was "Work/Life Balance" a large proportion of respondents were working more hours than they would prefer to work. Forty nine percent of respondents were happy with their current work hours, 41% wanted to work fewer hours and 3% wanted to work more hours. Professionals most concerned to work fewer hours were Physiotherapists, Community Pharmacists and Occupational Therapists.

Six hundred and fourteen (33%) practitioners were working more than 40 hours per week and nearly half of all respondents were working overtime (Table 8).

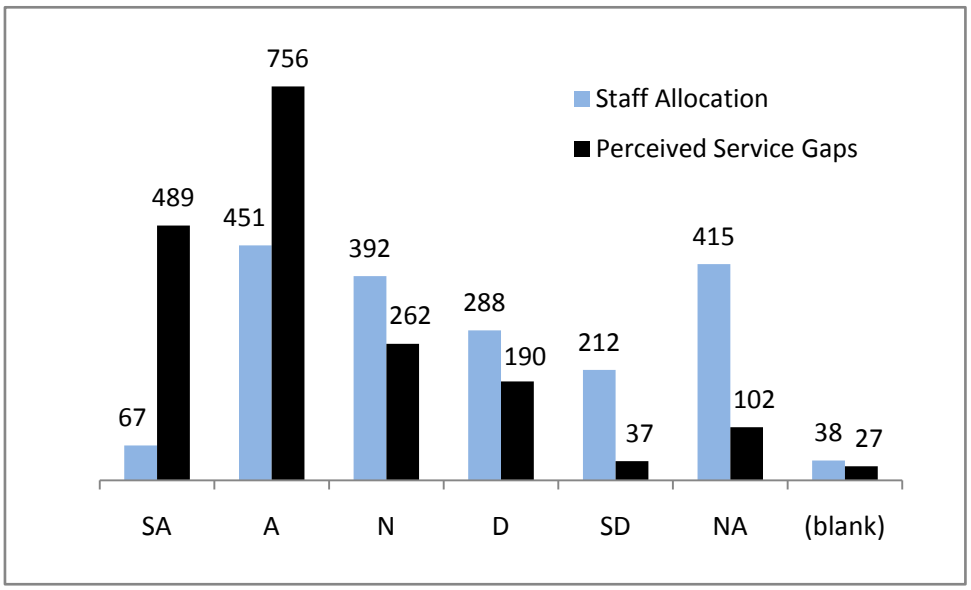
Table 8: Numbers of respondents working paid and unpaid overtime by occupation

Occupation	Total	Paid Overtime		Unpaid Overtime	
Audiologist	13	1	8%	7	54%
Chiropractor	81	0	0%	10	12%
Dental Therapist	16	1	6%	4	25%
Diagnostic Radiographer	194	77	40%	56	29%
Dietician	66	3	5%	30	45%
Medical Laboratory Scientist	30	9	30%	20	67%
Nuclear Medicine Scientist	4	1	25%	1	25%
Occupational Therapist	143	7	5%	70	49%
Optometrist	72	2	3%	19	26%
Orthoptist	3	1	33%	1	33%
Osteopath	21	0	0%	4	19%
Pharmacist (Community)	221	14	6%	50	23%
Pharmacist (Hospital)	54	5	9%	29	54%
Physiotherapist	414	22	5%	140	34%
Podiatrist	67	1	1%	22	33%
Prosthetist	4	0	0%	2	50%
Psychologist	147	8	5%	67	46%
Radiation Therapist	11	5	45%	5	45%
Social Worker	104	0	0%	61	59%
Sonographer	29	8	28%	7	24%
Speech Pathologist	88	2	2%	46	52%
Other	70	3	4%	27	39%
Occupation not specified	11	1	9%	3	27%
Grand Total	**1863**	**171**	9%	**681**	37%

The majority of respondents (56%) considered that their workload was reasonable. Thirty two percent agreed or strongly agreed with the statement "You feel burnt out".

Although 65% reported that they could take annual leave when they wanted, locum backfill for annual leave and unfilled positions was clearly not available. Sixty seven percent of respondents agreed or strongly agreed with the statement "There are service gaps because of limited human resources" while 28% agreed with statement "Personnel are allocated according to areas of clinical need". The perceived relationship between the appropriateness of staff allocation and existing service gaps warrants further exploration in order to assure the best use of health service resources (Figure 7).

Figure 7: Agreement with statements regarding service gaps and staff allocation *



*SA= strongly agree, A= agree, N= neutral, D= disagree, SD= strongly disagree, NA= not applicable. Level of agreement is in relation to these two statements:

"Personnel are allocated according to areas of clinical need"

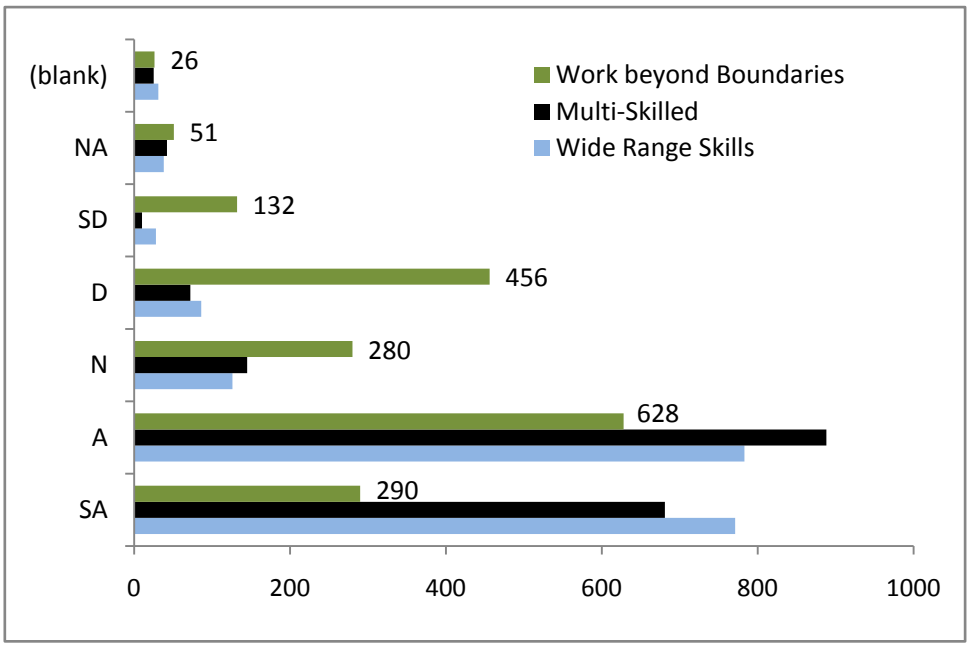
"There are service gaps because of limited human resources"

Retention – type of work/clients

The second most cited reason for being attracted to rural employment was "Type of Work/Clients". Considerable information can be gained from the survey about the type of work Allied Health professionals are doing in rural NSW. The data are extensive and what follows is only a partial analysis.

In the first instance, it appears that there is a trend to extend professional work roles: 49% of respondents agreed or strongly agreed with the statement "You sometimes work beyond the boundaries of your professsion". Respondents also reported the need to become multi-skilled to meet demand and used a wide range of skills in their clinical practice (Figure 8).

Figure 8: Agreement with statements regarding type of work*

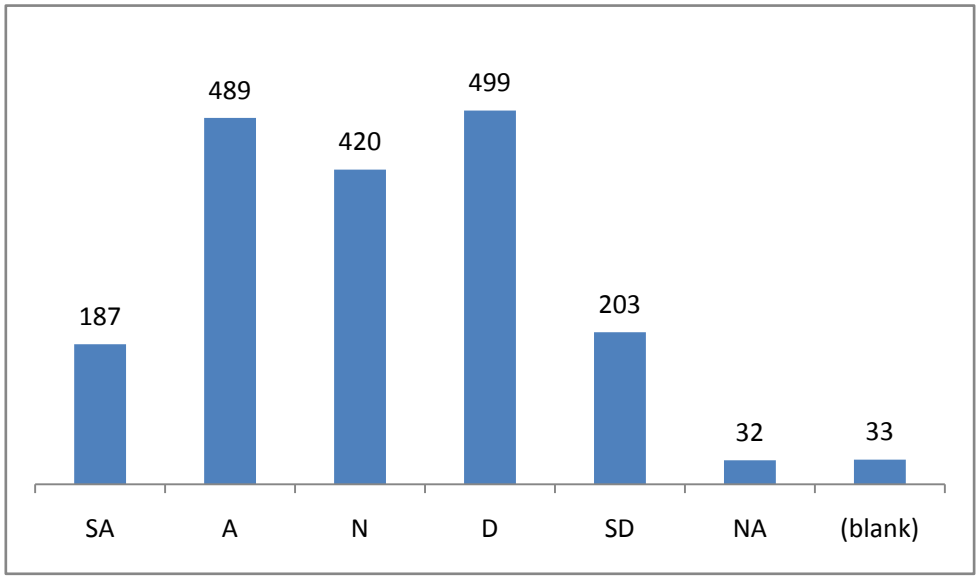


* SA= strongly agree, A= agree, N= neutral, D= disagree, SD= strongly disagree, NA= not applicable.
Level of agreement is in relation to these 3 statements:
"You sometimes work beyond the boundaries of your profession"
"You use a wide range of clincal skills in your work"
" You have had to become multi-skilled to meet clinical demands"

Clinicians also agreed or strongly agreed that they are able to work autonomously (74%) and that they were working in their area of expertise (84%).

The perception of professional isolation followed a normal distribution (Figure 9).

Figure 9: Responses to the statement "You feel professionally isolated"



* SA= strongly agree, A= agree, N= neutral, D= disagree, SD= strongly disagree,
(blank)= did not respond to the question

Retirement of the rural allied health workforce in NSW

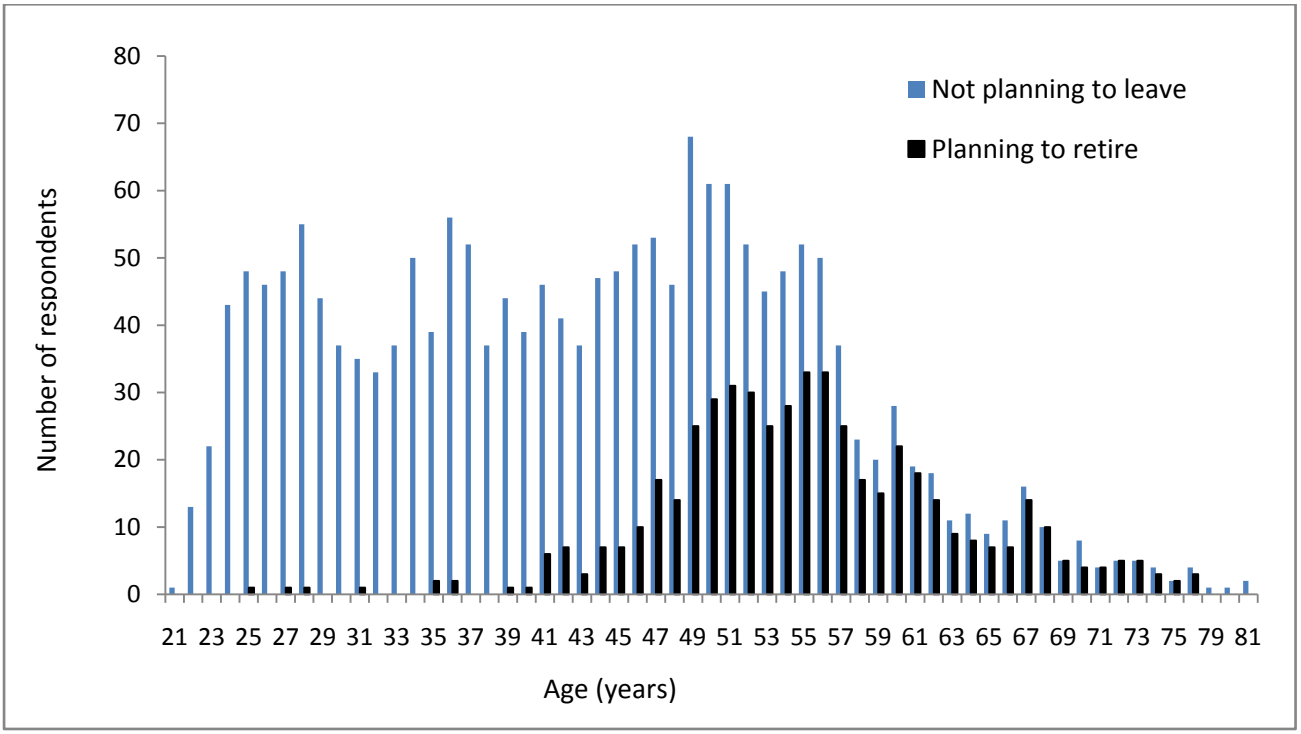
About a quarter of respondents planned to retire within the next decade but proportions differed by profession (Table 9).

Table 9: Respondents planning to retire within the next 5 years

Occupation	Public	Non-Public	Total Number (%) Retiring
Audiologist	3	2	5/13 (38%)
Chiropractor	0	21	21/81 (26%)
Dental Therapist	7	0	1/16 (44%)
Diagnostic Radiographer	46	18	64/194 (33%)
Dietician	1	0	1/66 (2%)
Medical Laboratory Scientist	12	2	14/30 (47%)
Nuclear Medicine Scientist	0	0	0/4 (0%)
Occupational Therapist	10	2	12/143 (8%)
Optometrist	0	24	24/72 (33%)
Orthoptist	0	0	0/3 (0%)
Osteopath	0	5	5/21 (24%)
Pharmacist (Community)	3	110	113/221 (51%)
Pharmacist (Hospital)	16	5	21/54 (39%)
Physiotherapist	59	68	127/414 (31%)
Podiatrist	4	14	18/67 (27%)
Prosthetist	2	0	2/4 (50%)
Psychologist	29	6	35/147 (24%)
Radiation Therapist	0	1	1/11 (9%)
Social Worker	20	2	22/104 (21%)
Sonographer	4	0	4/29 (14%)
Speech Pathologist	3	0	3/88 (3%)
Other	11	6	17/70 (24%)
Occupation not specified	2	4	6/11 (55%)
Grand Total	**232**	**290**	**522/1863 (28%)**

The average age of those intending to retire within the next decade was 49 years. This means that on average these practitioners were choosing to leave the workforce at about 59 years of age. In this sample 175 clinicians over 59 years of age (9%) were still working. Clinicians who are less than 40 years of age comprised 40% of the population (Figure 10).

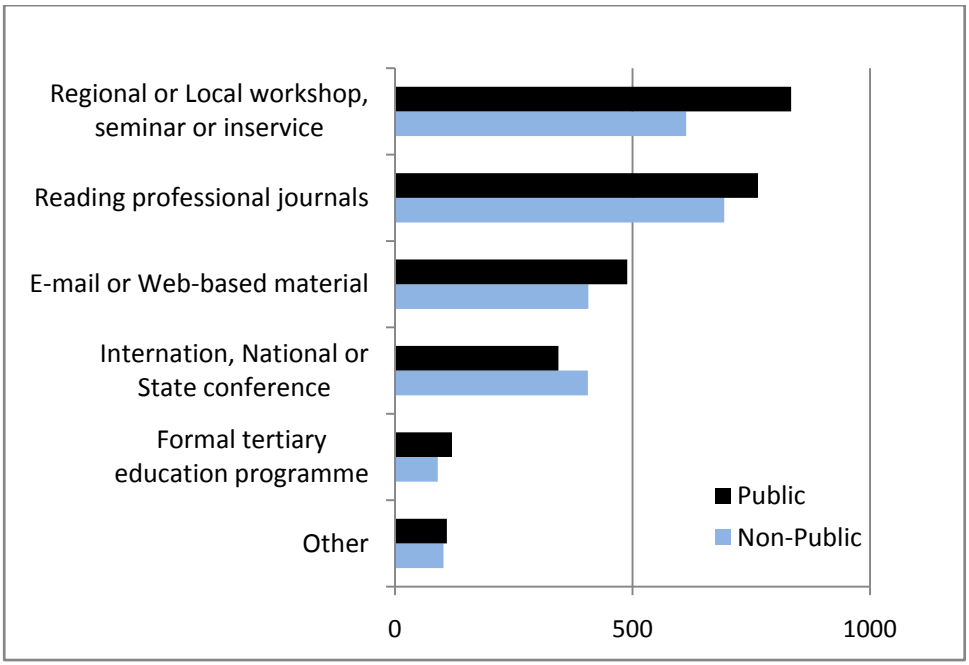
Figure 10: Age distribution of respondents planning to stay vs. those planning to retire from their current jobs



Continuing professional development (CPD)

Access to CPD is repeatedly cited in the literature as having a positive influence on retention of Allied Health professionals, yet access to CPD is problematic in rural areas (Stagnitti et al, 2005). There has been a recent push to develop online learning options to make CPD more available to rural clinicians. However, the RAHWS data showed a clear preference for face to face learning at a local or regional level (Figure 11). The uptake of "E-mail or web based material" was marginally better than travelling to major capital cities to participate in short courses or workshops. However, it was not clear from the survey whether the online material being accessed was organised in formal units, or if the response reflected a more ad hoc perusal of the internet. This question will be addressed in follow up focus groups.

Figure 11: Uptake of a variety of modes of CPD in the past year



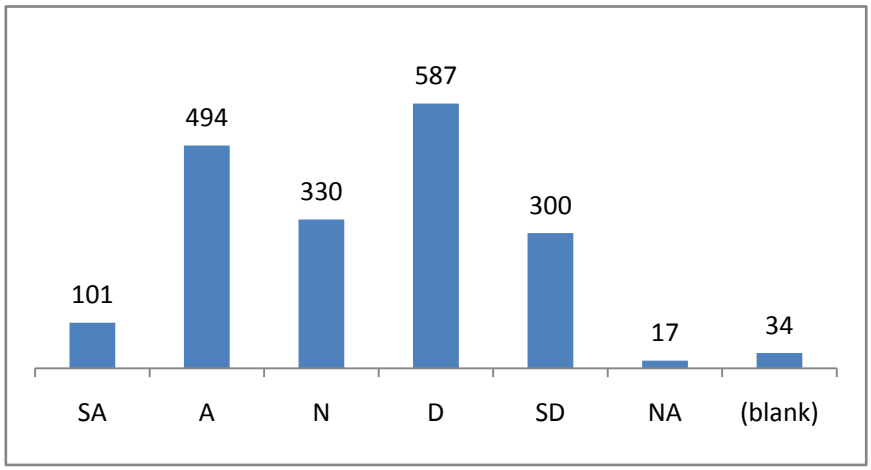
Several sources of CPD were commonly cited in the 'Other' narrative descriptors. These included:

teaching/research
supervision/mentoring
workplace learning (e.g. secondments or clinical rotations)
study using DVD's

About half of this sample had access to Medline or CIAP search engines at work. Although 1412 (76%) had broadband coverage, only 441 (24%) reported having Medline or CIAP search engine access at home. Clinicians most often accessed CPD through individual reading, local or regional workshops and workplace in-services.

Lack of local access was the most frequently cited reason inhibiting access to CPD. Less than half of the group were satisfied with their CPD access (Figure 12).

Figure 12: Responses to the statement "You are satisfied with your access to CPD opportunities"



* SA= strongly agree, A= agree, N= neutral, D= disagree, SD= strongly disagree, (blank)= did not respond to the question

Student supervision

The proportion of student supervisors is shown in Table 10. Overall, 955 (51%) of respondents took students on clinical placements. The private and public sectors differed in their student supervision: 577 of 991 public sector Allied Health professionals (58%) took students while 414 of 916 private practitioners (45%) of private practitioners offered clinical placements.

Table 10: Student supervisors by occupation

Occupation	Number Supervising Students	Total	Percent
Audiologist	8	13	62%
Chiropractor	16	81	20%
Dental Therapist	5	16	31%
Diagnostic Radiographer	149	194	77%
Dietician	54	66	82%
Medical Laboratory Scientist	16	30	53%
Nuclear Medicine Scientist	4	4	100%
Occupational Therapist	89	143	62%
Optometrist	11	72	15%
Orthoptist	1	3	33%
Osteopath	2	21	10%
Pharmacist (Community)	142	221	64%
Pharmacist (Hospital)	36	54	67%
Physiotherapist	190	414	46%
Podiatrist	30	67	45%
Prosthetist	2	4	50%
Psychologist	48	147	33%
Radiation Therapist	7	11	64%
Social Worker	49	104	47%
Sonographer	21	29	72%
Speech Pathologist	45	88	51%
Other	22	70	31%
Occupation not specified	8	11	73%
Grand Total	**955**	**1863**	**51%**

Discussion

Firstly, the methodological limitations of this study should be acknowledged. The overall response rate may have been anywhere between 31 and 44 percent, depending on which method of estimation was used to calculate the response rate. Response rates for individual professions varied from 15% to 55%, and many occupations' response rates could not be calculated. The sample demographics indicated a relatively even proportion of public and non-public workers but it is unclear whether this is representative of the rural Allied Health workforce distribution in NSW. Nevertheless, this was a large sample of 1863 respondents and results can be considered with some confidence.

Allied Health professionals in the NSW RAHWS survey formed a mature and experienced workforce having on average 19 years of experience and an average age of 43 years. This matched respondents' reports of autonomous practice as well as their use of a broad range of skills to meet clinical demands. About half of the RAHWS Allied Health clinicians agreed that they sometimes worked beyond their traditional professional boundaries, with public employees being more likely to report this work practice.

These observations argue in favour of recognising rural practice as a clinical specialisation, and support consideration of extending scope of practice in some circumstances (Productivity Commission, 2005). As "type of work" was frequently cited as an attractor to the area, this aspect of health policy could have a substantial impact on the attraction and retention of Allied Health professionals in rural areas.

The shortage of rural Allied Health practitioners in NSW is acute with 67% of respondents reporting perceived service gaps as a result of limited human resources (see Figure 7). Neither the magnitude nor the consequences of Allied Health service gaps have been explored.

Allied Health professionals contribute substantially to the early discharge of patients from acute care settings, and provide services that aid patients in the transition from acute care to a sustainable domiciliary residence. There has been no costing put to the prevention of hip fractures as a result of Occupational Therapist home safety assessments to reduce falls risk, or the ability to remain in the workforce as a result of Psychological counselling for acute depression. No estimation of preventable hospital readmissions has been made in relation to Allied Health service gaps in community settings, nor has it been assessed whether Allied Health workforce shortages result in extended acute care stays by delaying necessary pre-discharge clinical interventions.

In short, there is little or no evidence of the cost-effectiveness of Allied Health services on health outcomes. More evidence of the cost-effectiveness of Allied Health services is needed to make appropriate staff budget allocations, whether more or less than at current levels, based on the evidence.

Chronic insufficient staffing was commonly reported: 41% of respondents reported being short staffed, 25% reported high staff turnover, and 67% reported that locum backfill was not available. Despite this, 65% of respondents were able to take annual leave when they wanted, and 56% reported that they have a reasonable workload. These data support the

impression that clinicians are coping with high levels of clinical need by reducing service provision in order to adjust their workload to a manageable level. Further investigation is needed to explore the reasons why 27% of respondents felt that the existing Allied Health workforce could be deployed more effectively according to clinical need (see Figure 7).

Despite being attracted by "Work/life Balance" a large proportion of respondents were working long hours: 41% reported wanting to work fewer hours per week than they currently worked, 25% worked more than 40 hours per week and 36% were working unpaid overtime hours to meet high levels of clinical demand. The common practice of working overtime on an unpaid basis may indicate that the desire to meet clinical needs takes precedence over work/life balance for a great number of clinicians. This could be a significant contributor to the high level of "burn out" in the rural Allied Health workforce. The nuances of the phrase "Work/life Balance" can not be untangled using survey methodology, and follow up focus groups are needed to explore this and other questions in relation to RAHWS survey results.

Overall 77% of respondents were satisfied or extremely satisfied with their jobs, but it would be useful to examine the differences between those who were and were not satisfied with their jobs. The strong relationship between job dissatisfaction and intention to leave was supported by these results. Job dissatisfaction was more frequent in the public sector (see Figure 5). Other possible contributors to job satisfaction might include workload, professional isolation, or access to CPD. Additional analysis of the RAHWS data set will be conducted to identify factors associated with both job satisfaction and respondents' intention to stay.

The attraction to the climate or location was the third most frequently cited reason for moving to the area. Financial incentives such as "income" and "cost of living" may be less prominent in attracting Allied Health professionals to rural and regional areas, although preliminary analysis shows that financial incentives may be an important retention strategy. Thus effective recruitment campaigns should be strategically targeted to people seeking a work-life balance, performing work that is autonomous and wide ranging, and is located in an attractive and desirable location. Further analysis of RAHWS data will be needed to formulate similarly evidence-based retention strategies.

Over a third of RAHWS respondents reported feeling professionally isolated, yet the apparent preference for local face-to-face CPD opportunities was matched by the high use of self-directed study (see Figure 11). If there is a desire for professional interaction then educational resources may be better directed toward development of local and regional activities, such as discussion groups using prepared educational content on a DVD. Given the high level of skill and experience of this workforce, encouragement of teaching and offering recognition of expertise could also be a valuable retention strategy.

The effectiveness and uptake of online CPD opportunities may well be affected by restricted access to IT infrastructure and study time at work and at home. Further research on preferences for formal learning units versus more ad hoc web-based research is needed to develop user friendly web-based CDP that meets educational needs. It remains to be seen whether web-based learning mitigates perceived professional isolation or improves retention of rural Allied Health professionals.

While 23% of this sample planned to retire within the next decade the workforce age profile may well compensate for retiring practitioners. However, this does not take into account the variations by individual professional discipline, nor does it adjust for the anticipated increase in demand for Allied Health services as the general population ages. A more detailed analysis of retirement by individual discipline is needed.

On average RAHWS respondents were planning to retire at age 59, although a small proportion of this sample (9%) were working past that age. It is possible that retention strategies suited to an aging demographic may help to sustain the rural Allied Health labour force. Making good use of older practitioners through locally delivered clinical supervision and "home grown" CPD activities is one potential use of these highly experienced clinicians. Job sharing and part time arrangements are often attractive to people approaching retirement, as well as to younger workers looking after young children. As 70% of this sample was female and 50% had dependents, the possibility of job sharing may also have intergenerational appeal.

Students training to enter the Allied Health workforce were not fully supported by available supervisors. Only about half of respondents supervised students, with 58% of public and 45% of private practitioners offering clinical placements. The reasons for limited offers of student placements need to be explored. Training appears to improve uptake of student supervision, but issues of limited physical space, high clinical demand, and staffing uncertainty due to an absence of locum backfill undoubtedly play a part as well. Further exploration of student supervision is a high priority as shortages of placement offers can lead to delayed graduation for students when a placement can not be found.

In a climate of financial limitation and growing need for Allied Health services, the balance of practice at both the paraprofessional and expert ends of the clinical spectrum needs careful scrutiny. Unfortunately, as a result of unclear and inconsistently applied terminology, the RAHWS survey did not adequately measure the use of Cert IV trained Allied Health assistants. A measure of current use of therapy assistants and their level of education/training would be a valuable benchmark by which change could be measured as the VET sector training packages are implemented in rural NSW. These data could be collected relatively easily through public health management systems, but use of therapy assistants in the private sector would require an external research body to catalogue this information.

Conclusion

Workforce data collection for Allied Health professionals has historically been considered too methodologically difficult to obtain. The RAHWS study has demonstrated that the use of overlapping recruitment strategies and response methods was both feasible and effective, although more funding for paper based survey distribution and better engagement with key personnel in the public health sector might have improved response rates. A key factor in the success of recruitment was the "word of mouth" method. This strategy is particularly suited to rural culture and requires that the investigators be Allied Health colleagues.

The RAHWS survey is applicable to any rural region in Australia. The survey was also completed in Tasmania in 2008 and is currently in the early stages of implementation in rural South Australia and in the Northern Territory. These data can be compared across jurisdictions to determine national patterns and regional particularities that may assist in planning health policy.

Federal funding is needed to allow for a more coordinated approach to implementing the survey on a national basis. The survey could easily be repeated at intervals to track Allied Health workforce changes over time. With minor modifications, the survey could be adapted to include metropolitan practitioners. The multiple distribution and sampling methodology is equally applicable in rural and urban settings, and the ability to compare results across regions would be helpful to state and national health workforce planning.

The RAHWS survey instrument provides a detailed Allied Health workforce data set that is not available through any other source. These data provide essential information about rural Allied Health workforce demographics and work practices, and give some insight into effective strategies for recruitment and retention of Allied Health professionals in rural communities.

Follow up focus groups from rural NSW will be commencing in July 2009.

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An Investigation of the Rural Allied Health Workforce in NSW 2008

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You may complete the questionnaire online at: http://www.nrudrh.edu.au/
Use the link: 'RAHWS Allied Health Survey'
(The case-sensitive password to 'Enter Survey' is: AHsurvey)

If you have completed the paper-based version, instructions for return of the questionnaire can be found on the information sheet provided.

For assistance or further information please contact any member of the investigating team listed above.

Thank you for taking time to complete this questionnaire.

Section One: Some Background Information

1. Which Allied Health Profession do you belong to?

☐ Audiologist
☐ Chiropractor
☐ Dental Therapist / Hygienist
☐ Diagnostic Radiographer
☐ Dietitian
☐ Medical Laboratory Scientist
☐ Nuclear Medicine Scientist
☐ Occupational Therapist
☐ Optometrist
☐ Orthoptist
☐ Osteopath
☐ Pharmacist (Community)
☐ Pharmacist (Hospital)
☐ Physiotherapist
☐ Podiatrist
☐ Psychologist
☐ Prosthetist / Orthotist
☐ Radiation Therapist
☐ Social Worker
☐ Sonographer
☐ Speech Pathologist
☐ Other – Please specify _____

2. In what year did you qualify in this profession? ___ ___ ___ ___

3. What is your gender? ☐ Male ☐ Female

4. In what year were you born? ___ ___ ___ ___

5. What is your post code at work: ___ ___ ___ ___

6. What is your current marital status?

☐ Single ☐ Separated or divorced ☐ Married or Defacto relationship ☐ Widowed

7. Does your partner also work? ☐ Full-time ☐ Part-time ☐ Casual ☐ No ☐ N/A

8. Do you have dependant children? ☐ Yes ☐ No

If 'Yes', what are their ages? _____

9. Are you of Aboriginal or Torres Strait Islander descent? ☐ Yes ☐ No

10. What country were you born in?

_____

11. What is your current citizenship?

_____

12. Where did you obtain your initial Allied Health Professional qualification?

☐ In Australia ☐ Overseas - If so, where? _____

13. Which of the following best describes where you grew up?

☐ A Capital City
☐ Other Metropolitan (population ≥ 100,000)
☐ Large Rural Centre (25,000 – 99,000)
☐ Small Rural Centre (10,000 – 24,999)
☐ Other Rural Area (< 10,000)
☐ Remote Centre (5,000 – 9,999)
☐ Other Remote Area (< 5,000)

14. If originally from a rural background (i.e. population < 100,000), before you turned 18 years old …

(a) …for how many years was your home address in a rural area? = _____ years

(b) … for how many years did you go to school in a rural area? = _____ years

15. Did you have any rural placements during your education and training? ☐ Yes ☐ No

16. Did you attend a non-metropolitan or regional University or College? ☐ Yes ☐ No

Section Two: Your Current Employment

17. Do you have more than one paid position with different employers?

☐ Yes ☐ No If 'Yes', how many positions? _____

18. In what sector do you work? (Tick more than one box if appropriate)

☐ Public (State) ☐ Private ☐ Federally funded program ☐ Non-Government (NGO)

☐ Other – Please specify _____

If you work in multiple sectors please indicate the average proportion of your work-time spent in each.

Public (State)	+	Private	+	Fed. prog.	+	NGO	+	Other	=	Total
_____ %		_____ %		_____ %		_____ %		_____ %		**100** %

19. (a) Estimate the average total hours that you spend at work each week in all your positions?

☐ < 15 ☐ 15-29 ☐ 30-34 ☐ 35-40 ☐ 41-49 ☐ 50-60 ☐ > 60

(b) How many of those hours would be (a) paid overtime = _____ : (b) unpaid overtime _____

(c) About how many hours in total would you prefer to work in all your positions?

☐ < 15 ☐ 15-29 ☐ 30-34 ☐ 35-40 ☐ 41-49 ☐ 50-60 ☐ > 60

Answer the following questions in relation to your MAIN JOB

20. According to your 'position description', what is your current employment status?
(Tick more than one box if appropriate)

Full time	☐	Permanent	☐	Casual	☐	Self-employed	☐
Part Time	☐	Temporary	☐	Locum	☐		

Explanatory notes (if required): _____

21. About how long have you practiced in the region you now work in? _____

22. Are you a 'sole practitioner' where you work now?

☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

23. Indicate below the percentage (%) of your time spent in each of the following organisational roles, ensuring that the total equals 100%.

Individual patient clinical care	=_____%	Clinical services management tasks	=_____%	Research related activities / travel	=_____%
Non-individual clinical care	=_____%	Work related travel	=_____%	Teaching and training	=_____%

Other – Please specify _____ = _____%

24. If you, personally, provide sessional outreach services to other communities please describe below the frequency and duration of these sessions? (Leave blank if this does not apply to you)

Frequency of sessions:
- ☐ Monthly
- ☐ Fortnightly
- ☐ Weekly
- ☐ As necessary

Duration of sessions:
- ☐ ½ day
- ☐ 1 day
- ☐ ≥ 2 days

Other (Please specify frequency & duration):
_____
_____

Section Two Cont'd /-

25. (a) Approximately how long does it take for you to travel between home and work?: =_____

(b) Estimate the hours per week spent in work-related travel (excluding home-work-home)?: =_____

(c) How far is the most distant site that you service from where you usually work?: = _____ km

(d) What form of transport do you use for this work-related travel?

☐ Own car ☐ Car provided ☐ Other _____

26. In what size community is your employment based? (Refer to Q.13 for population categories)

☐ Large Rural Centre ☐ Small Rural Centre ☐ Other Rural (< 10,000) ☐ Remote

27. Do you, personally, provide 'home visits' to clients/patients?

☐ Yes ☐ No If 'Yes', how many visits per week, on average? _____

28. Do you do 'on-call' duty? ☐ Yes ☐ No

If 'Yes', estimate the average 'on-call' hours per week: (a) at work = _____ ; (b) not at work = _____

29. What <u>most</u> attracted you to your current position? (Please tick no more than 5 boxes)

☐ Work/life balance	☐ I come from the area	☐ Climate / location
☐ Income	☐ Marriage / partner	☐ Housing affordability
☐ Career advancement	☐ Good place to raise kids	☐ Cost of living
☐ Type of work/clients	☐ Family / social attachments	Other _____

30. How would you describe your level of satisfaction with your current job?

☐ Extremely satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Extremely dissatisfied

31. During the time that you have worked in this job have you received a promotion, upgrade or higher reclassification of your position? ☐ Yes ☐ No

32. Do you currently work with or supervise an assistant practitioner? ☐ Yes ☐ No

33. What is the professional background of your line-manager?

☐ Same allied health professional as yourself ☐ Not an allied health professional

☐ Other allied health (Specify _____) ☐ Not a health professional

34. Do you plan to leave your job within the next:

☐ 2 years?

☐ 5 years?

☐ 10 years?

☐ > 10 years?

☐ I have no plans to leave my job

35. What is the motivation for planning to leave your job in the time frame indicated? (Tick more than one box if appropriate)

☐ To earn a better income

☐ Better career prospects

☐ Retirement

☐ Your child(ren)'s education

☐ Relocation of partner

☐ Moving to a preferred location

☐ Never intended to stay

☐ Extended family commitments or obligations

☐ Other _____

Section Three: Education & Professional Development

36. What is the highest qualification you have completed?

☐ Certificate ☐ Honors Degree
☐ Associate Diploma ☐ Coursework Graduate Certificate, Diploma or Masters
☐ Diploma ☐ Research Higher Degree (Masters or PhD)
☐ Bachelor Degree ☐ Other _____

37. Are you currently studying for a further tertiary qualification?

☐ No ☐ Yes – If so, what? _____

38. What continuing professional development (CPD) activities have you participated in over the past 12 months? (Tick more than one box if appropriate)

☐ International, National or State conference ☐ E-mail or WWW-based material
☐ Regional or local workshop, seminar or in-service ☐ Reading professional journals
☐ Formal tertiary education program/enrolment ☐ Other _____

39. Estimate the number of days spent doing CPD activities over the past 12 months?

☐ < 1 day ☐ 1 - 2 days ☐ 2 – 5 days ☐ 5 - 10 days ☐ > 10 days

40. Who has been the provider of your CPD in the past 12 months? (Tick more than one box if appropriate)

☐ Self-directed ☐ Professional organisation
☐ Area Health Service ☐ University or UDRH
☐ State or Commonwealth Health Department ☐ Other tertiary education provider

41. How much do the following factors prevent you from participating in CPD?

Lack of employer support	☐ Greatly	☐ Moderately	☐ A little	☐ Not at all
The personal financial cost	☐ Greatly	☐ Moderately	☐ A little	☐ Not at all
Lack of local access	☐ Greatly	☐ Moderately	☐ A little	☐ Not at all
Time away from home	☐ Greatly	☐ Moderately	☐ A little	☐ Not at all
Time away from work	☐ Greatly	☐ Moderately	☐ A little	☐ Not at all

Other factors? _____

42. Do you have IT access at work and/or at home? (Tick all relevant boxes)

Work = ☐ E-mail ☐ Medline, CIAP, etc.
Home = ☐ E-mail ☐ Medline, CIAP, etc.
Do you have broadband access? ☐ Yes ☐ No

If you have **no** access to either e-mail or an electronic library either at work or at home please tick here. ➡ ☐

43. Do you participate in the supervision of students on professional placement in your workplace?

☐ No ☐ Undergraduates ☐ Postgraduates

If you do, for about how many students have you provided supervision in the past 12 months? _____

Which university(ies) were the student(s) from? _____

Have you had training in student supervision and/or mentoring? ☐ Yes ☐ No

Do you need training in student supervision and mentoring? ☐ Yes ☐ No

Section Four: Some More Important Questions

Please indicate your preferred response to the following statements by ticking the boxes, where:

SA = Strongly agree; **A** = Agree; **N** = Neutral; **D** = Disagree; **SD** = Strongly disagree; **NA** = Not applicable

Statement	SA	A	N	D	SD	NA
Your work hours are flexible						
You are always able to schedule annual leave when you want it						
Locum backfill is always available when you are away on leave						
Your department / practice is chronically short-staffed						
There is a high level of staff turnover where you work						
You have good facilities and equipment to work with						
You have good admin. support for enquiries, appointments, etc.						
You have good clinical support (colleagues or therapy assistants)						
You work as a member of a multidisciplinary team						
	SA	**A**	**N**	**D**	**SD**	**NA**
Recruitment for vacant positions always occurs in a timely way						
Temporary and / or part time positions are often hard to fill						
Locums are always available for unfilled positions						
Personnel are allocated according to areas of clinical need						
You are working in your area of clinical expertise						
You participate in clinical rotations / rosters across practice areas						
You use a wide range of clinical skills in your work						
Your are satisfied with your access to CPD opportunities						
You have regular face-to-face contact with colleagues in your field						
You have good access to more experienced staff in your field						
You feel professionally isolated						
	SA	**A**	**N**	**D**	**SD**	**NA**
You have had to become multi-skilled to meet clinical demands						
There are service gaps because of limited human resources						
You sometimes work beyond the boundaries of your profession						
Your workload is reasonable						
You are autonomous and can decide your own work priorities						
You feel ‘burned out’						
Your grading and salary are appropriate for the job you do						
You believe your manager understands your professional role						
You believe your manager values the work you do						
You get along well with your work colleagues						
You feel that your work makes a difference to patients / clients						
You enjoy living in your local community						
You feel that your work is valued by the local community						

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Original Article

Measuring rural allied health workforce turnover and retention: What are the patterns, determinants and costs?

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Abstract

***Objectives*:** *To measure variations in patterns of turnover and retention, determinants of turnover, and costs of recruitment of allied health professionals in rural areas.*

***Design*:** *Data were collected on health service characteristics, recruitment costs and de-identified individual-level employment entry and exit data for dietitians, occupational therapists, physiotherapists, podiatrists, psychologists, social workers and speech pathologists employed between 1 January 2004 and 31 December 2009.*

***Setting*:** *Health services providing allied health services within Western Victoria were stratified by geographical location and town size. Eighteen health services were sampled, 11 participated.*

***Main outcome measures*:** *Annual turnover rates, stability rates, median length of stay in current position, survival probabilities, turnover hazards and median costs of recruitment were calculated.*

***Results*:** *Analysis of commencement and exit data from 901 allied health professionals indicated that differences in crude workforce patterns according to geographical location emerge 12 to 24 months after commencement of employment, although the results were not statistically significant. Proportional hazards modelling indicated profession and employee age and grade upon commencement were significant determinants of turnover risk. Costs of replacing allied health workers are high.*

***Conclusions*:** *An opportunity for implementing comprehensive retention strategies exists in the first year of employment in rural and remote settings. Benchmarks to guide workforce retention strategies should take account of differences in patterns of allied health turnover and retention according to geographical location. Monitoring allied health workforce turnover and retention through analysis of routinely collected data to calculate selected indicators provides a stronger evidence base to underpin workforce planning by health services and regional authorities.*

KEY WORDS: *allied health*, *cost*, *retention*, *rural*, *workforce*.

Introduction

Allied health professionals (AHPs) are an essential component of the rural health workforce, with demand for their services increasing because of an ageing population, the growing burden of chronic disease and increased emphasis on the delivery of multidisciplinary care. While the patterns of allied health workforce shortage vary among professions and jurisdictions,[1] nowhere are workforce shortages more acute than in rural and remote areas.[2,3] The ratio of AHPs to population falls from 2.66 per 10 000 in capital cities to between 1.41 and 1.81 in regional areas, 1.17 in remote areas and 0.60 in very remote areas[4] as a result of increased difficulties recruiting and retaining AHPs with increasing distance from metropolitan areas.[5] Underrepresentation of AHPs in non-metropolitan communities limits access to much needed health services which in turn contributes to the poorer health status of rural people.[6]

Given the shortages of AHPs in many non-metropolitan locations, and the concomitant difficulties of recruitment to such areas, the need to minimize avoidable staff turnover and retain existing AHPs in rural areas is increasingly important. Optimizing workforce retention requires a sound understanding of what factors contribute to length of stay, and what issues need to be addressed in order to minimize avoidable turnover.

To date, most Australian research into the recruitment and retention of AHPs has comprised qualitative case studies investigating the personal, organizational and professional reasons why AHPs leave or stay.[5–15] Little

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***What is already known on this subject*:**
- *Many rural and remote communities experience difficulties recruiting and retaining allied health professionals.*
- *A wide range of personal, organizational and professional factors contribute to the decisions of allied health professionals to stay or leave.*
- *Most studies of allied health workforce recruitment and retention have been qualitative case studies.*

***What this study adds*:**
- *Demonstration of a methodology which can be used by health services and authorities to monitor workforce retention using existing human resources data.*
- *Quantitative evidence highlighting differences in crude patterns of workforce turnover and retention of allied health professionals according to geographical location which is useful to developing workforce performance benchmarks.*
- *Identification of the magnitude and significance of profession, grade and age as determinants of allied health turnover together with an indication of the costs associated with recruiting allied health professionals in differing geographical locations.*

high quality quantitative research has been undertaken to measure the patterns, determinants and costs associated with turnover and retention within the allied health workforce. It is this knowledge gap that this study seeks to redress.

Specifically, four important questions are investigated:

1. Does the turnover and retention of AHPs vary according to community size and location?
2. Does rural workforce turnover and retention vary significantly between allied health professions?
3. What are the most significant determinants of allied health workforce turnover?
4. Does the cost of replacing AHPs vary according to rural location?

Methods

Eighteen health services were purposively selected from within three Victorian Health Regions using stratified sampling methods. Services were stratified by distance from Melbourne (<200 km or >200 km) and town population (<5000, 5000–10 000, >10 000) in an attempt to obtain sufficient geographical diversity of health services for this pilot study. Given the need to meet privacy and confidentiality requirements data were analysed in revised categories, specifically remote (>200 km and population <5000), rural (>200 km and population >5000) or regional (<200 km and population >10 000). Sixteen health services initially agreed to participate in the study, but only 11 health services returned the requested data.

Data were collected using a survey which comprised three sections:

1. De-identified individual-level employment entry and exit data and selected personal characteristics data for all dietitians, occupational therapists, physiotherapists, podiatrists, psychologists, social workers and speech pathologists employed at each service at any time during the period 1 January 2004 to 31 December 2009.
2. The overall direct and indirect costs currently associated with recruiting an AHP to the health service. Health services were asked to indicate whether costs were actual or estimated.
3. Health service characteristics, numbers and composition of their allied health workforce, manager's perceptions of workforce retention and factors influencing turnover and retention measures implemented by the health services.

Five indicators, detailed elsewhere, were used to measure workforce retention and turnover.[16]

- *Annual turnover rate* – measuring the proportion of the workforce that left during each calendar year;
- *Stability rates* – measuring the proportion of original employees who remain after 1, 2, 3 and 4 years;
- *Median length of employment in current position* – a summary measurement of length of time that current employees have been employed;
- *Survival probabilities* – the likelihood that employees will remain employed beyond 1, 2, 3 and 4 years after commencement of employment; and
- *Median survival* – the elapsed time since commencement whereby half the workforce have left and half remain employed.

Simple descriptive statistics, arithmetic calculations, Kaplan–Meier survival analysis and proportional hazards regression modelling were used to analyse and model the data.[17] Data analyses were undertaken using PASW Statistics 18, StataIC, release 10 (StataCorp LP, College Station, TX, USA) and Microsoft Office Excel 2007 (Microsoft Corporation, Redmond, WA, USA).

Ethics approval was obtained from the Monash University Human Research Ethics Committee.

Results

The distribution of demographic characteristics on a total of 901 AHPs is shown in Table 1 (*locum tenens* were excluded from the analysis). Rural AHPs were overwhelmingly young women, with physiotherapists, occupational therapists and social workers comprising the largest groups. Not all health services employed the full range of AHPs, with remote health services offering a more limited range of allied health services. A second distinguishing characteristic was that rural and remote health services generally offered a greater range of workforce retention incentives to their allied health employees. Formal monitoring of the effectiveness of retention incentives on length of stay was not undertaken by health services.

Length of stay of allied health professionals by community size and location

Table 2 and Figure 1 indicate that, while not statistically significant, crude measures of allied health workforce turnover and retention do exhibit some variation by rurality. Remote health services have the highest annual turnover rates, lower stability rates after 2, 3 and 4 years and lower survival probabilities after second and subsequent years of employment together with shorter median survival and median length of stay in current position compared to rural or regional health services. Figure 1 indicates that little variation in employee survival exists

TABLE 1: *Characteristics of allied health professionals*

Characteristics	*n*	(%)
Gender		
Female	773	(85.8)
Male	128	(14.2)
Allied health profession		
Dietitian	92	(10.2)
Occupational therapist	175	(19.4)
Physiotherapist	250	(27.8)
Podiatrist	51	(5.7)
Psychologist	77	(8.6)
Social worker	171	(19.0)
Speech pathologist	85	(9.4)
Age on commencement		
≤30 years	539	(59.8)
Over 30–35 years	112	(12.4)
>35 years	245	(27.2)
Missing	5	(0.6)
Grade on commencement		
Grade 1	336	(37.3)
Grade 2	371	(41.2)
Grade 3 or higher	63	(7.0)
Missing	131	14.5
RRMA		
RRMA 3	655	(72.7)
RRMA 4	79	(8.8)
RRMA 5–7	167	(18.5)
Total	901	(100)

RRMA, Rural, Remote and Metropolitan Areas Classification.

TABLE 2: *Length of stay indicators by regional, rural and remote health services*

Indicator	All health services (*n* = 11)	Regional health services	Rural health services	Remote health services
Annual turnover (%)	26.0	18.7	25.4	30.2
Median length of stay in current position (years)	3.1	4.1	3.1	2.7
Stability after 1 year (%)	92.5	85.3	94.9	93.2
Stability after 2 years (%)	66.4	70.7	77.3	50.8
Stability after 3 years (%)	59.5	64.7	71.5	46.2
Stability after 4 years (%)	56.3	60.4	66.9	46.2
Survival probability after first year (%) (95% CI)	74.7 (71.7, 77.5)	74.9 (71.3, 78.1)	74.5 (67.4, 80.3)	71.9 (58.7, 81.6)
Survival probability after 2 years (%) (95% CI)	57.5 (54.0, 60.8)	60.4 (56.3, 64.2)	51.4 (43.3, 59.0)	40.9 (27.6, 53.7)
Survival probability after 3 years (%) (95% CI)	49.7 (46.1, 53.2)	53.0 (48.8, 57.0)	41.7 (33.6, 49.7)	30.7 (18.2, 44.1)
Survival probability after 4 years (%) (95% CI)	43.7 (40.0, 47.3)	47.2 (42.8, 51.4)	35.5 (27.5, 43.6)	25.1 (13.5, 38.6)
Median survival (years) (95% CI)	3.0 (2.4, 3.5)	3.5 (2.7, 4.3)	2.1 (1.7, 3.1)	1.7 (1.3, 2.5)
n (AHPs)	901	655	182	64

AHPs, allied health professionals; CI, confidence interval.

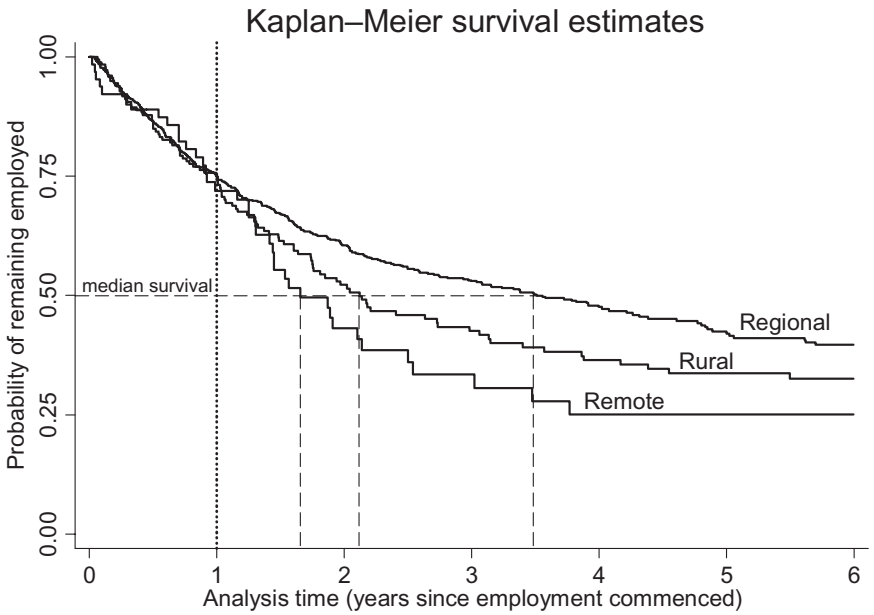

FIGURE 1: *Survival curve analysis for regional, rural and remote health service employees.*

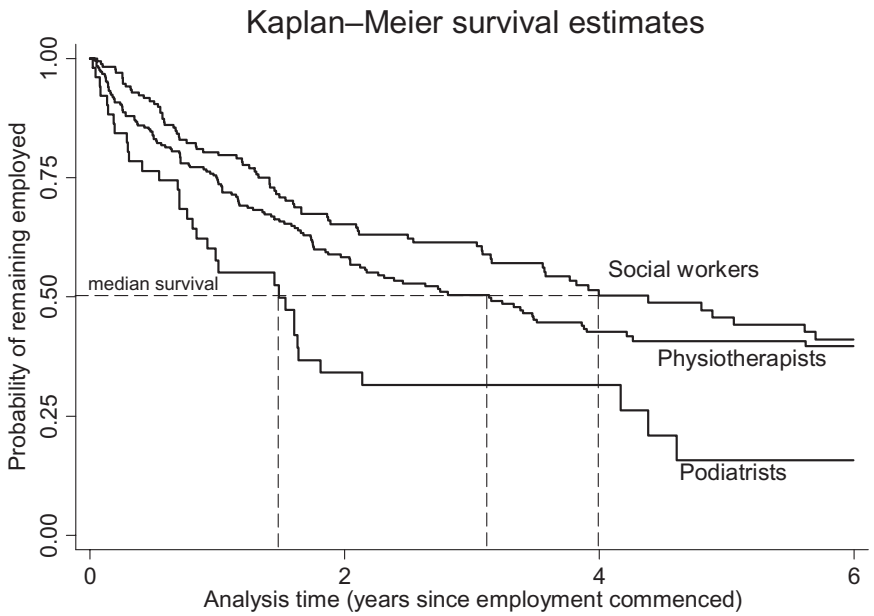

FIGURE 2: *Survival curve analysis for selected allied health professions.*

in their first 12 months of employment, but that notable differences according to geographical classification emerge between 12 and 24 months and are subsequently sustained. Thus while rural classification as measured by the Rural, Remote and Metropolitan Areas Classification is not a statistically significant determinant of turnover hazard either crudely or once adjustments are made for other factors (Table 3), survival analysis graphing provides insight as to why this is the case.

Variation in length of stay by allied health profession

Figure 2 illustrates the unadjusted differences between social workers, physiotherapists and podiatrists in the probability of remaining employed. The median survival for podiatrists is 18 months, for physiotherapists about 3 years and for social workers 4 years. Not illustrated is the median survival for dietitians (18 months), speech

TABLE 3: *Proportional hazards regression model*

Reference	Variable	Turnover hazard ratio	*P* value	Lower limit 95% CI	Upper limit 95% CI	*P* value
Physiotherapist	Dietitian	1.17	0.270	0.86	1.59	0.005
Physiotherapist	Occupational therapist	0.84	0.133	0.66	1.07	
Physiotherapist	Podiatrist	1.79	0.054	0.99	3.23	
Physiotherapist	Psychologist	1.24	0.321	0.78	1.98	
Physiotherapist	Social worker	1.09	0.429	0.86	1.40	
Physiotherapist	Speech pathologist	0.94	0.722	0.64	1.37	
≤30 years of age at employment commencement	>30 to 35 years of age	0.79	0.306	0.48	1.29	0.032
≤30 years of age at employment commencement	>35 years of age	0.64	0.012	0.46	0.88	
Female	Male	1.25	0.188	0.88	1.79	
Grade 1 on employment commencement	Grade 2	0.75	0.038	0.58	0.98	0.087
Grade 1 on employment commencement	Grade 3 or higher	0.57	0.025	0.36	0.92	
RRMA 3	RRMA 4	0.89	0.528	0.59	1.33	0.51
RRMA 3	RRMA 5–7	1.14	0.318	0.86	1.52	

CI, confidence interval; RRMA, Rural, Remote and Metropolitan Areas Classification.

therapists (2.6 years), psychologists (2.5 years) and occupational therapists (3 years). This analysis indicates the presence of differences of up to 2.5 years in the length of employment that a manager might reasonably expect from an AHP in regional, rural or remote Victoria, depending on their profession, if other factors are not taken into account. Some of these differences might be related to differing age and grade structures within professions. For example, once adjustments for differences in age and grade on commencement (Table 3) were made the differences between social workers and physiotherapists were not statistically significant.

Determinants of allied health professional length of stay by commencement grade

The Cox proportional hazards regression model developed to model AHPs from commencement of employment with the health services took account of multiple factors which might be associated with the likelihood of employees leaving (Table 3). The hazard ratios demonstrate that at any instant, an AHP who commences employment at either Grade 2 or at Grade 3 or higher has a significantly reduced risk of leaving employment compared to those who commence at Grade 1.

Other determinants of allied health professional turnover

Age category of AHPs when commencing employment was shown to have an important and statistically significant association with turnover risk. However, neither employee gender nor whether an AHP was employed in a full-time versus part-time capacity (not shown) had a significant association with turnover risk.

Cost of replacing allied health professionals by location

Table 4 shows the direct and indirect costs per AHP that are incurred by regional, rural and remote health services when replacing staff. The median total cost incurred by remote health services to replace an AHP was $45 781, while the median cost for regional health services was $23 010. The main cost components for rural and remote health services were direct costs, which comprised temporary staffing and overtime, advertising, interviewing and relocation costs and orientation and training costs. Vacancy costs were particularly high for remote health services. Indirect costs provided were estimates, while some, although not all, health services were able to provide actual direct costs of staff replacement.

Discussion

This study illustrates how allied health workforce patterns can be evaluated by extracting employment data

TABLE 4: *Cost of recruiting an allied health professional*

Allied health professional recruitment costs	Direct costs: Vacancy costs† Median§ ($)	Recruitment costs‡ Median§ ($)	Orientation training costs per new recruit Median§ ($)	Total direct costs Median§ ($)	Indirect costs: Cost of decreased productivity among remaining staff members Median§ ($)	Cost of initial reduced productivity of new recruit Median§ ($)	Total indirect costs Median§ ($)	Total costs: Total Costs Median§ ($)
All health services ($n = 11$)	3 130	3 740	3 200	18 882	600	600	1 200	26 721
Regional health services	0	2 150	8 360	10 510	10 000	2 500	12 500	23 010
Rural health services	3 130	3 800	3 100	18 882	600	2 000	5 300	26 721
Remote health services	42 049	3 888	2 030	45 241	360	180	540	45 781

†Vacancy costs include cost of temporary staff, overtime, expenses due to patient transfer and loss of contractual work; ‡recruitment costs include advertising, search firm costs, interviewing costs and relocation expenses; §because of skewed data the median is a better measure of central tendency than mean. However, medians cannot be totalled across the table.

from existing health service human resources databases, then using carefully selected sentinel workforce indicators to measure workforce retention and turnover patterns to provide critical evidence to underpin workforce retention strategies. Several key findings emerge that have significant implications for rural allied health workforce planning, including the implementation of retention strategies and incentives.

1. Our understanding of the patterns of workforce retention can be furthered by employing a range of different measures of turnover and retention, selected from *annual turnover rate*, *stability rates*, *median length of employment in current position*, *survival probabilities and regression modelling*.
2. Some differences in crude patterns of workforce turnover and retention according to geographical location and town size emerge from 12 to 24 months after the commencement of employment. The lack of statistical significance of differences in employee survival according to geographical location might occur because the differences take time to emerge (whereas the analysis has considered the entire length of employment) as well as possibly because of data limitations related to sample size. Importantly, the direction of differences in employee turnover according to geographical location as well as their delayed emergence are consistent with both anecdotal evidence and findings from the literature, supporting the notion that this area of investigation warrants further research. Our findings additionally suggest that the first 12 months of employment in rural and remote settings could provide an opportunity for implementing comprehensive retention strategies. Moreover, despite the overall lack of a statistically significant association between geographical location and turnover hazard, it remains appropriate that crude benchmarks to guide use of retention incentives take account of geographical location.
3. Patterns of turnover and retention vary by allied health profession. This effect is evident in both the unadjusted survival curves and with regression modelling.
4. Although many professional, organizational and personal factors impact upon turnover and retention of AHPs in rural and remote areas, a key factor appears to be the significance of career grade. Lack of opportunity for grade advancement is an issue in small rural and remote health services where opportunities for employing AHPs at higher levels might be limited.
5. The direct vacancy costs of replacing AHPs increases with increasing remoteness, and are quite considerable. This creates opportunities for managers to implement retention incentive strategies

which remain cost neutral to the health service, although clearly careful evaluation is indicated to ensure their effectiveness.

Several limitations characterize this study but should not detract from its overall importance. Although the study aimed to ensure a good representation of health services located in towns of varying location and size, the purposive stratified sampling procedure and the small number of health services providing data both contribute to a limited ability to generalize the findings to health services beyond the study. Estimates of annual turnover, stability rates and median length of stay in current position likewise lacked precision, and therefore can be considered to be indicative at best. Another issue was the variability in the quality of data provided, something that reflected the capacity of health services to generate quality human resources data easily, and estimate costs accurately. Median direct and indirect cost estimates also lack precision because of the small number of health services participating in the study.

For health services to monitor workforce patterns, several prerequisites need to be met at local and regional levels. Agreement needs to be reached on the appropriate indicators to use for monitoring turnover and retention. At the local level, efficient and consistent workforce data collection processes need to be implemented. Regular analysis and reporting of workforce patterns can be undertaken by health service management, as the basis for evaluating existing retention strategies and to further inform workforce planning. For this to occur local and regional health services must be resourced with the expertise and infrastructure required to collect, analyse and report on workforce performance. Regional authorities also need to facilitate data analysis and data linkage allowing comparisons to be made across similar services.

Conclusion

Optimizing health workforce retention is the key to ensuring locally delivered, appropriate and sustainable health services and can contribute significantly to overcoming the rural workforce shortage. The retention of AHPs in rural and remote Australia for reasonable lengths of time is becoming an increasingly important issue for policy makers, researchers, health service managers and rural communities. This study demonstrates the feasibility of using appropriate analysis of routinely collected employment data to monitor allied health workforce patterns. A national study capturing a diversity of geographical locations and larger numbers of AHPs has the potential to generate a robust evidence-base which can better inform health services and authorities about workforce performance. Linking this with knowledge of the costs associated with avoidable turnover can open the way for the development of cost-neutral retention incentives and ultimately lead to improved retention of rural AHPs and enhanced delivery of allied health services to rural areas.

Acknowledgements

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Author contributions

J.H. conceptualized and designed the study. M.C. undertook the literature search and data collection. D.R. undertook the analysis of data. All authors contributed equally to the writing of the manuscript.

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PHYSIOTHERAPISTS SCHEDULE OF FEES EFFECTIVE 1 NOVEMBER 2011

Australian Government
Department of Veterans' Affairs

DEFINITIONS

Initial Consultation

- Up to three can be claimed in a 12 month referral period. Each initial consultation must be for a new episode of care or a new and unrelated condition.
- Treatment for Repatriation White Card holders must be related to an accepted disability. Eligibility must be established prior to commencement of treatment.

Standard Consultation

- Cannot be claimed on the same day as an initial consultation for the same patient.
- Should be claimed for ongoing treatment of a condition.
- Two consultations cannot be claimed on the same day, unless in hospital.

Extended Consultation

- For treatment of two acute and unrelated areas.
- For treatment of an acute condition when a chronic condition needs ongoing treatment.
- Treatment of related areas, or treatment of multiple, chronic musculo-skeletal conditions, should **NOT** be claimed as an extended consultation.

Shaded items require prior financial authorisation from DVA. To obtain prior financial authorisation, please contact DVA, using the contact details at the end of the Schedule.

FURTHER INFORMATION TO ASSIST YOU WHEN TREATING MEMBERS OF THE VETERAN COMMUNITY IS CONTAINED IN THE 'NOTES FOR PHYSOTHERAPISTS' AVAILABLE ON THE DVA WEBSITE AT:

http://www.dva.gov.au/service_providers/dental_allied/physio/Pages/index.aspx

ITEM NO.	DESCRIPTION	FEE (excluding GST)	GST STATUS ++
ROOMS			
PH10	Initial Consultation	$ 61.10	GST-free
PH20	Standard Consultation	$ 61.10	GST-free

PH30	Extended Consultation	$ 64.75	GST-free

HOME

PH11	Initial Consultation	$ 65.65	GST-free
PH21	Standard Consultation	$ 61.10	GST-free
PH31	Extended Consultation	$ 76.70	GST-free

HOSPITALS

PUBLIC

The Department will only pay for health care services carried out in public hospitals in exceptional circumstances, and when DVA has given prior financial authorisation.

Only one 1st Patient claim applies in the same facility(ie PH12 or PH22)

PH12	Initial Consultation – 1st Patient	$ 65.65	GST-free
PH16	Initial Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free
PH22	Standard Consultation – 1st Patient	$ 61.10	GST-free
PH26	Standard Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free

PRIVATE

The Department will only pay for health care services carried out by providers in private hospitals when the contract between DVA and the hospital does not already cover these services. It is the provider's responsibility to determine whether or not health care services are included in the bed-day rate under the DVA contract, before providing services, by contacting the Veteran Liaison Officer at the hospital or DVA.

Only one 1st Patient claim applies in the same facility (ie PH13 or PH23)

PH13	Initial Consultation – 1st Patient	$ 65.65	GST-free
PH17	Initial Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free

PH23	Standard Consultation – 1st Patient	$ 61.10	GST-free
PH27	Standard Consultation - 2nd & Subsequent Patients	$ 61.10	GST-free

RESIDENTIAL AGED CARE FACILITIES (RACFs)

The level of care (High or Low) refers to the health status of the entitled person, not the facility in which they reside. If a provider is in doubt about the level of care an entitled person who has been referred to them is receiving in a RACF, they must contact the care facility. It is the provider's responsibility to ascertain the assessed care level of an entitled person before they provide treatment.

HIGH CARE

Once a veteran has been assessed as a High Level Care (formerly Nursing Home level of care) patient the responsibility for maintenance health care services passes from DVA to the RACF. All treatment provided to entitled persons receiving High Level Care, requires prior financial authorisation from DVA. Authorisation will only be given in exceptional circumstances such as where intensive long-term rehabilitation services are required.

Only one 1st Patient claim applies in the same facility (i.e. PH14 or PH24)

PH14	Initial Consultation – 1st Patient	$ 65.65	GST-free
PH18	Initial Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free
PH24	Standard Consultation – 1st Patient	$ 61.10	GST-free
PH28	Standard Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free

LOW CARE

Prior financial authorisation is not required for health care services provided to eligible veterans living in RACFs who are receiving a Low Level Care (formerly Hostel level of care).

Only one 1st Patient claim applies in the same facility(ie PH15 or PH25)

PH15	Initial Consultation – 1st Patient	$ 65.65	GST-free
PH19	Initial Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free
PH25	Standard Consultation – 1st Patient	$ 61.10	GST-free
PH29	Standard Consultation – 2nd & Subsequent Patients	$ 61.10	GST-free

LYMPHOEDEMA TREATMENT

- Only physiotherapists with appropriate training, which is recognised by DVA, in the treatment of lymphoedema are able to provide this treatment to veterans.
- Upon receiving prior financial authorisation from DVA, the physiotherapist will determine the type, number and frequency of services to be provided to the veteran. The physiotherapist should claim for the total cost of the services provided up to the maximum fee. The total cost can be claimed progressively.
- Item PH40 should be claimed for all aspects of clinical treatment.
- Clinically required consumables should be claimed under item PH92 or PH93.
- Clinically required aids and appliances should be claimed under item PH94.
- All other clinically required consumables, aids and appliances should be sourced through DVA's Rehabilitation Appliances Program (RAP).
- Do not claim for items that the veteran can purchase through a pharmacy or supermarket for on-going self management of conditions.
- Treatment for lymphoedema cannot be provided to patients already receiving lymphoedema treatment from an occupational therapist.

PH40	Lymphoedema (annual limit per patient)	$2,473.90	GST-free

GROUP PHYSIOTHERAPY

PH50	Group Physiotherapy (Per Patient)	$ 27.35	GST-free

AQUATIC PHYSIOTHERAPY

Travel cannot be claimed for Aquatic Physiotherapy.

PH60	Supervised Individual Aquatic Physiotherapy	$ 61.10	GST-free
PH61	Supervised Group Aquatic Physiotherapy (Per Patient) *Claim the actual amount but no greater than the maximum fee*	$ 35.80	GST-free

CLINICALLY REQUIRED CONSUMABLES

Use these items only for the supply of consumables and small items. Please ensure that you retain documentation and/or invoices on file to substantiate claims.

PH92ϕϕ	**Consumables clinically required immediately during the consultation/treatment** *Do not claim for items that the veteran should purchase through a pharmacy or supermarket for ongoing self-management of conditions e.g. dietary supplements. Claim invoiced cost only, not exceeding the maximum fee.*	$ 49.40	GST-Free ϕϕ
PH93	**Consumables clinically required for treatment after consultation** *Do not claim for items that the veteran should purchase through a pharmacy or supermarket for ongoing self-management of conditions e.g. dietary supplements. Claim invoiced cost only* ***exclusive of GST****, not exceeding the maximum fee. DVA will automatically add GST to the amount claimed.*	$ 49.40	Taxable

SMALL MEDICAL AIDS AND APPLIANCES

(Must be covered by section 38-45 of the GST Act)

Use this item to facilitate the provision of small medical aids and appliances, eg soft collar, braces for knee, ankle, elbow or wrist, lumbar corsets etc. All other aids and appliances must be sourced through RAP.

PH94	**Small Medical Aids and Appliances** *Use this item to facilitate the provision of small medical aids and appliances covered by section 38-45 of the GST Act. Claim the invoiced cost only, not exceeding the maximum fee, and attach a copy of the invoice to your claim***.**	$ 99.00	GST-free ϕϕ
PH98	**Small Medical Aids and Appliances – Postage/Freight** *Use this item to claim an actual amount of postage or freight directly attributable to an item purchased for a veteran and claimed under PH94.* *Restriction: This item cannot be claimed separately, ie it can only be claimed in conjunction with Item PH94.*	$ 12.05	Taxable

SPLINTS/CASTS

Use these items only for the supply of splints and casts that are covered by section 38-45 of the GST Act.

NOTE: Prior financial authorisation must be sought from DVA if the cost of a static splint or cast exceeds $79.65, or exceeds $170.80 for a dynamic splint. Splints may also be sourced through RAP.

PH95	**Static Splint/Cast** *Claim the invoiced amount only, not exceeding the maximum fee.*	$ 86.55	GST-Free ϕϕ
PH96	**Dynamic Splint** *Claim the invoiced amount only, not exceeding the maximum fee.*	$ 185.60	GST-Free ϕϕ

DIRECT SUPPLY TO DVA

(Subject to prior financial authorisation)

Use item number PH99 only when DVA contacts you directly to request that you provide:

- a written report; or
- a consultation or assessment to eligible veterans or war widows/ers, either separately or in conjunction with a written report.

For example, this may occur when DVA requires a second opinion concerning treatment for a veteran. DVA will give financial authorisation and advise the fee at the time of the request, according to the above schedule items. The kilometre allowance is included in the fee, and is **not** to be claimed in addition to the fee.

Please note: This item does not cover the supply of clinical notes, care plans or other information requested by DVA as part of monitoring activities, as these are provided free-of-charge under DVA requirements.

PH99	Report or service specifically requested by DVA	Fee specified at time of request	Taxable

KEY

++Recognised Professional	Paragraph 38-10(1)(b) of the (Goods and Services Tax) GST Act states that only a 'recognised professional' can supply GST-free health services as listed in section 38-10. Please refer to section 195-1 of the GST Act for the definition of 'recognised professional' for GST purposes.
ϕϕ **GST-free consumables**	Please refer to sections 38-10(3), 38-20(3), 38-45, 38-47 of the *'A New Tax System Act 1999'* (GST Act) to determine the status of the health good, and GSTR2001/8 for determining the GST status and whether apportionment is required if there are GST-free and taxable components in a supply.

DVA CONTACT NUMBERS:	**CLAIMS FOR PAYMENT**
Non-metropolitan callers: 1800 550 457 Metropolitan callers: 1300 550 457 DVA Fax: (08) 8290 0422 http://www.dva.gov.au/service_providers/dental_allied/physio/Pages/index.aspx	Please send all claims for payment to: Medicare Australia GPO Box 964 ADELAIDE SA 5001 Claim enquiries: 1300 550 017

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Original Article

Physiotherapy for female stress urinary incontinence: a multicentre observational study

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Abstract

Background: No previous data are available on the effectiveness of physiotherapy management of urinary stress incontinence with relevance to the Australian health system.

Aims: To evaluate Australian ambulatory physiotherapy management of stress urinary incontinence.

Methods: Observational multicentre clinical study of physiotherapy management of female stress urinary incontinence between February 1999 and October 2000, with 1-year follow-up. Outcome measures were a stress test and a 7-day diary of incontinent episodes (pretreatment and at every visit) and a condition-specific quality of life (QoL) questionnaire (pre- and post-treatment). Subjects were followed-up 1 year after treatment by questionnaire with a 7-day diary, QoL questionnaire, and assessment of subjective outcome, subjective cure, satisfaction and need for surgery.

Results: Of the 274 consenting subjects, 208 completed an episode of physiotherapy care consisting of a median (IQ range) of five (four to six) visits. At the end of the episode, 84% were cured and 9% improved on stress testing, whilst 53% were cured and 25% improved according to the 7-day diary. Mean volume of urine loss on stress testing reduced from 2.4 (2.5) mL to 0.1(0.4) mL after treatment. There was a significant improvement in all QoL domains. Median (interquartile range) incontinent episodes per week were reduced from five (three to 11) to zero (zero to two) ($P < 0.05$) after treatment and to one (zero to four) at 1 year ($P < 0.05$). At 1 year, approximately 80% of respondents had positive outcomes on all outcome measures.

Conclusions: Physiotherapy management in Australian clinical settings is an effective treatment option for women with stress urinary incontinence.

Key words: outcomes research, pelvic floor, physiotherapy, treatment outcome, urinary stress incontinence.

Introduction

Stress urinary incontinence (SUI) is a common, costly and distressing health problem for women,[1–3] impacting on their quality of life and predisposing to withdrawal from physical activity.[4] Treatment for SUI has traditionally been surgical, but surgery is costly[5] and there is significant risk of morbidity and, occasionally, mortality.[6,7] The efficacy of surgical repair has also been shown to diminish over time.[8,9] However, in recent years conservative treatment, particularly pelvic floor muscle training (PFMT), has been shown to be effective and is now recommended as first-line treatment before consideration of surgery, based on low risk, low cost and demonstrated efficacy.[3,10] Rates of cure/improvement as high as 65–80% in the short term have been reported,[3,11,12] although studies of 5–10-year follow-ups suggest that the effect of training diminishes over time if pelvic floor exercises are not maintained.[13–15]

Efficacy studies are generally conducted as randomised trials (RCT) under controlled conditions, usually employing highly trained staff to demonstrate what is possible, testing one intervention under ideal conditions.[16,17] However, such trials might not reflect what is achievable in regular clinical practice, nor do they provide insights into what can be expected in terms of the health outcomes of ordinary patients, treated by regular clinicians.[18] Several observational studies have reported outcomes of treatment of SUI in clinical practice,[19,20] but no studies of the physiotherapy management of SUI were found with relevance to the Australian health system.

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Information about clinical physiotherapy management of SUI would be of interest to medical practitioners such as general practitioners, urologists and gynaecologists, who refer patients to physiotherapists, as well as for the general public who can legally seek physiotherapy treatment without medical referral in Australia.

One aspect of conservative treatment in the clinical setting which is of great relevance to consumers and third party payers because of the economic implications is the number of treatments (occasions of service) in an episode of care needed to achieve optimum treatment response.[21] Reports of the duration of the episode of care vary widely in the literature, from 2 weeks to 6 months, based on different theoretical premises for PFMT.[3,22,23] Some protocols have reported as many as 42 occasions of service.[24] Currently 4–6 months of training are recommended although the optimal number of patient contacts has not been established.[3]

This paper reports on an observational study of the management of women with SUI by continence physiotherapists in centres across Australia. The study was designed not to test the efficacy of PFMT or other treatment modalities under ideal conditions, but as a rigorously evaluated, clinical effectiveness study of real life physiotherapy management of SUI, evaluating various aspects of treatment, including health outcomes, number of treatments in an episode of care and treatment modalities used, and outcomes at 1-year follow-up. We used subjective, objective and quality of life outcome measures.

Materials and methods

Study design and ethics

A multicentre prospective study was conducted between February 1999 and October 2000. Written informed consent was obtained from all subjects and approval was obtained from the Human Research Ethics Committee of the University of South Australia and the 19 other participating institutions.

Physiotherapists

Thirty-nine physiotherapists participated in the study from 35 centres around Australia (all states and the Australian Capital Territory): 22 in private practice and 17 in hospital departments and community centres. All physiotherapists had postgraduate training in continence management and pelvic floor muscle evaluation and training. Prior to the study, all received additional training in the administration of the standardised study protocol and outcome measures.

Subjects

Women who presented consecutively for physiotherapy management of their SUI were invited to participate in the study if they were over 18 years of age and had a clinical or urodynamic diagnosis of SUI. Exclusion criteria were known or suspected pregnancy, any symptoms of or urodynamic diagnosis of detrusor instability, urinary tract infection, neurogenic bladder, inability to communicate, read and write in English, inability to follow or comply with instructions due to cognitive status, medication affecting the lower urinary tract, and anterior vaginal wall or uterine prolapse to, or beyond, the introitus.

Diagnosis

When a urodynamic diagnosis had not been established by a referring specialist, a clinical diagnosis was made by the treating physiotherapist on the basis of the presence of both the symptom and sign of stress incontinence.[25] The symptom was diagnosed according to criteria proposed by Lagro-Janssen (i.e. stress incontinence was assumed if the subject reported symptoms of urine loss on coughing, sneezing or exertion and denied urine loss associated with urinary urgency).[26] The sign was confirmed by a provocative stress test[27] as described below.

Outcome Measures

Primary outcome measures, taken pretreatment and at every subsequent visit until the completion of treatment were an objective stress test (the expanded Paper Towel Test[27]) and a 7-day diary of incontinent episodes. A frequency/volume chart with multiple variables such as voided volumes, fluid intake and incontinent episodes is recommended as an outcome measure for incontinence research,[28] but as we were primarily interested in the number of incontinent episodes, we asked women to only record episodes of urine loss over 7 days to represent a typical week of daily activities. We named this simplified chart an Accident Diary. The secondary outcome measure was a condition-specific quality of life (QoL) questionnaire, the King's Health Questionnaire, completed by the subjects pre- and post-treatment.[29] Subjects were only included in the study if they had a positive stress test and recorded at least one episode of urine loss on the diary.

Subjects were followed up by post 1 year later with another Accident Diary and QoL questionnaire. Additional 1-year measures were a questionnaire for assessment of subjective outcome (cured, improved, unchanged, worse), satisfaction with treatment on a five point scale (very satisfied to very dissatisfied) and a binary response to the questions of whether they had proceeded to surgery or wished to have any further treatment.

Stress Test

All women performed one repetition of a provocative stress test at each visit incorporating coughing, jumping and simultaneous coughing and jumping while a folded paper hand towel was worn in the crotch of the underwear to objectively demonstrate urine loss.[27] Urine loss as small as 0.001 mL can be identified with this test and any discernable loss was recorded as 'wet'. Each wet paper towel was placed in a Snap Lock bag, the outline marked on the bag by the physiotherapist

within 15 s of testing and the wet towel discarded. No discernable loss was recorded as 'dry'. An attempt was made to standardise bladder volume on testing by asking the women to void 2 h before their appointment and to immediately drink 250 mL of water and a further 250 mL within the next hour.[30]

Pelvic Floor Muscle testing

Correct PFM action was taught[3,31] and strength routinely assessed prior to commencement of treatment. Strength was graded on a modified Oxford scale to provide the basis for treatment according to an algorithmic model.[32]

Treatment

Treatment was determined by each physiotherapist using a clinical reasoning process based on individual patient assessment and need. Thus the components, length and sequence of treatment were not prescribed in the protocol and could include PFMT or any other physiotherapy modality, such as electrotherapy or biofeedback. Treatment modalities were recorded at each visit. Episodes of care were completed (i.e. treatment ceased) when patients were satisfied with the outcome or failed to improve any further and in either instance, did not seek further treatment. Subjects who were referred for surgery were recorded.

Data management and Statistical analysis

After each occasion of service, all Snap Lock bags and other raw data were sent to the principal author who was blinded to the therapists and patients identity, as these were identified by numbers only. The principal author was responsible for all data collation and statistical analysis. The volume of urine lost was calculated from the size of the wet area on the Snap Lock bag using the formula ($V = 0.018353A + 0.001308A^2$).[27] Scanning of the marked 'wet' areas and calculation of the area within the circumference was performed by an independent assessor.

Descriptive analyses were used for the main outcomes, the sample's demographic characteristics and the number of physiotherapy treatments constituting a completed episode of care and its duration (in weeks). Non-parametric statistics were used to assess change in pre- and post treatment Accident Diary and expanded Paper Towel Test measures because of non-normal distribution of the data.[33] Differences between pre- and post-treatment QoL results were analysed using Wilcoxon signed-rank test for ordinal data.

'Cure' was defined as no recorded incontinent episodes on the diary or no urine loss on the stress test. 'Improvement' was defined as > 50% change from baseline records of incontinent episodes on the diary and volume of urine lost on the stress test.

The data were also analysed with an 'intention-to-treat' approach that is, the baseline data of the women who did not complete treatment were included in the analysis as their outcome data.[34]

Table 1 Demographic and clinical characteristics of subjects ($n = 274$)

	Mean (SD)	Range
Age	47 (11)	23–77
Parity	2.4 (1.2)	0–10
BMI	25 (4.6)	16–48
Pelvic floor muscle grade (median)	2	2–3 (IQ range)
No. of incontinent episodes per week (median)	5	3–11 (IQ range)
	No. of subjects	**Per cent**
Forceps deliveries	97	35
Babies > 4 kg	85	31
Previous hysterectomy	49	18
Previous repair or incontinence surgery	31	11
Onset of incontinence:		
< 1 years	45	16
1–5 years	88	32
> 5 years	134	49
unknown	7	3

Baseline characteristics of subjects who completed treatment were compared with withdrawals using unpaired-*t*-tests, Mann–Whitney *U*-test or Chi-square as appropriate. Significance was set at $P < 0.05$. All methods, definitions and units conform to the standards recommended by the ICS.[28]

Results

Three hundred and forty-two women were approached to join the study; 274 (80%) fulfilled the inclusion criteria, provided consent and were enrolled. Demographic and clinical characteristics of the women enrolled in the study are shown in Table 1. Sixty-six subjects (24%) withdrew from the study and ceased treatment. Reasons for withdrawal were failure to improve (8), pregnancy, illness or family sickness (18), family crisis (7), too busy to do exercises (6), moved to another city (6), 'better' (1), too expensive (1), unknown (19). Five of those who failed to improve went on to surgery. There were no significant differences between subjects who completed the study and those who withdrew for any of the baseline characteristics listed, except for age. Women who completed treatment were slightly older mean 48 [SD 11] years compared with 43 (SD 10) years in the women who withdrew.

Results of the 208 women who completed treatment are presented in Table 2. Of those completing treatment, 111 (53)% were cured and a further 51 (25)% improved according to the accident diary. Eighty four per cent were objectively cured and 19 (9%) improved on stress testing. Urine lost on stress testing decreased from 2.4 (2.5) mL to 0.1 (0.4) mL at the end of treatment. Using an 'intention to treat' approach, 41% were cured and 19% improved according to the accident diary at the conclusion of treatment, and 64%

Table 2 Results of Accident Diary, Expanded Paper Towel Test, subjective outcome, satisfaction with treatment and incontinence impact before treatment, at end of treatment and one-year follow-up with number (%) of subjects

Outcome measure	Pre-treatment (n = 274)	Post-treatment (n = 208)	1 year (n = 158)
Accident Diary			
cured	NA	111 (53)	51 (33)
improved	NA	51 (25)	46 (29)
Expanded Paper Towel Test			
cured	NA	175 (84)	NI
improved	NA	19 (9)	NI
Subjective outcome	NA	(n = 148)	(n = 149)
cure		18 (12)	21 (14)
improved		114 (77)	110 (74)
unchanged		14 (10)	12 (8)
worse		2 (1)	6 (4)
Satisfaction with treatment	NA	(n = 151)	(n = 146)
very satisfied		51 (34)	38 (26)
satisfied		78 (52)	76 (52)
uncertain		15 (10)	22 (15)
dissatisfied		5 (3)	8 (5)
very dissatisfied		2 (1)	2 (1)
Incontinence Impact (QoL)	(n = 200)	(n = 200)	(n = 148)
not at all	6 (3)	52 (26)	48 (32)
a little	91 (45)	106 (53)	75 (51)
moderately	78 (39)	34 (17)	19 (13)
a lot	25 (12)	8 (4)	6 (4)
Did not want further treatment	NA	NI	(n = 135) 106 (85%)

NA, not applicable; NI, not investigated at this assessment.

Table 3 Results of King's Health Questionnaire with Quality of Life scores (median and range with 25–75th centiles) pretreatment, post-treatment and at 1-year follow-up

QoL domain	Pre-treatment median score	Range (25–75th centiles)	Post-treatment median score	Range (25–75th centiles)	1 year median score	Range (25–75th centiles)	Significance* (pre-post & post 1 year)
General health	25	(0–25)	25	(0–25)	25	(0–25)	ns
Incontinence impact	67	(33–67)	33	(0–33)	33	(0–33)	< 0.05
Role limitation	17	(0–33)	0	(0–17)	0	(0–17)	< 0.05
Physical limitation	33	(17–50)	17	(0–33)	17	(0–17)	< 0.05
Social limitation	0	(0–11)	0	(0–0)	0	(0–0)	< 0.05
Personal relationships	0	(0–17)	0	(0–0)	0	(0–0)	< 0.05
Emotions	22	(11–33)	11	(0–22)	0	(0–22)	< 0.05
Sleep/energy	33	(17–42)	17	(17–33)	17	(9–33)	< 0.05
Severity measures	33	(20–47)	20	(7–33)	20	(7–33)	< 0.05

*Wilcoxon ranked pairs test; ns, not significant.

were cured with 7% improving on stress testing. No adverse effects were reported.

At 1-year follow-up, 97 (62%) of the 158 women who returned a completed Accident Diary remained cured or improved. Eighty eight percent of women who returned the questionnaire were subjectively cured or improved, 78% were satisfied or very satisfied and 83% reported that incontinence had little or no impact on their lives 1 year after treatment. In addition, 85% of respondents did not want any further treatment. Ten subjects had received surgery within the year (nine incontinence surgery, one vaginal repair).

The median (IQ range) number of incontinent episodes per week decreased significantly from five (three to 11) to zero (zero to two) after treatment ($P < 0.05$) and to one (zero to four) at 1 year, which remained significantly less than pretreatment ($P < 0.05$).

There was a significant improvement in all domains of QoL from pre- to post-treatment which was maintained at 1 year (Table 3). General health status remained unchanged throughout treatment and the follow-up period.

The median (IQ range) number of physiotherapy treatments in an episode of care was five (four to six) over a

median of 17 (10–25) weeks. Treatment modalities provided within an episode of care included pelvic floor muscle training (100% of subjects; strength training 84%, functional training 98%), biofeedback (66%), electrotherapy (11%), vaginal cones (8%).

Discussion

This is the first study to comprehensively report the short and medium-term outcomes of the real-world clinical physiotherapy management of SUI. Our results suggest that physiotherapy is an effective treatment option for women with SUI in Australia, with a good outcome for approximately 80% of women who completed treatment with no adverse effects. A year later, 78% of those women who were able to be followed up were still happy with their response to treatment and 85% did not want any other treatment. In total, only 15 subjects (5%) were known to have proceeded to surgery for their incontinence. The median number of visits was five over a median of 17 weeks. We believe that this information will be welcomed by consumers and referring doctors as evidence of effective management by expert physiotherapists in Australia, at least comparable with international studies.[12,20,23,35–37]

We have reported a 64% objective cure rate using a more stringent measure of cure than the ICS definition of ≥ 1 g on pad testing.[33] Our criteria allowed for no discernable urine loss on the paper towel which equates to volumes less than 0.001 mL.[27]

The women in our study reported a significant improvement in all domains of quality of life as a result of physiotherapy treatment. No comparable reports on changes in quality of life for conservative management were found in the literature. However, Bidmead *et al.* reported significant changes in quality of life after colposuspension for stress incontinence comparable with our findings, although our subjects had lower mean pretreatment scores overall, suggesting more mild incontinence.[38]

An acknowledged weakness of observational studies is the lack of a control group which does not allow the calculation of a true effect size. This weakness is acknowledged in this study, as it was an effectiveness study of clinical practice without the possibility of a control group.[16] In order to provide a more rigorous estimate of the effect size, data analysis was performed using 'intention to treat principles', by including the base-line data of the subjects who withdrew from treatment. Comparable with other incontinence studies, 24% ($n = 66$) of our subjects withdrew during the treatment phase (episode of care)[36,39] and a further 24% ($n = 50$) by 1-year follow-up.[40] We were able to identify the reasons why 47 (17% overall) of the women withdrew from treatment. Thirty-one (66% of withdrawals) did so because of factors not related to the study, such as sickness of family members and moving away from services. Thus, these withdrawals cannot strictly be classified as treatment failures. Indeed, they reflect in part the difficulty some women experience in accessing services or in prioritising their own health needs. Another 19 women withdrew, but we were unable to determine the reasons. It has been suggested that some women in incontinence studies might withdraw from treatment because their symptoms have resolved.[39] Thus our objective cure rate of 64% using an intention-to-treat approach, including all the withdrawals as treatment failures, could be unrealistically low.

We have also comprehensively reported treatment outcomes using subjective, objective and QoL measures. Eighty four percent of women completing treatment were objectively cured (dry) performing a provocative test of bladder control. By contrast, only 53% were completely dry on the accident diary, possibly reflecting real life situations which challenge bladder control unexpectedly and more suddenly than in a formal test situation. Although only 12% of women considered themselves completely cured at the end of treatment, another 77% were subjectively improved. Cammu has stated that the majority of women are happy with an improvement in their symptoms and able to cope with minor urine loss although they might not be completely dry at all times.[19] Our results support this thesis, as 85% of women still did not want any other treatment a year later. All domains of quality of life improved after treatment and remained stable 1 year later, except the domain 'Emotions' which improved further. This domain assesses the impact of incontinence on the woman's feelings of depression, anxiety and self worth. The continued improvement in emotional impact after cessation of treatment suggests that it takes time for the women's confidence about bladder control to match the physical changes. When cure and improvement rates are combined, similar results were obtained with all instruments indicating that our results truly reflect a positive health outcome for the majority of women.

In this study, successful physiotherapy management of SUI in Australia generally involved five occasions of service in an episode of care, which reflects a small outlay of time and money for a successful outcome in many cases. Further analysis of our data is being undertaken to determine the costs of physiotherapy to allow comparison with other forms of treatment.

The study protocol allowed physiotherapists to individually prescribe treatment based on a clinically reasoned process and considering evidence-based principles. We found that PFMT formed the basis of treatment for all women, with adjunctive treatment used in 62% of episodes of care, primarily to provide additional sensory feedback to enhance the motor learning process.

The scope of the study was extensive, including 35 physiotherapy continence centres in all Australian states and the ACT, both public and private, suggesting strong external validity. Importantly, all physiotherapists in this study had received postgraduate training in continence management. However, it cannot be assumed that similar results would be obtained by other physiotherapists or other health professionals who do not have similar specialised training. Medical practitioners should take account of the specialist training of the physiotherapist in continence management when considering patient referral.

Conclusion

Physiotherapy management in Australian clinical settings is an effective treatment option for women with stress urinary incontinence.

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The costs and benefits of physiotherapy as first-line treatment for female stress urinary incontinence

Abstract

Objective: To evaluate the costs and benefits of physiotherapy for stress urinary incontinence (SUI) in Australia.

Methods: We evaluated the costs and benefits of physiotherapy for the treatment of SUI using outcome data from a prospective multicentre observational study conducted in 1999/2000. Women presenting with SUI to physiotherapists trained in continence management in 35 centres across Australia were recruited into the study. The outcomes of treatment were assessed using subjective, objective and quality-of-life measures at the conclusion of treatment and with 12-month follow-up. The number of treatments in an average episode of care was calculated and adverse events were recorded.

Results: Of the 274 consenting subjects, 208 completed an episode of physiotherapy care consisting of a median (IQ range) of five (4-6) visits. The estimated average costs for an episode of ambulatory physiotherapy treatment were $302.40. Based on 'intention to treat' principles, 64% of women were objectively cured. There was a clinically and statistically significant improvement ($p<0.05$) in all outcomes after treatment and these were maintained at one-year follow-up. No adverse events were reported.

Conclusions and Implications: Specialised ambulatory physiotherapy for SUI in Australia is a low-cost, low-risk and effective treatment. These results provide evidence to support international recommendations that physiotherapy should be routinely implemented as first-line treatment before consideration of surgery. This information has important economic implications for planning future health services.

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Urinary incontinence (UI) is a prevalent[1] and costly[2] condition. An estimated 1.8 million community-dwelling women had UI in Australia in 1998, of whom an estimated 742,000 sought help. Sixty-eight per cent of these women were aged 40-69 years.[2] The personal financial costs for women managing urinary incontinence in Australia in 1998 were estimated at $372 million a year, while the total annual costs of treatment were estimated at $339 million.[2] UI may also have an emotional, social and psychological impact on women.[3,4] For those with stress urinary incontinence (SUI), which is the most common type of UI, anxiety about loss of urine during physical activity may also cause them to avoid exercise, risking obesity and its associated morbidities.[5]

The management of SUI has traditionally been surgical and cost estimates suggest that surgery accounts for 50%[6] to 88%[7] of the total costs of treating SUI.[8] A wide range of procedures have been developed.[9-11] Until recently, colposuspension has been the surgical treatment of choice because of its efficacy with reported cure rates between 69% and 88% in the short term.[11] However, the Tension-free Vaginal Tape (TVT) has been increasingly reported as an equally effective but minimally invasive procedure with a shorter hospital stay.[12] In fact, a 15.4% increase in the number of operations performed in Austria for SUI between 1999-2000 was attributed particularly to a 30.2% increase in the number of TVT operations performed.[13] Despite previous reports of high cure rates, a recent, well-designed randomised controlled trial (RCT) comparing colposuspension with TVT showed a similar cure rate at six months (66% for TVT and 57% for colposuspension) and also at two years (63% for TVT and 51% for colposuspension).[14,15] Long-term follow-up for colposuspension suggests a decline in efficacy over 20 years,[11,16] but long-term follow-up data for TVT are lacking.[12] The minimally invasive nature of the TVT suggests a possible cost benefit and while two studies demonstrated that it was more cost-effective than colposuspension,[17,18] one found the TVT to be more costly to perform than the laparoscopic colposuspension.[19] Reported estimates of the Australian per capita cost for continence surgery (colposuspension) in 2001 were $4,668 for laparoscopic colposuspension and $6,124 for open colposuspension.[20]

A further consideration with surgery is the associated morbidity (prolapse, detrusor

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instability, voiding dysfunction),[21] bladder perforation[14] and mortality.[21,22] One study suggested that only 44% of patients were both continent and complication-free following incontinence surgery.[21] Adverse events that require further medical or surgical intervention impose further personal and societal costs, which may be considerable and difficult to quantify.[23,24]

There is strong evidence that up to 80% of patients with SUI can expect to be cured/improved by conservative treatment, delivered by physiotherapists.[25-27] In a recent, rigorously conducted RCT of physiotherapy with pelvic floor muscle training and biofeedback, an objective cure rate of 67% was reported. Ninety-seven per cent of the women noted an improvement in their symptoms and only 5% proceeded to surgery.[27] We have previously reported similar results from continence physiotherapy in Australia.[28] Moreover, there have been no reports of adverse events with physiotherapy.[29-31]

Because of its demonstrated efficacy, low risk and apparent low cost, published clinical guidelines recommend that conservative management, particularly pelvic floor muscle training, should be first-line treatment for SUI.[29,31] Bidmead et al.[24] suggested that surgery should be reserved for women who had failed conservative treatment. At present, there are no Australian guidelines to promote conservative management as the first-line management of SUI and there are no published Australian data on the number of women who have surgery without prior conservative management.

Despite the claims that it is low cost, there is a dearth of literature on the cost-effectiveness of conservative treatment.[30,32] A recent Australian Government report has highlighted the lack of information about the micro-economics of incontinence in Australia and, in particular, the costs associated with incontinence for community-dwelling women in their mid-years.[32]

Foote et al. evaluated the comparative costs of treating community-dwelling women with UI at a tertiary continence unit.[20] In a cost utility analysis, they compared five treatments for UI by continence nurse adviser, urogynaecologist, Tolterodine, open colposuspension, and laparoscopic colposuspension. Conservative management by a continence nurse adviser was estimated to be the most cost-effective treatment and about one-sixth the cost of open colpsosuspension. In an RCT, Moore et al. found that treatment by a continence nurse adviser had similar outcomes at two years but reduced costs when compared with conservative treatment by a urogynaecologist.[33] However, there have been no reports on the costs of physiotherapy for SUI despite the large body of literature supporting its efficacy. In view of the escalating costs of health care and limited health budgets, there is an economic imperative to choose health interventions that maximise benefits but utilise a minimum of society's resources.[34,35]

In 1999/2000, we conducted a large observational study to report the effectiveness of current physiotherapy management of SUI in Australia.[28] A strength of this multicentre study, involving specially trained continence physiotherapists from centres in all Australian States, was the evaluation of current clinical practice, including patient outcomes and the number of treatments in an average episode of care. The observational study design allowed us to investigate current clinical physiotherapy practice more closely. Participating physiotherapists were employed in 35 centres (18 private practices, 14 hospitals and three community settings). The outcomes of this study have been reported in detail elsewhere.[28] This paper reports further data from the multicentre study on the costs, benefits and consequences of physiotherapy treatment for SUI in Australia.

Methods

Consecutive women presenting to physiotherapy services in 35 centres across all Australian States were recruited into the study if they had a urodynamic diagnosis of SUI or a clinical diagnosis, confirmed by the presence of both symptoms and sign (positive provocative stress test) of stress urinary incontinence.[36] Definitions complied with International Continence Society Guidelines.[37]

Outcomes were assessed at the end of treatment with a seven-day patient-completed diary of incontinent episodes and two valid and reliable tools: a provocative stress test (Expanded Paper Towel Test)[38] and a quality of life (QoL) questionnaire (King's Health Questionnaire).[39] Follow-up at one year involved a postal questionnaire investigating satisfaction with their condition and the desire for other treatment, a seven-day diary of incontinent episodes and the QoL questionnaire. Objective cure was defined as no visible loss of urine on the paper towel on stress testing (with an ability to discern volumes as small as 0.001ml) or no incontinence episodes (IE) on the seven-day diary. Improvement was defined as >50% and <100% change in baseline values. Any adverse events were recorded.

The direct costs of physiotherapy were calculated for the private and public sector. Fee/charge data for initial and subsequent consultations for physiotherapy in the private sector between 1999-2000 were obtained from questionnaires sent to the private practitioners participating in the study. In private practice, consumables, biofeedback and electrotherapy equipment and overhead expenses were costed into the fee structure. Cost data for physiotherapy in the public sector were obtained from the National Hospital Cost Data Collection (1999-2000) ('non-admitted clinical occasions of service – Allied Health/ Physiotherapy, Tier 2, Round 4),[40] and used to provide a best estimate of the costs of treatment, including costs of employment and overheads.[41] Rates of pay in the hospital and community centres were provided by the physiotherapists. Details of any patient co-payments in the public sector were provided. Direct costs of private physiotherapy treatment also included the costs of an appointment with a general practitioner and for urinalysis. Evidence of no urinary tract infection was an inclusion criterion for the study. Medical consultation (Schedule 23: <20minutes) and urine tests were costed from the Medical Benefits Schedule.[42] Costs of urodynamic studies were not included as they are not indicated prior to first-line physiotherapy treatment.[31]

Indirect costs associated with time taken off work, loss of earnings and cost of travel to appointments were not assessed.

This was a cost of treatment study so that the costs of managing incontinence (such as cost of pads and laundry) were not assessed. All costs are expressed in Australian dollars and based on costs in 1999/2000.

Results

Table 1 summarises the baseline characteristics of the 274 study participants. Mean (SD) age of the women was 47 (11) years. At baseline, the median (IQ range) number of incontinent episodes per week was five (3-11) and median incontinence impact scores measured on the King's Health Questionnaire was 67 (33-67). A score of 100 represents maximum impact.

Results of the outcomes for the 208 women who completed treatment are presented in Table 2. The median (IQ range) number of incontinent episodes per week decreased significantly from five (3-11) to 0 (0-2) after treatment ($p<0.05$) and to one (0-4) at one year, which remained significantly less than pre-treatment ($p<0.05$). Mean volume of urine loss on stress testing reduced from 2.4 (2.5) ml to 0.1 (0.4) ml after treatment ($p<0.05$). There was a significant improvement in all QoL domains after treatment and at one year ($p<0.05$). General health status remained unchanged throughout treatment and the follow-up period. Using an 'intention to treat' approach, i.e. including in the analysis the 66 (24%) of women who withdrew from treatment, 41% were cured and 19% improved according to the accident diary at the conclusion of treatment, and 64% were cured with 7% improved on stress testing. Seventy-eight per cent of respondents to the one-year follow-up (114/146) were still satisfied or very satisfied with the outcome of treatment and 85% did not want any other treatment for their SUI. No adverse effects were reported.

All 18 private practitioner physiotherapists provided cost data including the fee for, and length of, an initial and follow-up consultation. All hospital and community-based physiotherapists provided data on length of initial and follow-up consultations. Hourly rates of pay were provided by 10 hospital and two community-based physiotherapists. Patient co-payment was required in three centres. Cost details are provided in Table 3.

Table 1: Summary of baseline characteristics and severity of incontinence in physiotherapy subjects.

Baseline characteristics	n=274
Age (mean SD)	47 (11)
BMI (mean SD)	25 (5)
Parity (mean)	2.4
Prior surgery (% subjects)	11
Duration of symptoms (% subjects)	
1-5 years	32
>5 years	49
Baseline severity	
Incontinence Impact (median (IQ range) (King's Health Questionnaire)	67 (33-67)
Incontinent episodes (median (IQ range)	5 (3-11)

Table 4 details the total estimated costs of physiotherapy. Based on a median (IQ range) of five (4-6) occasions of service in an episode of care, the direct mean treatment costs for physiotherapy in private practice were $250.50 ($206-295) (median, IQ range). The costs of treatment given by a physiotherapist employed in the public sector were $265 ($212-318). There was no difference in the number of treatments for public and private physiotherapy. With the additional treatment cost of $44.65 for general practitioner consultation and urinalysis, total direct costs for an average episode of physiotherapy care were thus estimated at $302.40.

Discussion

To our knowledge, this study is the first to assess the costs and benefits of physiotherapy management for SUI not only in Australia but worldwide. We have demonstrated that Australian ambulatory continence physiotherapy provides effective and low-cost treatment for women with SUI. There were no demonstrated adverse events or complications that could prejudice subsequent treatment options, consistent with reports of conservative management in the literature.[30,31] As the average age of the women in our study was 47 years, we have provided some evidence about the costs of treatment for community-dwelling Australian women with SUI in their middle years.

Drummond[43] stated that economic evaluations should be based on treatment that would be given in regular clinical practice, with

Table 2: Summary of outcomes of physiotherapy treatment.

Outcome	Result
Cure[a]	
Stress test	64% of subjects
Seven-day diary IE	41% of subjects
Improvement[a] (<100% >50%)	
Stress test	7% of subjects
Seven-day diary IE	19% of subjects
Quality of life[b]	Significant change from baseline to end of treatment and to one year
Incontinent episodes	
After treatment	0 (0-2) median (IQ range) per week ($p<0.05$)
At one year	1 (0-4) median (IQ range) per week ($p<0.05$)
Adverse events/ complications	Nil reported
Failures	66 (24%) did not complete treatment 5 (1.8%) failed treatment and went on to surgery A further 10 (3.6%) had had surgery at one year follow-up

Notes:
(a) Based on 'intention to treat' principles.
(b) King's Health Questionnaire: p<0.05 in all domains except general health status.

patients typical of a normal caseload, using a naturalistic protocol and including a quality of life measure. Although we have not undertaken a formal economic evaluation, our data were based on a study of current clinical practice in Australia, using objective and quality of life measures, by physiotherapists specially trained in continence management, working in regular ambulatory settings and making their own clinically reasoned decisions about treatment. A strength of this study was that it was not a randomised controlled trial but a rigorously conducted observational study of clinical practice, thus reflecting the real-life situation of costs and benefits of physiotherapy for SUI in Australia. Furthermore, in order to address the physiotherapy data in the most rigorous manner, the outcomes presented were based on an 'intention-to-treat' approach, i.e. including in the analysis those who withdrew from treatment.

Our results suggest that physiotherapy is a cost-effective option when compared with the estimates of surgical costs available in the literature. The average total costs of an episode of physiotherapy were $302.40 in 1999-2000 while costs for colposuspension for SUI were estimated to be between $4,000 and $6,000 in 2001. We also demonstrated a 64% objective cure rate after physiotherapy treatment with maintenance of objective and QoL outcomes at 12-month follow-up. While we acknowledge that our dropout rate of 24% presents a potential bias, our analysis was based on 'intention-to-treat' principles. This also compares favourably with reported surgical outcomes. The surprisingly low cure rate of 63% at two years for TVT and 51% for colposuspension reported by Ward et al. may be a realistic objective reflection of the results of surgery as this study was considered to be of high methodological quality by the Cochrane reviewers.[10]

Table 3: Details of occasions of service with times, costs, fees, co-payments in both private practice (n=18), public hospital (n=14) and community centres (n=3). All costs are expressed in Australian dollars and based on costs in 1999/2000.

Physiotherapy	Median (25-75 percentile)
Length of consultation in minutes (n=35)[a]	
First occasion of service	60 (55-60)
Subsequent occasions of service	30 (39-47)
Fees/charges	
Private practice (n=18)	
Fee: First occasion of service	72.5 (60-85)
Fee: Subsequent occasions of service	44.5 (39.25-47)
Patient co-payment (public/community: n=3)	4.65 (4.65-6.5)
Hourly rate of pay	
Public hospital (n=10)	26.25 (25-30.5)
Community centres (n=2)	35.00 (35-45)
Public hospital costs of employment[b]	Average
Cost per occasion of service	53

Notes:
(a) Non-significant difference in time (minutes) between public and private physiotherapy for first or subsequent occasions of service (p<0.05).
(b) Public sector NHCDC: Cost Report – Round 4 (1999-2000) page 39: Comparison of non-admitted clinic occasions of service.

Although we did not formally assess the time required away from paid employment or family duties while attending physiotherapy treatment, we suggest that any costs due to lost earnings would be small since physiotherapy appointments were only 30-60 minutes in duration with a median of five appointments over an average of five months. Women can arrange visits for physiotherapy without having to take days or weeks off work. By contrast, subjects were reported to require a median (IQ range) of four (3-7) weeks to return to work after a TVT and 10 (8-12) weeks after colposuspension.[14]

We acknowledge that our patient population may have had less severe incontinence than those typically presenting for surgery. The women in our study had a median (IQ range) of five (3-11) incontinent episodes a week at baseline whereas Ward et al. reported a median (IQ range) of three (1-5) episodes per 24 hours prior to TVT and two (1-4) episodes per 24 hours in women prior to colposuspension.[14] If the international guidelines were routinely implemented in the management of SUI, it would be expected that women with milder SUI were referred to physiotherapy. However, 31/274 (11%) of our subjects had failed prior surgery, suggesting that the guidelines are indeed not routinely implemented in Australia.

O'Sullivan et al. have shown mild incontinence is more amenable to cure and costs substantially less to treat than moderate incontinence.[44] These results further support the early implementation of physiotherapy as first-line treatment as effective and economically sound management from a societal perspective.

There are few comparable reports of the costs of conservative management of SUI. Two other reports published in Australia contained data for all women presenting with UI, i.e. including those with overactive bladder, and did not provide specific costs for treatment of women with SUI.[20,33] This prevents direct comparison with our study. Moore et al. provided costs of treatment based on the hourly rate paid to continence nurse advisers and urogynaecologists in 1998, suggesting that the cost of treatment by a continence nurse adviser was $83 (based on a first 45-minute

Table 4: Summary of costs of physiotherapy based on median (IQ range) of five (4-6) occasions of service. All costs are expressed in Australian dollars and based on costs in 1999/2000.

Service	Costs
Direct costs of physiotherapy	
Private practice	$250.50 (206-295)
Hospital	$265.00 (212-318)
General practitioner	$27.55
Investigations	
Midstream urine	$17.10
Mean cost for episode of physiotherapy care:	$257.75 (209.00-306.5)
Additional costs for general practitioner/urine test:	$44.65
Total mean costs of treatment by physiotherapy:	$302.40

and six subsequent 30-minute visits at an hourly rate of $22). However, we have provided a more realistic estimate of costs for hospital physiotherapy by using data from the Hospital Cost Data Collection (1999-2000), which includes costs of employment and overheads to provide a best estimate of the costs of treatment.[40] Furthermore, our data also show that the Hospital Cost Data Collection estimate of costs of an occasion of physiotherapy service are exactly double the average hourly rate paid to physiotherapists, suggesting that cost estimates based on hourly rates of pay are likely to underestimate the true cost of treatment. Private practitioners calculate their charges to include all personnel, overheads and equipment costs. Although this fee charged is to be distinguished from the actual costs of treatment, it is likely to be a realistic reflection of the true cost of treatment in private practice.

The costs for treatment by urogynaecologists in the study by Moore included costs associated with referral to a privately practising physiotherapist for 23/71 (32%) of patients.[33] Typically, this involved four visits over the 12-week limit of the study protocol. However, subjects were only referred to a physiotherapist by the urogynaecologist if they were unable to contract their pelvic floor muscles. Thus the results of their study cannot be extrapolated to infer the efficacy or costs for physiotherapy management of SUI in general.

In the only other English-language study that we identified which evaluated the costs of conservative treatment, Ramsey et al.[45] suggested that surgery was more cost-effective than conservative management for SUI over a 10-year period because of the need to repeat conservative treatment regularly. However, their study did not evaluate the physiotherapy treatment with pelvic floor muscle training of SUI in community-dwelling women, but used data sourced from a study by Sowell et al.[46] where conservative treatment consisted of a prompted voiding program for severely mentally and physically disabled residents in a nursing home setting. Thus Ramsey's conclusion that conservative management of stress incontinence was more costly than surgery must be questioned.

The recent increase in the numbers of TVT procedures may represent an improvement in the surgical management of SUI with shorter hospital stay, faster return to normal activities and possibly fewer serious long-term complications.[12] However, reports on the outcomes vary widely. While initial data from case series suggested cure rates of up to 100%, a recent rigorously conducted RCT has found much less favourable cure rates at six months (66%)[14] and two years (63%).[15] In addition, they reported post-operative complications in 39% of subjects. Cody et al. warned against extending the use of TVT procedure to women who were managed conservatively before rigorous evaluation had occurred.[12] This would seem prudent in the light of the study by Ward et al.[14,15] Even if the outcomes were comparable with no adverse events, widespread implementation of the TVT as first-line treatment could have considerable economic implications for society as a whole.

We have not sought to measure the societal costs of physiotherapy management in this study. However, there are different costs to the woman seeking treatment for her SUI depending on whether physiotherapy is provided in private practice or in the public domain. Women seeking treatment from a privately practising continence physiotherapist will have to bear the cost of treatment themselves. If they have paid for private health insurance with specific 'Extras' cover for physiotherapy, they will receive a rebate from their insurer for part of the cost. However, at the time of writing, the Australian Government provided a 30% taxpayer-funded rebate for the cost of private health insurance. In the public sector, a co-payment for patients receiving physiotherapy treatment was charged at three of the institutions that participated in our study. The average fee was $5.27. Further studies are needed to more fully evaluate the personal and societal costs of conservative treatment of incontinence in community-dwelling women.

The participating physiotherapists were trained in continence management and employed in private practice, public hospitals and community centres, from every Australian State and the Australian Capital Territory. However, we did not attempt to enlist a representative number of private practitioners or hospital-based physiotherapists from each State or from urban, country and remote centres for the study. The reported costs are thus only generally representative of the costs of ambulatory physiotherapy management for stress incontinence in Australia in 1999-2000. Even when the higher estimate of costs due to a longer episode of care for physiotherapy are considered, the costs remain considerably less than the published cost estimates for surgery. Since 2000, there have been improvements in postgraduate physiotherapy continence training that would have the potential to improve outcomes through greater availability of physiotherapists with the requisite skills. Otherwise, there have been no relevant changes to physiotherapy practice or fee structure since 2000 that would significantly alter our cost assessment other than changes in line with the consumer price index.

On the basis of our results, we conclude that conservative management of SUI by Australian continence physiotherapists is an effective, low-risk and low-cost treatment. Our results suggest that continence physiotherapy should be routinely implemented as first-line therapy for SUI, with surgery reserved for women who have failed adequate continence physiotherapy. However, the number and distribution of existing physiotherapy services within Australia should be evaluated as to whether they are able to meet future demands and to provide equitable service delivery to women across the country. This may be an important area for future research given the fact that less than half of those with UI seek professional help.

The evaluation of the costs and benefits of physiotherapy for women with SUI in this study provides essential information to inform general practitioners who refer patients with SUI, patients considering their treatment options, and decision makers who need to consider how best to allocate scarce health resources.

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