A survey of rehabilitation services in Australia

Susan K Graham and Ian D Cameron

Abstract

A survey, which achieved a 54% response rate, was completed to assess the availability and type of rehabilitation health services in Australia. 1044 surveys were sent out and 561 were returned. The details of a total of 346 rehabilitation services were obtained. There were more services in metropolitan compared with rural areas, more services in New South Wales and Victoria than in the other states, and a higher proportion of services led by health care workers other than rehabilitation physicians in rural compared with metropolitan areas.

There is likely to be a need for additional rehabilitation services of all types across Australia. The majority of rural, regional and remote areas are likely to need additional physician-led, allied health and nursing services. Further work is needed to assess the size and catchment areas of services in the capital cities and other large population centres to assess whether additional services are also needed in these areas.

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What is known about the topic?

There is limited information about the distribution of rehabilitation services nationwide. Nationwide sources of data on rehabilitation service distribution are sub-speciality specific, for example, the CRS Australia vocational rehabilitation provider network.

What does this paper add?

This paper summarises data on rehabilitation services by region and whether the service is led by medical practitioners or other health care providers.

What are the implications for practitioners?

This information will be useful to policy practitioners determining funding, distribution and expansion of rehabilitation services. Health care practitioners will be able to make more informed decisions regarding the setting up and development of their own services. This paper is currently the most comprehensive source of information regarding the availability of rehabilitation services in Australia.

REHABILITATION SERVICE TEAMS consist of medical, nursing and allied health members specifically brought together to address clients' functional impairments, activity and participation restrictions, and any environmental barriers impacting on their ability to carry out personal, domestic and social activities of daily living. Inpatient rehabilitation services are needed for people with severe new or progressing activity or participation limitations for which hospitalisation is required. These individuals may be referred directly from the community or be transferred from acute inpatient services. Outpatient rehabilitation services are provided for individuals requiring continuing care following an inpatient episode and others whose activity and participation limitations and environmental barriers (such as sub-optimal home or workplace set-up) do not require hospitalisation.

In 2003 the Australian Bureau of Statistics (ABS) carried out a survey assessing restrictions and limitations of individuals across Australia.[1] According to this survey of ageing, disability and carers, about 20% of Australians have a disability (a "limitation, restriction or impairment which has lasted or is likely to last for at least 6 months and restricts everyday activities"). About 17% have specific restrictions or limitations and 15% core activity restrictions (6.3% profound or severe and 8.8% mild or moderate). The disability rate is 19.2 per 100 people in major cities, 21.2 in inner regional areas and 22.1 in other areas. Queensland, South Australia and Tasmania have the

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1 Rehabilitation service categories*

Category	Description
1	A rehabilitation service provided by allied health professionals without clinical supervision of a medical officer
2	A rehabilitation service provided by allied health professionals under the clinical supervision of the referring medical officer
3	A rehabilitation service providing rehabilitation within a particular medical specialty such as orthopaedics, geriatrics or cardiology under the direction of an appropriately qualified specialist
4	A rehabilitation service under the direction of a Rehabilitation Medicine Specialist and providing a full range of rehabilitation services

* Based on the rehabilitation service categories of the Australasian Faculty of Rehabilitation Medicine,[5] modified to include a category for services with no input from a medical practitioner.

highest age-adjusted disability rate (23%) and the Australia Capital Territory the lowest (16%). The disability rate for those over 60 years of age is 51% (19% profound or severe) and 92% (74% profound or severe) in those over 90 years.

These figures suggest that there may be about 4 million people in Australia with a disability, some of whom have profound or severe core activity restrictions, meaning that they have difficulty carrying out basic self-care activities. Individuals with profound or severe core activity restrictions are likely to require input from rehabilitation services. This need is likely to be greatest in areas with a high proportion of older people, in non-metropolitan areas and in Qld, SA and Tas where the ABS survey demonstrated a higher disability rate. In addition, individuals with short-term impairments and/or restrictions, for example following major injury or medical illness, may benefit from acute rehabilitation intervention.

There is limited information on the availability and type of rehabilitation services in Australia. A survey was conducted to assist in understanding the working definition of health-related rehabilitation and some of the factors which may be contributing to the development of services for people with acute and chronic conditions resulting in activity and participation restrictions and for those affected by environmental barriers.

Methods

Following a systematic literature review, it was agreed to use the *Hospital and health services yearbook*[2] as a source of participants. In September 2004, the survey questionnaire was sent to all public and private hospitals listed in the Yearbook. The survey was addressed to the Director of Clinical Services if available. If this position was not listed in the Yearbook the survey was addressed (in order of preference) to the Director of Nursing, Director of Medical Services, Chief Executive Officer, Manager, Director or default contact person (as per the health services Yearbook). To assess the validity of sending questionnaires to hospitals only, all health care facilities (including hospitals, nursing homes and community health care services) for two metropolitan postcode areas (2112 and 2040) and three rural (2830, 4551 and 4567) and one remote (2835) postcode area (as per the Rural, Remote and Metropolitan Areas [RRMA] classification[3]) were also contacted and the survey findings compared. The questionnaires were distributed using a commercial mailing service.

A rehabilitation service was defined as "an accessible, designated, inpatient, outpatient or community based service where a co-ordinated, interdisciplinary rehabilitation programme is carried out to optimise each individual client's functional capacity. The service should be overseen by an appropriately qualified rehabilitation specialist and incorporate client participation in planning and implementation, prevention strategies, advocacy, long-term follow-up and quality assurance."[4] The first page of the questionnaire listed rehabilitation service categories (Box 1) and gave the above definition of a rehabilitation service.[1] Participants were asked to complete tables requesting the category and contact details for rehabilitation services available at or in the catch-

2 Rehabilitation services across Australia

ment area of the facility being surveyed. Participants were provided with a stamped addressed envelope for return of the questionnaire. According to a previously published method outlined by Kelsey,[6] reminder letters were sent to non-responders after 1, 3 and 7 weeks.

When assessing the number of services identified by the survey, the following guidelines were applied. If different respondents allocated the same service to different categories, the highest allocated category was recorded. The basis for this guideline was that some respondents may refer directly to allied health team members and not be aware that the service included a medically trained director. If a number of services (for example an inpatient service plus a community-based cardiac rehabilitation service) were listed at one site, this was counted as one rehabilitation service. If services were listed at several sites (and therefore presumably involving a number of rehabilitation teams) these were counted as separate services, even if there was evidence that these services were coordinated by a single contact person based elsewhere.

A clinically experienced rehabilitation physician ("reviewer") from each state was asked to review a preliminary report of the survey and comment on the accuracy of survey findings. Comments were also invited from the Australasian Faculty of Rehabilitation Medicine (AFRM) membership during a pre-conference workshop at the 2006 AFRM Annual Scientific Meeting and via the AFRM electronic newsletter. (AFRM is a faculty of the Royal Australasian College of Physicians that provides accreditation for rehabilitation physicians). Information obtained via these reviews was used to assist in interpretation as outlined above. Additional rehabilitation services identified by reviewers were included in the final analysis.

The study was approved by the Royal Rehabilitation Centre Sydney Research Ethics Committee.

Results

A total of 1044 surveys were sent out and 561 were returned (53.7% response rate). Of the returned surveys, 514 were completed and 47 were returned to sender or not completed. One-hundred and sixty respondents stated that they had no rehabilitation services available and 354 respondents had rehabilitation services available. The details of a total of 346 rehabilitation services were obtained (Box 1, Box 2 and Box 3); 249 rehabilitation services were listed by only one respondent, 56 by two respondents and 41 by three or more respondents.

A number of surveys were returned without front sheets (which included participant identification information). The institution for 466 of 561 returned surveys could be identified. The ability to compare the contact person and institution between respondents and non-respondents was therefore limited. The postcode for 495 of 561 returned surveys could be identified.

The survey found there were 346 rehabilitation services across Australia — providing one service per 58 000 population. However, only 123 of these are full rehabilitation services under the direction of a rehabilitation physician — providing one service per 163 000 population. There was a greater number of rehabilitation services in NSW and Vic than in the other states (Box 3); a greater availability of rehabilitation services in metropolitan than rural areas (Box 4); and a

greater proportion of services led by health care workers other than rehabilitation physicians in rural areas compared with metropolitan areas (Box 4).

The number of surveys returned for postcode areas 2040, 2112, 2830, 2835, 4551 and 4567 (for which all health care institutions were contacted) were five, six, ten, eight, three and zero, respectively. Between zero and three surveys were returned from all other postcode areas (for which only hospitals were contacted). The number of services obtained by the survey for postcode areas 2040, 2112, 2830, 2835, 4551 and 4567 were two, three, two, zero, two and zero, respectively. Between zero and five services were obtained for all other postcode areas.

Although more surveys were returned from areas where surveys were sent to all health care services, the number of rehabilitation services identified in these areas was not greater than in other areas (where surveys had only been sent to hospitals). Sending the survey only to hospitals therefore appeared to be as effective at obtaining details of rehabilitation services as contacting all health care services. A number of rehabilitation services were cited by more than one respondent, suggesting that the number of surveys sent may have been over inclusive.

Comments from reviewers suggested that the survey results did not always accurately reflect services they were aware of in their own regions; it would be important to know the size of services and whether they included inpatient and outpatient services; and there has been expansion of rehabilitation services in Queensland and some other regions since the survey was carried out.

Discussion

This is the first paper to provide a comprehensive picture of rehabilitation services in all of Australia. There was about one service per 60 000 population and only 36% were led by a rehabilitation physician. These services were clustered in urban areas and in NSW and Vic. This distribution is to some extent appropriate, as the greatest population densities are in these areas,[7] and transport networks should enable

3 Number and type of rehabilitation services by state

	Number of rehabilitation services						
State	Full service*	Sub-specialty service†	Supervised allied health service‡	Unsupervised allied health service§	Don't know	Total	Ratio of full/other rehabilitation services
ACT	1	0	3	7	0	11	0.10
NSW	63	19	16	28	1	127	0.98
NT	2	0	0	1	0	3	2.00
QLD	14	19	15	22	4	74	0.23
SA	7	1	8	5	2	23	0.44
TAS	3	0	2	2	0	7	0.75
VIC	32	13	13	14	5	77	0.71
WA	1	11	6	4	2	24	0.04
Total	123	63	63	83	14	346	0.55

ACT = Australian Capital Territory. NSW = New South Wales. NT = Northern Territory. QLD = Queensland. SA = South Australia. TAS = Tasmania. VIC = Victoria. WA = Western Australia.
* A rehabilitation service under the direction of a Rehabilitation Medicine Specialist and providing a full range of rehabilitation services (category 4). † A rehabilitation service providing rehabilitation within a particular medical specialty such as orthopaedics, geriatrics or cardiology under the direction of an appropriately qualified specialist (category 3). ‡ A rehabilitation service provided by allied health professionals under the clinical supervision of the referring medical officer (category 2).
§ A rehabilitation service provided by allied health professionals without clinical supervision of a medical officer (category 1).

4 Availability and type of rehabilitation services by region

State	Region	Type of rehabilitation service				
		Full service*	Specialist service†	Supervised allied health service‡	Unsupervised allied health service§	Don't know
ACT	Canberra	1	0	3	7	0
NSW	Broken Hill	0	0	0	1	0
	Central West	3	0	5	7	0
	Hunter	9	2	3	3	1
	Mid North Coast	3	0	0	1	0
	Murray Region	1	1	1	1	0
	New England	1	1	2	2	0
	Northern Rivers	2	0	0	0	0
	Riverina	2	1	1	4	0
	South Coast	5	1	2	4	0
	Sydney	37	13	2	5	0
NT	Alice Springs	1	0	0	0	0
	Darwin	1	0	0	1¶	0
QLD	Booval/Ipswich	1	1	1	0	1
	Brisbane	5	9	1	5	1
	Cairns	1	1	0	1	0
	Central Queensland	1	1	1	5	1
	Gold Coast	3	1	0	1	0
	Mackay	0	2	1	0	0
	Northgate/Gladstone	0	2	2	2	1
	Sunshine Coast	2	1	1	1	0
	Toowoomba	0	0	7	5	0
	Townsville	1	1	1	2	0
SA	Adelaide	7	1	2	2	0
	Far Country	0	0	3	1	2
	Near Country	0	0	3	2	0
TAS	Hobart	3	0	0	0	0
	Launceston	0	0	2**	2**	0
VIC	Ballarat	1	0	2	1	0
	Bendigo	3	1	0	3	0
	Melbourne	23	6	5	3	3
	Geelong	2	1	3	2	1
	Gippsland	2	1	1	3	1
	Seymour	1	4	2	2	0
WA	Cent/Murchison	0	0	0	0	0
	Gold Fields	0	0	4	0	1
	Great Southern	0	0	1	0	0
	North West	0	0	1	2	0
	Perth	1	11	0	2	1
	South West	0	0	0	0	0

ACT = Australian Capital Territory. NSW = New South Wales. NT = Northern Territory. QLD = Queensland. SA = South Australia. TAS = Tasmania. VIC = Victoria. WA = Western Australia.

* A rehabilitation service under the direction of a Rehabilitation Medicine Specialist and providing a full range of rehabilitation services (category 4). † A rehabilitation service providing rehabilitation within a particular medical specialty such as orthopaedics, geriatrics or cardiology under the direction of an appropriately qualified specialist (category 3). ‡ A rehabilitation service provided by allied health professionals under the clinical supervision of the referring medical officer (category 2). § A rehabilitation service provided by allied health professionals without clinical supervision of a medical officer (category 1). ¶ Receives outreach visits from rehabilitation physicians. ** Not a full multidisciplinary team.

referral of clients from rural and remote areas to specialist metropolitan centres, while many issues can be managed by non-medical health care workers locally. However, non-metropolitan areas and those states with a higher disability rate (Qld, SA and Tas) are likely to require more extensive rehabilitation services, and many of the services covered in this survey, particularly those in rural areas, are likely to be small community-based services.

The categories used in this survey do not provide information on the size of services or whether services are inpatient, combined or purely outpatient. Further information is required on population rehabilitation needs and the size, staffing and catchment areas of the rehabilitation services identified in the survey before detailed recommendations can be made on the requirement for additional rehabilitation services.

Validity of the survey

The response rate of 53.7% is fair and compares well with similar surveys with response rates of 65%[8] and 58.5%.[9] Although more surveys were returned for areas for which all health care services were contacted there was not an appreciably greater number of rehabilitation services identified in these areas. The size (and therefore cost) of future surveys may be reduced by sending surveys to select hospitals in areas with large numbers of hospitals — such as major metropolitan centres.

The survey recorded 123 services led by rehabilitation physicians. In June 2005, the AFRM listed 120 Fellows in Australia. This suggests that the survey included all rehabilitation services with input from rehabilitation physicians, and may in fact have overestimated the number of full rehabilitation services led by a rehabilitation physician. Further work is needed to confirm the number and distribution of other rehabilitation services without direct involvement from a rehabilitation physician.

The distribution of services found by this survey was similar to that of other national sources of rehabilitation data (eg, CRS Australia[10]). However, the current survey provides more information regarding type of service. The VicHealth website[11] provides detailed information on rehabilitation services in Victoria by postcode, is more inclusive than the current survey, and could therefore be used as a benchmark for the validity of future Australia-wide surveys. Rehab Search (formally the NSW Inpatient Rehabilitation Referral Data [NIRRD])[12] provides readily accessible information regarding hospital-based rehabilitation services available in NSW. The majority of the 113 rehabilitation services listed by NIRRD were also obtained by the current survey, while the survey includes additional information on non-hospital-based services. There is little information available from other sources regarding rehabilitation services in other states.

Comparison with Australian population data

According to Australian Bureau of Statistics (ABS)[13] census data, in 2003 the population of the ACT was about 325 000, NSW 6 250 000, the NT 165 000, Qld 3 800 000, SA 1 500 000, Tas 495 000, Vic 4 900 000 and WA 1 950 000. This suggests that in the ACT there is one full rehabilitation service per 325 000 population, one per 99 000 in NSW, one per 82 500 in the NT, one per 271 400 in Qld, one per 214 300 in SA, one per 165 000 in Tas, one per 153 125 in Vic and one per 1 950 000 in WA. According to the ABS Survey of Ageing, Disability and Carers the disability rate varies between states and regions. The disability rate is 15.8 per 100 persons in the ACT, 17.7 in NSW, unknown in the NT, 22.5 in Qld, 22.6 in SA and Tas, 19.9 in Vic and 21.4 in WA. Individuals residing in rural and regional areas have a higher disability rate and older individuals are more likely to have disabilities and more profound activity and participation restrictions.

These figures suggest that the greatest need for additional rehabilitation services is in the ACT, Qld, SA and WA where there are the largest numbers of individuals per rehabilitation service. Additional services may also be required in states with a higher disability rate, including Qld, SA, WA and possibly Vic. Fur-

ther information is required to clarify the situation in the NT. States, such as Qld and WA, with large distances between relatively large rural populations, are likely to have special service requirements to enable access to rehabilitation services for individuals that ABS survey data suggest may have a higher disability rate.

Possible solutions to the need for extra services in rural and regional areas includes improved transport and health care infrastructure, workforce recruitment initiatives, video and teleconferencing, fly-in-fly-out services and networking between existing services to facilitate support of smaller (primarily rural) services by larger (primarily metropolitan) rehabilitation services. It will also be important to target large, regional population centres with small numbers of rehabilitation services and large numbers of individuals with a higher disability rate. States with a high ratio of full rehabilitation services to others (Box 3), such as NSW, may need to prioritise the development of smaller services to be supported by larger existing services. States such as the ACT and WA with a smaller number of full rehabilitation services should prioritise the development of large rehabilitation services led by rehabilitation physicians, while continuing to support allied health-led services.

In order to assess whether population needs are being met by existing services, further information is needed on population needs and distribution, infrastructure and accessibility; and the size, catchment area and outcomes of rehabilitation services of all types.

Comparisons with other regions

It would be of interest to compare the results of this survey with others from the Asia-Pacific region, the UK, US and Canada. Unfortunately there are few comprehensive data on the distribution of rehabilitation services in these areas. An editorial by Fang and Yeung[14] in 2002 for the *Journal of Orthopaedic Surgery* stated that there were few statistics for rehabilitation services in most member countries of the Asia Pacific Orthopaedic Association and that a 1997 Australian rehabilitation medicine workforce report provided the most useful data on rehabilitation service needs. Japan is noted to have a comprehensive rehabilitation network, and much information can be obtained via the National Rehabilitation Information Centre, however this does not provide a summary of rehabilitation service numbers and distribution.

The Canadian National Reporting System (NRS) collects data from rehabilitation service providers and users. The 2002–2003 NRS report[15] summarised data from 71 participating hospitals, which researchers stated was only a sample of rehabilitation services in Canada. An American national survey[16] of rehabilitation capacity in 1997 found 2200 co-ordinated rehabilitation programs using membership data from three leading rehabilitation industry organisations. This would provide one rehabilitation service per 121 000 population (US population[17] in 1997 was about 266 000 000). This survey did not include the smaller, therapist-led services included in the current survey.

Conclusions

The survey provides the most comprehensive currently available overview of rehabilitation services in Australia. Future work should include further assessment of population needs and a repeat survey of rehabilitation services to obtain updated information on the number of rehabilitation services in Australia and additional data on the type, size and catchment area of services. It would also be useful if more data were available regarding rehabilitation services in countries with health care systems and population distributions similar to those in Australia.

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Competing interests

The authors declare that they have no competing interests.

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