

The Australian health workforce: facts and futures

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Abstract

The quality of care received by a patient or consumer critically depends on the knowledge, skills and attitudes of the health workforce; the structure and functioning of the health workforce is critical to the structure and functioning of the health system overall. To a very large extent, diagnosis and treatment decisions call on the training and experience of the health professional. The quality of the interaction between a patient or consumer depends on the interpersonal and technical skills of health professionals. In a sense, health workers are important to defining the very nature of health care services. The importance of the health workforce is further highlighted by the fact that, as is typical of most service industries, labour accounts for a large proportion of health costs (around 80%).

This paper provides an overview of the size and composition of the health workforce in Australia. It then reviews three segments of the workforce in more detail (medical, nursing and other health professionals) and reviews contemporary policy issues affecting those groups.

The size of the health workforce

There are two ways of looking at the size of the Australian health workforce. The first is in terms of the health professions, i.e., groups that have specific training related to diagnosis and treatment of patients/consumers and/or the organisation of health care delivery. The second way of analysing the health workforce is in terms of those people who work in the health industry, be they health professionals or people from a different background. Table 1 shows information on the place of the health workforce (using both approaches) in terms of the Australian labour market.

Table 1: Number of persons in health occupations and in the health and other industries, 1996

Industry	Health occupations			Other occupations	Total	
	Medical	Nursing	Other	Health professionals subtotal		
Health Industry: -						
Hospital, Nursing Homes	12 972	116 913	12 880	142 765	168 650	311 415
Medical, Dental Services	25 090	6 479	12 767	44 336	58 698	103 034
Other Health Services	3 385	29 260	19 072	51 717	250 008	301 725
Subtotal health industry	41 447	152652	44 719	238 818	477 356	716 174
All other industries	2708	8947	15574	27229	6892928	6920157
Total	44155	161599	60293	266047	7370284	7636331

Source: Unpublished Census cross-tabulations.

The health industry accounts for 9.38% of the employed workforce, slightly larger than the health share of Gross Domestic Product. Health professionals account for one third of employment in the health industry. Other groups include managers, cleaners, social welfare professionals, and people in trades. Nurses are the single largest health profession, accounting for one fifth of all health industry employment.

Many industry sectors have a role in promoting or protecting health such as local government and water supply authorities. However, over 90% of medical and nursing professionals are employed in the health industry, with the remainder being employed across a range of industries including tertiary education, government sector, etc. Almost three quarters (72%) of nurses are employed in hospitals.

The number and distribution of health professionals

Table 2 provides more detailed data on persons in health occupations in Australia. The different numbers between Tables 1 and 2 are partly the result of a different data source (1996 Census for the occupation for Table 1, the quarterly Labour Force Surveys for Table 2, and also Table 2 is for a later time period (1997/98) compared with the Table 1 1996 Census data.

Table 2: Persons employed in health occupations (not including associate professionals), 1997/98

	Males '000	Females '000	Persons '000	Average weekly earnings
Generalist medical practitioners	23.8	10.8	34.6	1459.8
Specialist medical practitioners	10.4	2.4	12.8	2095.1
Registered nurses	12.1	136.3	148.3	605.5
Dental practitioners	6.2	2.7	8.8	-
Pharmacists	8.0	7.7	15.6	695.5
Occupational therapists	0.5	4.3	4.8	-
Optometrists	1.2	0.6	1.8	-
Physiotherapists	2.0	8.9	10.9	648.1
Speech pathologists	0.1	1.9	2.0	-
Chiropractors and osteopaths	1.2	0.2	1.4	-
Podiatrists	0.3		0.6	0.9-
Medical imaging professionals	2.6	3.7	6.3	814.8
Other health professionals	0.5	3.4	4.0	-
Total employed in health occupations	77.0	203.0	280.0	759.9

Source: Persons employed is from unpublished data from ABS Quarterly Labour Force Survey. (Data are averaged over 1997-98); Estimated average weekly earnings is from ABS Employee Earnings, Benefits and Trade Union membership survey, August, 1998 (unpublished data. Note: average weekly earning data on professional groups with less than 5000 persons are unreliable.)

Nurses represent over half the health professional workforce with medical practitioners being the second largest group: workforce issues relating to these two groups are discussed in more detail later below (See Selby-Smith and Crowley (1995) for a review of issues relating to other health professions). The next major health professional groups are pharmacists, physiotherapists and dentists, together accounting for a further one eighth (12.6%) of the health workforce.

The health workforce is predominantly female (72.5%) although the higher-income professions tend to be male dominated. 80% of specialist medical practitioners are male. Males make up 68% of generalist medical practitioners and 70% of dental practitioners compared with 8% of registered nurses and 18% of physiotherapists.

The health workforce has grown substantially over the last 30 years. The 1961 Census, for example, recorded a total 72598 health professionals (i.e., people with health professional qualifications, whether employed or not), 56% of whom were registered nurses, 16% medical practitioners, and the remaining 28%, all other health professionals. By 1996, the health workforce had more than trebled to 270 796 with nurses now accounting for 59%, medical practitioners 17%, and others 24%. The number of health professionals per head of population increased from 6.9 per 1000 population in 1961 to 14.8 per 1000 population in 1996. (The proportion of nurses reported here probably exaggerates the growth in this profession as the 1961 figures do not include an additional 20 000 student nurses employed, but not counted in the professional workforce.)

The health workforce is now characterised by a large number of separate professions, each with a different course of preparation, a different emphasis in practice and, to some extent, different ideological foundations in terms of the way in which the profession interacts with other professions and with patients or consumers. The workforce has changed dramatically over the last 20 years with increasing specialisation in the workforce, both within professions (e.g. additional specialisations in medicine and nursing) and by the creation of new professions. To some extent, this specialisation has led to increased quality of care, as individual professionals have been able to develop in-depth skills across a narrower range of areas. However, in the late 1990s it has been recognised that this increasing specialisation has also had a downside in increased coordination costs, leading to inefficiency and problems of continuity of care.

Issues in health workforce supply and demand

An important and regularly recurring policy issue relating to the health workforce is the adequacy of supply to meet demand: do we have enough doctors, are we facing a nursing shortage crisis? Increasingly, governments are concerned to ensure that there is an adequate supply of skilled labour in all areas of the economy, usually implemented through education and training policy. Government has historically been active in health workforce issues, particularly relating to the medical workforce, because of the government’s role as both a funder and provider in the health sector. Health workforce policy has usually been driven by health (rather than education and training) portfolios and policy levers applied to influence the supply and distribution of the health workforce have been a mix of ‘health’ and ‘education’ instruments (see Table 4). Policy attention is directed to whether the workforce (and particular professions) are in balance at a state or national level as well as whether segments of the market (specialty, location) are in balance.

Ensuring a balance of supply and demand in the health workforce is difficult for a number of reasons:

- low mobility of health professionals means that there can be oversupply in some areas and under-supply in others, thus reducing the likely success of training additional professionals as a means of redressing imbalances;
- long lead times for education and training of health professionals, especially specialists;
- long term predictions must also take account of changes in technology in the health industry (and hence demand) and yet technological change is quite rapid, possibly invalidating even recent predictions.

Health workforce policy is further confounded by the existence of real costs associated with an imbalance, both in terms of undersupply and oversupply (see Table 3).

Table 3: Costs of workforce imbalance

Costs of undersupply	Costs of oversupply
<ul style="list-style-type: none">• Poor access, unmet need, potentially poorer outcomes.• Overworked and stressed workforce (which may make the profession/area unattractive and further reduce supply).• Increased costs of alternative provision (e.g. travel costs).	<ul style="list-style-type: none">• Unnecessary costs incurred in education sector in training workforce.• Unnecessary services provided where workforce can create own demand.• Workforce may not maintain skills because of insufficient consultation rate.

Source: Derived from AMWAC and AIHW (1998) AMWAC Report 1998.8

Typically, health workforce policy attempts to influence supply, viewing demand as exogenous. This is not the case, however, as changes in broad policy settings or the labour force may in turn affect demand for consultations with health professionals. There can also be policies to affect demand for health consultations. For example, providing additional information to consumers may increase their ability to self manage a particular condition.

Identifying whether there are shortages or surpluses of a particular profession requires analysis of both workforce supply and demand. As indicated above, there can be interactions between supply and demand. For example, if there is a severe workforce shortage, this may create queues and waiting lists, which in turn may reduce demand. Table 4 shows several options for addressing an imbalance between workforce supply and demand. For ease of presentation, the Table has been structured in terms of addressing a workforce shortage, but addressing a workforce oversupply involves symmetrical strategies.

Each of the strategies in the table needs to be assessed in terms of the general criteria for assessing health systems: efficiency, equity and acceptability. In terms of equity, the co-payment strategies for example, will have an adverse effect on equity; other strategies may have adverse effects on acceptability (e.g. encourage self-management of care needs) or efficiency. The strategies also need to be assessed in terms of their cost-effectiveness and whether they will establish precedents that would result in increased expenditure for professions or specialisations that are not subject to a workforce imbalance.

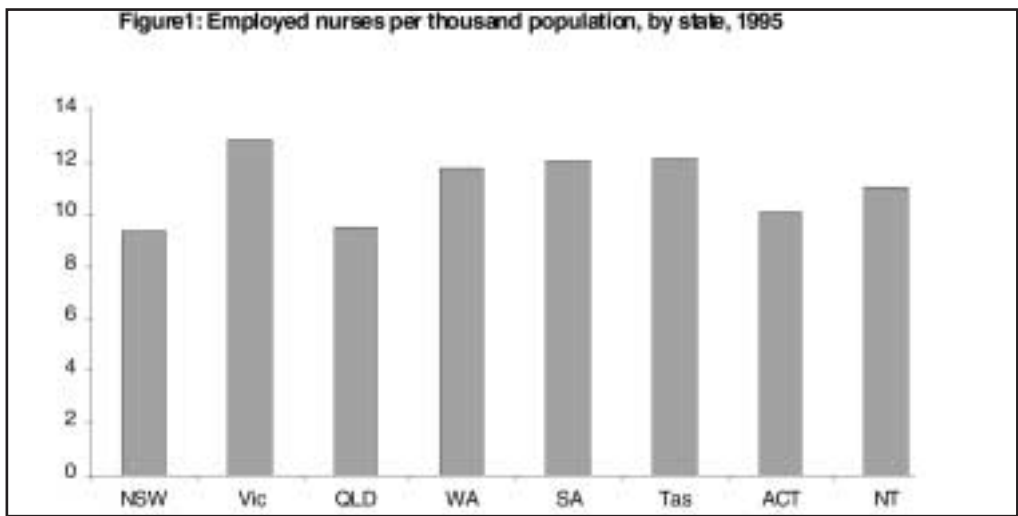
The nursing workforce

Nursing represents the largest component of the health professional workforce. There have been few national studies of the nursing labour force, partly because the Commonwealth does not have direct funding responsibility for this workforce and partly because, despite the number of nurses relative to medical practitioners, nursing practitioners are not as influential within the health care system. The most recent source of nursing labour workforce data (AIHW 1998 Cat no HWL 8) provides a range of data on nurses in Australia in 1995 and most of the data in this section are taken from that publication. Updates of nursing labour force data are available on the Australian Institute of Health and Welfare website.

Table 4: Options for addressing workforce imbalances (shortage)

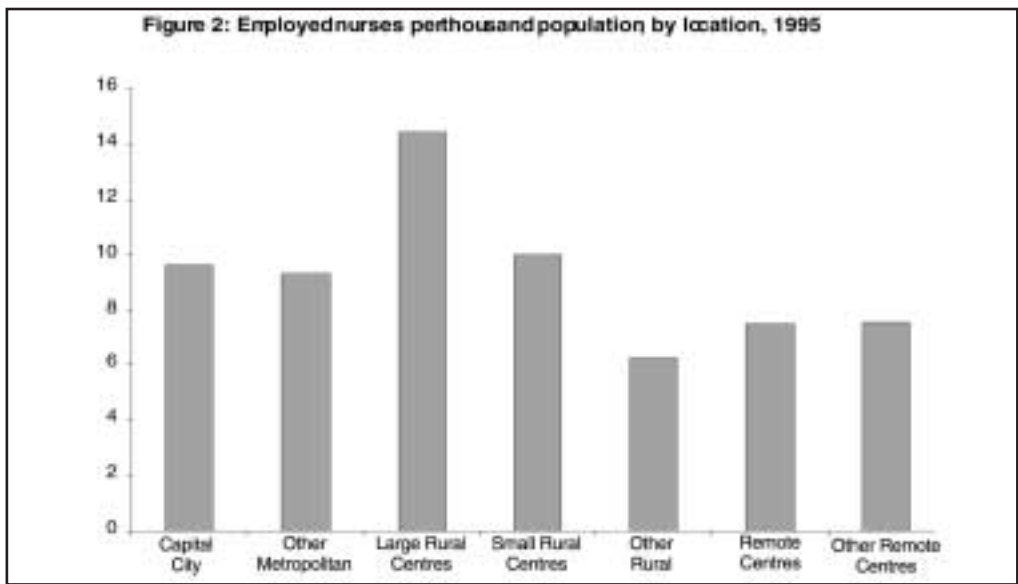
	Demand Side	Supply Side
Price	<ul style="list-style-type: none"> • Increase/introduce consumer co-payments 	<ul style="list-style-type: none"> • Increase relative wages/fees for health professionals • Increase/introduce recruitment/retention bonuses • Introduce retraining incentives to reskill professionals to skill area of short supply • Introduce mobility incentives to encourage relocation of professionals to geographic area of short supply
Volume	<ul style="list-style-type: none"> • Encourage use of substitute professionals • Encourage self-management of care needs through information provision or other strategies • Support informal carers • Reduce demand through changing consumer expectations 	<ul style="list-style-type: none"> • Increase educational intakes • Reduce program dropouts • Increase flow of internationally trained professionals into the workforce • Facilitate re-entry through retraining programs, job redesign • Increase use of technology to expand available provision (e.g. telehealth)

Figure 1 shows that in Australia in 1995, there was an average of eleven nurses per thousand population (82% of whom were registered nurses). There is almost a 40% variation in the number of nurses per thousand population between the highest provision state (Victoria 12.8) and the lowest provision state (New South Wales, 9.3).



Source: AIHW (1998)

Figure 2 shows the significant variation in employment patterns of nurses by location, with provision in remote centres being at lower levels than in capital cities and other metropolitan areas. Interestingly, unlike the situation with respect to medical practice, large rural centres have very high levels of supply of nurses. The availability of nurses in large rural centres may in part reflect the more widespread availability of nursing education. Many large regional centres have nursing schools on the campus of the local university. This is unlike the situation for medical training where most of the medical schools are located in capital cities.



Source: AIHW (1998)

Figure 3 shows the number of nursing course commencements over the period 1989-1997. New nursing students increased from 6247 in 1989 to a peak of 9347 in 1991 before declining to the 1997 level of 7552. Obviously, the number of entrants is in part a reflection of choice by students about whether they wish to enrol in nursing as a course and partly, choices by institutions about how many places they will make available. A number of universities have reduced the places available to nursing students in the late 1990s as part of a strategy to increase the tertiary entry score required for entry to the profession.

Contemporary issues in the nursing workforce

A review of nursing education in Australian universities in 1994 (National Review of Nursing Education, 1994) identified a range of policy issues affecting the nurse workforce including issues of labour force planning, career pathways, and educational preparation. In its report, the review made a large number of recommendations for change and development that have received little policy attention. Universities are making independent decisions about curriculum development; and states and territories are making independent decisions about the structure of the nursing workforce with relatively weak national coordination of policies.

A major issue for nursing workforce policy in the medium term relates to the role of the professional (registered) nurse. Without clarification of the role of the nurse, there cannot be clarity about how many nurses are required from the workforce demand perspective, and educational institutions will find it difficult to make coordinated decisions about design of curricula and the number of nurses that ought to be appropriately enrolled in nursing education programs.

The competency standards for the nursing profession published by the Australian Nursing Council Incorporated (www.anci.org.au/competencystandards.htm) are broad and aspirational. The Australian Nursing Council has also published a statement on the role of a nurse, which is also phrased in broad generalities. There is good reason for this, as an alternative approach focussing on particular tasks may make the competency standards and role statements out of date relatively quickly.



Source: AIHW (1998)

The role of the nurse is the subject of a number of pressures, posing both threats and opportunities to the profession. In the first instance, the educational preparation of all nurses is improving, associated with the move to university-based education and the continuing refinement of university curricula. This broader educational preparation of nurses provides a foundation for nurses to undertake more complex roles and tasks. Further, as the postgraduate preparation of nurses is also now largely university-based, this provides further opportunities

for developing highly skilled nurses. There is now a developing literature about the potential for nurses to undertake roles that were previously the sole preserve of doctors (Richardson and Maynard, 1995; Sakr et al. 1999). Some studies have suggested that up to 30% of the work of doctors could be undertaken by nurses. Whether this substitution is cost-effective depends not only on the relative pay rates of nurses and doctors, but also on the relative time taken to complete the tasks.

New South Wales was the first state to consider the potential for nurses taking broader roles through a series of pilot programs under the general rubric of 'nurse practitioner'. This is an unfortunate term as it is poorly defined. The New South Wales nurse practitioner pilot programs initially focussed on practice in rural and remote areas where there is said to be a shortage of medical practitioners. Developing the nurse practitioner model in the other states has not been limited to rural and remote practice.

Nurses can substitute for general practitioners in many primary care tasks, for residents in intensive care units, and can undertake high-level triage functions in hospital emergency departments. Midwives also play a significant role in maternity care. In general, most Australian experience in substitution has occurred in areas which are relatively unattractive to medical practitioners (eg, rural areas, aged care, services for Aboriginal people and Torres Strait Islanders) and hence substitution strategies have not caused conflict with the medical profession.

The basis for independent nursing practice is a sound educational base to make diagnosis and treatment judgements. Opportunities for substitution would be substantially greater if nurses had independent prescribing rights (for either a limited range of drugs, or according to specific protocols). The extent to which nurses should have independent prescribing and practice rights is thus a critical issue for determining the future role of the nurse. It is also likely to be a contentious one, attracting opposition from the medical profession, as did the transfer of nursing education to universities in the 1980s (Hazelton 1990).

Discussion of the development of expanded nursing roles (including nurses' prescribing) is confused by a focus on the payment arrangements e.g. an automatic assumption that the development of a 'nurse practitioner' means a change of payment arrangements from an employment model to fee-for-service based remuneration. There is no reason why the development of a nurse practitioner model needs to involve independent fee-for-service practice.

The economic viability of substitution and enhanced nursing roles must also take account of the effects on treatment thresholds. If nurses become the first point of contact with the health care system, this may change the perception of consumers about whether or not they should initiate a health consultation. Conditions that might have previously been self-managed may, in the new environment, lead to a professional consultation, with consequent increases in the volume of consultations and total measured costs.

Policies on substitution should also involve consideration of whether all the tasks currently undertaken by professional nurses should continue to be undertaken by those nurses, or whether they can be delegated to other personnel, either associate professionals (enrolled nurses) or persons with shorter more generic training.

Change in roles, including greater substitution, needs to be carefully planned, and accompanied by appropriate legal protection (Dowling et al. 1996). As was noted earlier, there are considerable differences in the relative proportions of professionals and associate professionals in the nursing workforce, partly reflecting decisions in different states about which tasks can be undertaken by enrolled nurses and which can be undertaken by other personnel. This is particularly important with respect to employment in nursing homes. If professional nurses are to undertake an expanded role, some tasks currently undertaken by nurses will need to be delegated to other personnel. Given constraints on health funding and available places in universities, a significant expansion of the nursing workforce is relatively unlikely.

Finally, resolution of legal, economic and organisational issues relating to broader nursing roles will not necessarily mean that implementation of the new roles is easy. Opposition to broader roles may well derive from ideological/value differences or opposition to a perceived market competitor. Broader roles for nurses may eventually lead to increased power for nurses in policy debates, to the detriment of those, especially the medical profession, who occupy that policy space at present.

Issues relating to substitution in the health workforce lead on to consideration of what is the appropriate model for nursing workforce development. At present there are three major levels of entry into the nursing workforce: a registered nurse who graduates from a 3-year university program, a 12-18 month trained enrolled nurse, and a nursing assistant with very short training in the vocational education and training sector. An alternative model would be a structure involving an initial preparation of four years for registered nurses, and two years for enrolled nurses, with the nursing assistant level unchanged. An enrolled nurse with two years training could undertake a much broader range of tasks and should be able to provide the predominant staffing in most hospital settings.

A model of this design that increases the average length of training would be substantially more expensive if current roles were to continue. However, in order to be cost effective the model would need to be accompanied by a major change in roles and a significant reduction in the demand for four year trained registered nurses. In this model, the registered nurse would be employed in professional and consultative roles as well as having prescription rights and would function in a way analogous to the autonomy exercised by other health professionals. In turn, this model would require a review of the current ratios of registered to enrolled nurses. Such a model could only be implemented in a phased way given the large number of existing nurses who would need some additional educational preparation.

The nursing workforce is increasingly segmented into specialties e.g. midwifery, intensive/critical care nursing, emergency nursing etc. These specialties generally parallel medical specialties, many of which could not now function without appropriate specialist nursing support (AMWAC 1998). The education pathway for each of these nursing specialties is different and thus the workforce needs of each should be planned separately.

Responsibility for initial preparation of nurses rests with the universities, loosely coordinated by the Commonwealth government. Each university makes an independent decision about course design, number of entering students, postgraduate course offerings and so on. University decisions have critical consequences for the health and community service sectors in terms of the numbers of entering registered nurses and yet there are no mechanisms at national level and few mechanisms at state level to ensure that these university decisions impact positively on future workforce requirements. The need for national coordination in this area is self-evident but sadly lacking.

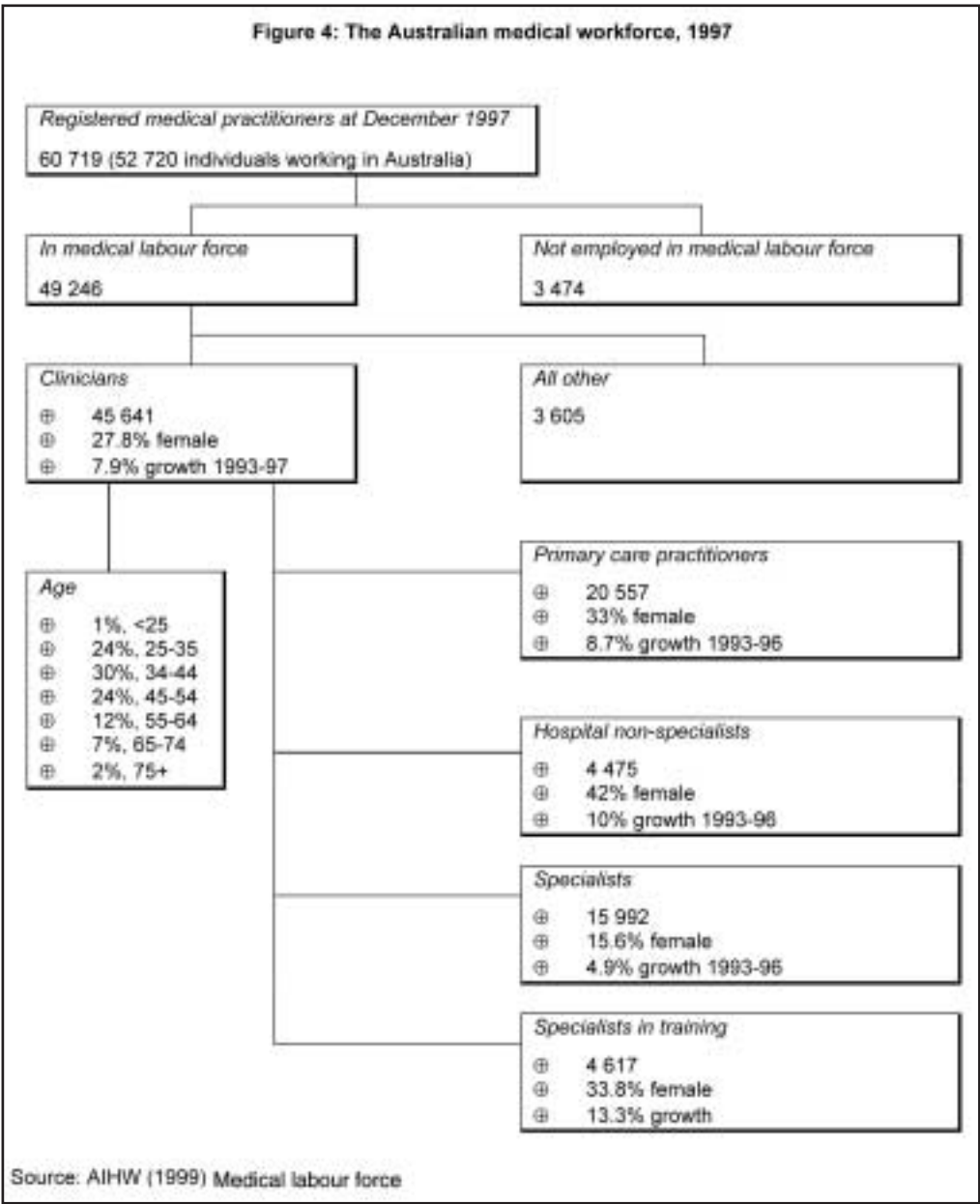
Medical workforce

The medical workforce accounts for about 13% of the entire health workforce. The most recent source of data on the medical workforce is for 1997 (AIHW 1999 Cat No. HWL 13; this publication is updated on the Australian Institute of Health and Welfare website). Figure 4 summarises the overall medical workforce information.

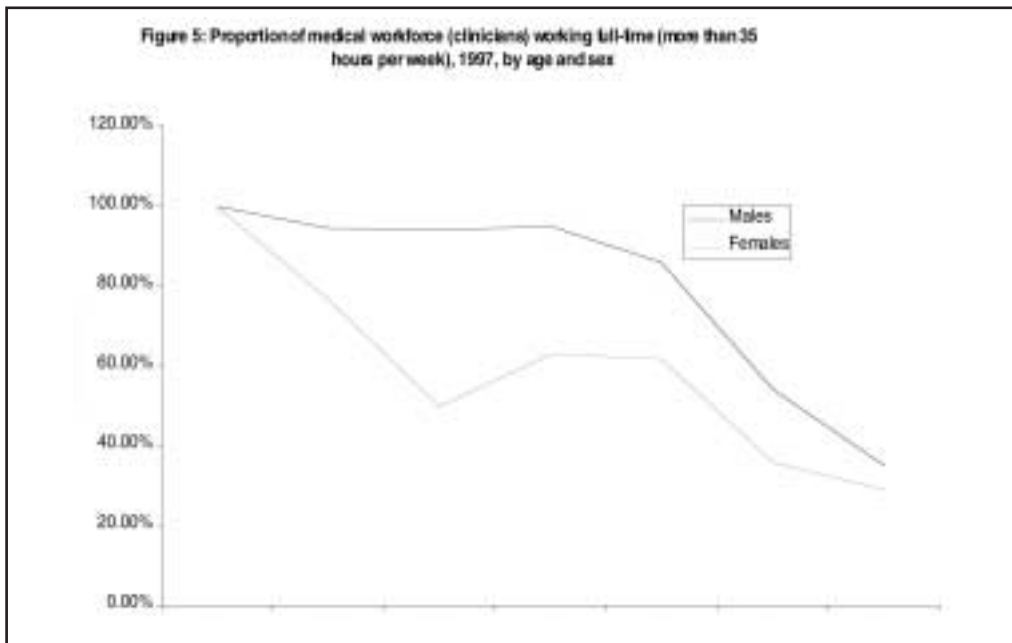
There are around 50 000 individual medical practitioners working in Australia. There are around 60 000 medical practitioners on state and territory registers, but this includes multiple state registrations as well as medical practitioners currently working overseas. Of the individual practitioners registered, 93% are in the medical workforce, most of these (92.7%) being clinicians.

The clinical workforce is divided into primary care practitioners (about 45% of the medical workforce); hospital-based non-specialists (10%); specialists (35%); and specialists in training (10%). The proportion of women in each of these areas differs remarkably, with 33% of primary care practitioners being female compared with 16% of specialists. It is interesting to note that there is a larger proportion of female specialists in training relative to the female specialist workforce, which may suggest that, over time, the proportion of women in the specialist workforce will increase to that in the primary care practitioner workforce, subject to similar attrition patterns.

The female proportion of medical graduates increased from 40% in 1988 to 47% in 1994 and has stabilised since then. Females therefore comprise a significantly higher proportion of entrants into the medical workforce as a whole. As Figure 5 shows, females have a different work pattern from males, with a lower proportion of the female workforce working full-time.



‘Feminisation’ of the medical workforce results in fewer effective full-time medical practitioners being available. Although the proportion of female medical practitioners working full-time may increase as family-friendly work place policies are introduced, the relative proportion of female practitioners in the workforce will remain a significant variable to be taken into account in workforce planning (for comprehensive reviews of this issue see AMWAC and AIHW 1996 and 1998 AMWAC Reports 1996.7 and 1998.4).



Source: AIHW (1999) Medical Labour Force.

The clinician workforce has grown by about 8% over the period 1993-97, with the smallest growth occurring in specialist positions. It is again interesting to note that the number of specialists in training is growing rapidly. This suggests that, as the trainees graduate, the specialist growth rate will begin to increase. (The rapid growth in specialists in training may be driven by government policy to limit access to Medicare provider numbers to specialists and Fellows of the Royal Australian College of General Practitioners (FRACGP) or equivalent.)

The fastest growing area of employment for clinicians is in the hospital non-specialist workforce, growing 13% over the period 1993-97. This growth is also a result of specific policies at both Commonwealth and state level, in this case, to change the composition of the workforce in hospitals by using career medical officers to undertake work previously undertaken by specialists in training or junior doctors (Mason et al. 1993; van Konkelenberg and McAlindon 1993). Use of career medical officers reduces the overtime hours of trainees and provides experienced personnel in a range of specialty areas, albeit without specialist qualifications.

As Figure 6 shows, there is considerable variation in the number of employed medical practitioners per 100 000 population around the Australian average (259.5). The highest ratio of employed medical practitioners in South Australia (287) is almost 20% above the ratio in the lowest state (Queensland, 238).

Figure 7 shows trends in general practitioner: population ratios in urban and rural areas in Australia. There has been a significant increase in general practitioner provision in both metropolitan and rural areas, with a higher ratio in capital cities relative to rural and remote areas. What is remarkable about this is that, although there is a perception of under-provision of general practitioners in rural areas and a significant focus of policy attention on access in rural and remote areas (Humphreys et al. 1997), the contemporary level of access in rural centres is above the metropolitan level in 1984.

The size of the medical workforce is affected by the flow of internationally trained practitioners. There are two main pathways for recognition of internationally trained medical practitioners. The most common is the pathway for general registration. In the period 1995-97, an average of 875 candidates presented to the Australia Medical Council for the multiple choice questionnaire component of its examination. An average of 325 candidates passed the examination each year, with an average of 237 per annum passing the clinical examination for registration. The alternate pathway is for specialist recognition and on average 54 people achieved specialist recognition per annum in the last three years.

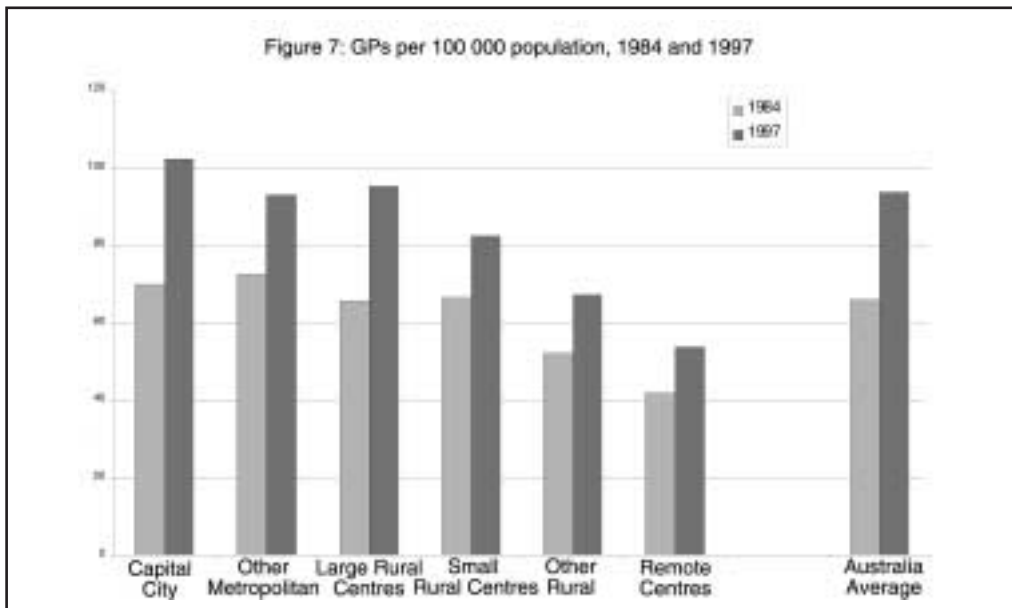


Source: AIHW (1999) Medical labour force.

An important flow affecting the medical workforce relates to medical practitioners migrating to Australia for short-term employment. In contrast to the relatively small numbers completing the Australian Medical Council recognition process, an average of 815 doctors migrated to Australia for a short stay in each of the years 1995-97. Of these, over 70% were doctors trained in the United Kingdom or Ireland, with a further 10% trained in the United States of America and Canada, and 5% in New Zealand. Doctors from these countries are often able to achieve temporary registration to fill positions in areas of designated workforce shortage, especially rural areas. They are obviously an extremely important component of the medical workforce in Australia.

Workforce planning for the specialist medical workforce involves the same considerations as for the general practitioner workforce. However, because the number of personnel involved is obviously a subset of the total workforce, planning involves a finer detail in decisions in terms of increasing or reducing supply. In a provocative paper, Paterson (1994) suggested that there was considerable imbalance in the specialist workforce, principally based on the differential earning power of the different specialties. In the context of the debate about Paterson's thesis, it was suggested that a number of specialty associations were restricting entry into the specialty in order to maximise income. As indicated earlier, restriction on supply is often justified on the basis of the need to maintain quality.

A major review of the surgical specialist workforce in 1994 (Baume 1994), argued that there were shortages in a number of surgical specialties and recommended improved processes to address surgical supply. Since then, medical workforce planning has improved with the creation of the Australian Medical Workforce Advisory Committee (AMWAC) that has clear policy and implementation processes. AMWAC has produced a number of reports on a range of specialties, the recommendations of which often include increasing the number of trainee positions. These recommendations are often adopted by states that fund and regulate hospital training positions.



Source: AIHW (1999) *Medical labour force*.

Contemporary issues in medical workforce planning

Policy on the development and management of the medical workforce has changed dramatically since the 1970s. There have been five major policy reviews of the medical workforce in this period with significantly different recommendations (see Table 5). There has been a complete reversal of policy over this period.

Development of policies on the medical workforce is confounded by two conflicting objectives of government. On the one hand, government, through Medicare, is the major funder of medical services in Australia. Viewed from that perspective, government's objectives are associated with minimising growth in medical expenditure. On the other hand, government also has objectives about ensuring adequate access to medical services as part of its health policies. During the mid to late 1990s, government pursued two strategies with respect to restraining expenditure. The first, implemented by the Labor Government in 1995, was an attempt to reduce the number of medical graduates produced in the country by limiting intakes into medical schools. Although some temporary reductions were achieved and some redistribution of intakes from South Australia to the Northern Territory, this strategy failed to effect any long term reduction in medical school intakes. The second strategy, implemented by the 1996 Liberal Government, separated medical registration from entitlement to bill Medicare for medical services. The government introduced a policy of restricting new Medicare provider numbers to people who had achieved specialist, including College of General Practitioner, recognition. Simultaneously, the government also introduced steps to address the perceived relative shortage of services for medical services in rural Australia.

As for nursing, a critical issue in workforce planning relates to the future role and place of the medical profession. There can be considerable overlap in the role of nursing and medical practitioners in primary care and in major hospitals (see also Dowling et al. 1995). Nurses, especially if granted limited prescribing rights, can undertake many of the contemporary functions of medical practitioners in primary care without any reduction in quality of care (Sergison et al. 1999). Given the difficulty of attracting medical practitioners to rural areas, a nurse-led strategy would seem to form a key part of addressing rural medical workforce shortages. Similar strategies could also be applied in metropolitan areas.

Table 5: Medical workforce policy recommendations

Report, year	Direction	Key recommendations
Karmel 1973	Expansion	<ul style="list-style-type: none"> • Increase graduates by about 300 p.a. • New medical schools at University of Newcastle and James Cook University of North Queensland
Doherty 1988	Stable	<ul style="list-style-type: none"> • No need for reduction in medical school intakes but review in five years • New graduates expected to be around 1 160 in early 1990s and this is adequate
Budget 1995	Contraction	<ul style="list-style-type: none"> • Aim to reduce medical school intakes from around 1200 to around 1000 p.a.
AMWAC 1996	-	<ul style="list-style-type: none"> • Endorsed 1995 Budget targets
Budget 1996	Contraction	<ul style="list-style-type: none"> • Changed policy focus from medical school intakes to number of doctors billing Medicare. • Continued 1995 policy emphasis of concern about metropolitan general practice oversupply

There are also potential overlaps in some areas of the specialist workforce. For example, in the United States, nurse anaesthetists play a significant role in the provision of anaesthetic services, complementing and substituting for medically qualified anaesthetists. In the United States, and to a lesser extent in the United Kingdom, podiatric surgeons undertake some orthopaedic surgery, which in Australia tends to be the preserve of orthopaedic surgeons.

These issues of substitution and role clarification are going to become increasingly important as the cost of educating nurses, podiatrists, etc. is substantially less than educating medical practitioners, and the average earnings of these groups are lower than for the general practitioners or specialists for which they substitute. It would appear cost effective for there to be wider use of alternative personnel in provision of health care, subject to ensuring that the time taken to perform similar tasks is similar and that the quality of care is not affected. In the long run, however, wage creep might change the salary relativities. Identifying what is the unique role of medical practitioners then becomes an important issue for policy.

Workforce supply is determined by multiplying two variables: the number of professionals and the hours each professional works. The feminisation of the medical workforce will impact on the average hours worked of medical personnel and hence will reduce the effective supply. The extent to which a given level of workforce supply can meet demand is affected by a further variable: the consultation rate per professional per hour. This latter variable is particularly amenable to short term change through financial incentives to change the average length of consultation, and by improving efficiency through better organisation of a practice. For example, increased productivity in medical practice could be achieved by consolidating medical practices into larger practice groups and using auxiliary personnel. This may also have benefits in terms of increasing quality by improving patient access to practitioners with a different set of skills in the health team (such as nurses or physiotherapists).

Policy change on length of consultation time is quite complex, as very short consultation times are often perceived to be associated with poorer quality care. Workforce policy thus needs to be clear with respect to the trade-offs it is trying to achieve.

As already discussed, the medical workforce is segmented both by a series of specialties and by location. Medical workforce policy needs to be quite sophisticated to ensure that relative shortages in labour market segments are addressed without creating excess supply in other segments of the market. This suggests that financial incentives, when used, need to be carefully targeted. Workforce segmentation also highlights the importance of training (and retraining) programs.

Globalisation of the international economy will also impact on the medical workforce, with pathology and radiology services probably the first to be affected with the dissemination of technology for the digital transmission of views of specimens and medical images. This will mean that a specialist pathologist or radiologist, located remotely from the patient, will be able to provide a report on the examination. Internationalisation of the ownership structure of pathology and radiology practices is already occurring.

Policy on 'telehealth' (tele-radiology, tele-pathology) has typically focussed on the potential to improve services in remote Australia by telecommunication connection to metropolitan areas. However, there is no technological reason why the communication cannot be to a pathologist or radiologist in another country. The extent to which this occurs will in part depend on financial incentives (Medicare may not pay for these services), and legal constraints (Is the pathologist or radiologist providing a medical service in Australia? Are they registered? Do they need to be registered for this purpose? Can another doctor rely on a pathology or radiology report by a practitioner who may not be registered in Australia? Who is legally liable for negligence and how is that enforced?). Nevertheless, inevitably there will be increased emphasis on telehealth which will impact on labour force requirements.

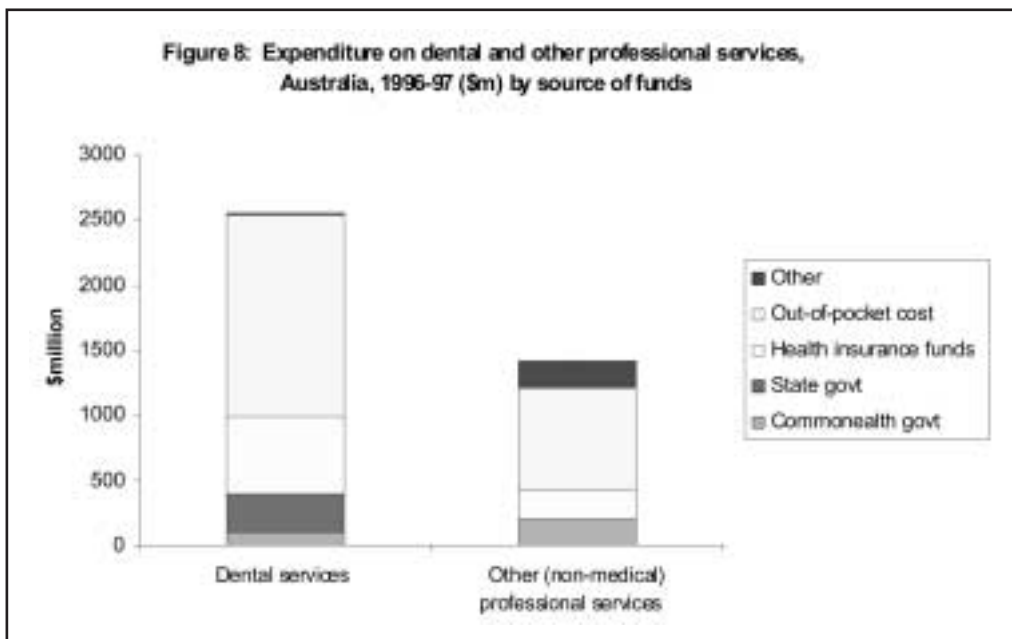
The development of the European Union has also meant that there is free movement of labour between European Union countries. A medical practitioner trained in Germany is able to work in any other European Union country, despite the very different approaches to medical education and medical practice across member countries. A similar economic zone in the Asian area (which might emerge from Asia-Pacific economic cooperation) would also have profound implications for the medical workforce.

Other health professionals

About one-fifth of the health professional workforce consists of people trained in a wide variety of professions including pharmacists, dentists, chiropractors, therapists, (e.g. physiotherapists, occupational therapists, speech pathologists), and non-medical professionals trained to assist in diagnostic techniques (e.g. medical imaging technologists). Some of these groups are able to diagnose and treat patients independently (dentists, podiatrists, chiropractors). Others may not have direct interactions with patients (e.g. health information managers and those supporting diagnostic modalities). These health professionals are involved in a range of employment locations. Unlike nursing staff, the vast majority of whom are employed in hospitals, only a minority of these other health professionals (around 20%) are employed in institutional locations with the majority employed in non-institutional settings, including private practice.

Unlike the situation with respect to 'private' medical practice, which is underpinned by public health insurance through Medicare, no similar direct public support for independent private practice is available for most of these professions. The major exception relates to optometry, which is encompassed within the Medicare arrangements. As part of the negotiations for inclusion of optometrists within the Medicare Benefits Schedule, the optometrical profession agreed that MBS benefits would only be paid to optometrists who committed to charging all patients at or below the schedule fee and direct (bulk) billing all pensioners (Scotton and Macdonald 1993). This 'participating optometrist' scheme is unique in Medicare and has led to continuing high levels of direct billing (95% of all optometrical services in 1998/99). Pharmacy also attracts public support as the Pharmaceutical Benefits Scheme provides important underpinning for private community pharmacy through the mark-ups paid by the Commonwealth for medication dispensed under the Scheme.

Although the Medicare schedule is principally focussed on rebates for the work of medical practitioners, it includes a number of items that do not require the direct personal provision by the medical practitioner. These items can be rendered 'on behalf' of a medical practitioner where another professional, either employed by the medical practitioner or 'acting under the supervision of the medical practitioner', renders the service. In either case, the service must be billed in the name of the medical practitioner who accepts full responsibility for the service. Typically, where the other health professional is not directly employed by the medical practitioner, there would need to be quality assurance processes for data acquisition and the medical practitioner would sign off on the report, presumably after analysing the data reported by the other health professional. The most widespread use of billing for services not 'personally provided' is in the provision of pathology services but it also applies in a range of other areas such as radiation oncology where imaging technologists administer the treatment, audiology and orthoptics. The Medicare Benefits Schedule also provides for some assistance for dental services in the area of oral surgery.



Source: AIHW (1999) Health Expenditure Bulletin.

The major sources of funds for professional services are shown in Figure 8. It does not include expenditure in the category 'community and public health' which would also encompass expenditure on health professionals such as physiotherapists. Over \$2 million was spent in this category, and is principally sourced from government, the majority from state government. This category is not further subdivided in the published data and also includes expenditure on nursing, medical and other services. Information on pharmaceuticals is also not included in Figure 9.

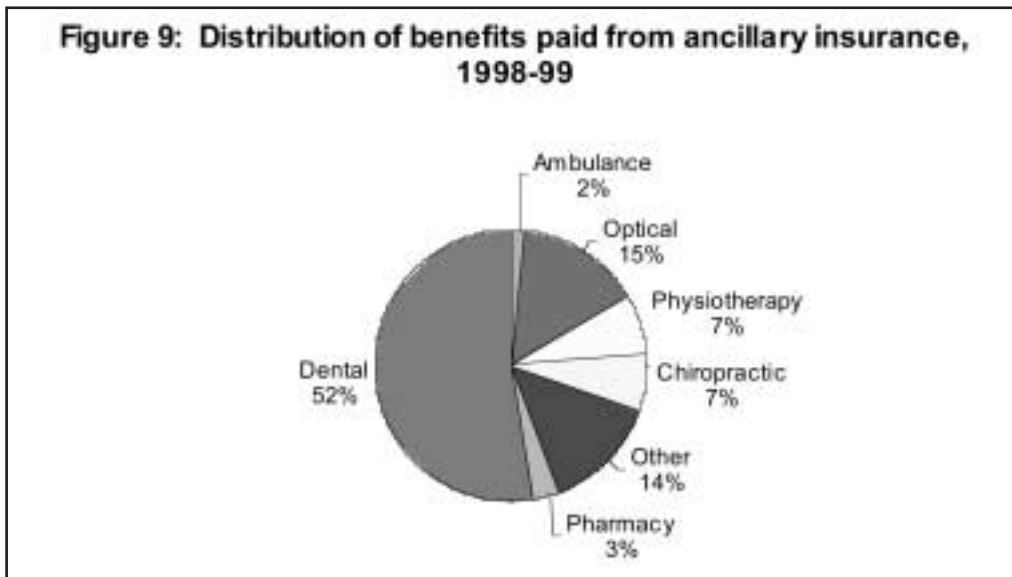
It can be seen that the pattern for dental services is quite different to that for the other professionals. A much higher proportion of dental expenditure is sourced from government, even after the withdrawal of funding from the Commonwealth Dental Scheme (Lewis 2000, Senate Community Affairs Reference Committee 1998). Over half the funding for other health professionals is sourced via health insurance funds. The current Federal government rebate of 30% of the cost of health insurance thus provides a significant indirect subsidy to fees for these services.

However, 'ancillary insurance', from which the health insurance benefits for other health professionals is paid, has, like hospital insurance, declined over the last decade. The decline in ancillary insurance is not quite as steep as the decline in hospital insurance: ancillary insurance declined from 40% of the population for the year ended 30 June 1990 to 32% in the quarter ended 30 June 1999 compared to the hospital insurance decline from 44% to 30.5% over the same period. The level of ancillary insurance differs between the states from a low of 22% in Victoria to a high of 55% in Western Australia.

Over half the payments from ancillary insurance tables is for dental services (see Figure 9) with optical services accounting for almost one-sixth of expenditure (although optometry is covered by Medicare, the cost of glasses themselves is not covered by Medicare). Other significant expenditures from ancillary tables are for chiropractic and physiotherapy services.

Like insurance for hospital care, ancillary insurance is more common amongst people with higher incomes. Given the significant proportion of funding raised from insurance, it is not surprising that higher income groups have better access to services such as dental, physiotherapy and chiropractic (Schofield 1999).

Another significant source of funding for other health professionals is from third party insurance arrangements such as transport accident and workers compensation insurance.



Source: Private Health Insurance Administration Council (1999).

Challenges facing health professionals

The working environment for other health professionals in the public sector has been significantly affected by the financial squeeze in that area (Ferguson 1998). The non-medical, non-nursing health professionals have been traditionally relatively weak in hospital power structures as they do not have the status and role in attracting and treating patients directly as medical practitioners do, nor the numerical dominance of nurses. As a result, these health professionals have felt excluded from the decision-making processes of hospitals. The strategy of the mid to late 1980s to counteract this was the creation of 'allied health divisions', to parallel similar structures for the medical profession, and the creation of senior allied health leadership positions in hospitals to head the division. However, these leadership positions were often removed with the funding reductions of the mid to late 1990s.

The increased use of casemix funding in hospitals has called into question the contribution of the health professions to the treatment process. The evidence about the extent to which therapy services contribute to improved outcomes or improved efficiency is somewhat mixed (Liang et al. 1987; Haas 1993; Cherkin et al. 1998). This may in part be because most of these professions were relatively latecomers to university education and so do not have a long tradition of research to determine their effectiveness. This is changing and for the last decade, all of these professions have been educated in university settings and there has been a parallel development of research into these areas.

Although many of the professions are educated in faculties with a multidisciplinary focus, only a small proportion of the undergraduate curriculum is designed to foster the teamwork necessary in these professions post-graduation. As a result, there is some disjunction between the expectations of therapists on graduation and the nature of the work that is undertaken. This means that, as with medicine, people graduating in other health professions require consolidation of their professional training through a formal (or informal) internship arrangement. Unfortunately, the funding reductions in the hospital sector have tended to reduce these learning opportunities.

The increased use of multidisciplinary care plans (Tallis and Balla 1995, Wang et al. 1997) which systematised the treatment and care processes in hospitals has provided increased opportunities for the various health professions to articulate and demonstrate the contributions they can make to improving outcomes or increasing efficiency in hospitals. Although care plans cover a minority of the care provided in hospitals, they at least provide a framework of ensuring that the role of all the health professions is clearly recognised.

Conclusion

The health professions are facing a range of problems. Some of the problems being faced by the professions are similar: during the 1990s, all hospital-based staff have been subject to reduced funding and organisational restructuring. The reduced funding has often been associated with increased accountability through casemix funding and calls for a greater emphasis on evidence-based practice.

The political environment in the institutional sector means that the professions have not been equally affected by these changes. Medical staff have traditionally had greater power in the sector and, although they have not escaped unscathed, their power has ensured that the medical profession has not been challenged to the same extent as the two other main groups of professionals, nurses and 'allied health staff'. The impact on these two other groups has principally come through reduction in the number of staff and increased intensity of the workplace (reduced staffing per patient and increased acuity or complexity of patients). These changes are often shortsighted because of the role of professions such as occupational therapy and social work in facilitating discharge. Indeed expansion of these services may be a cost effective use of institutional funds.

The interests of the professions are also not coincident because substitution affects the professions differentially. Nursing staff may substitute for medical staff in rural communities; similarly substitution can also occur in major teaching hospitals where nursing staff could appropriately substitute for some medical staff in intensive care units, cancer treatment, emergency departments and so on. In some states, hospital funding design militates against such substitution e.g. by providing a significant subsidy for employing hospital-based registrars. There are similar possibilities for substitution of allied health for nursing staff (and vice-versa) and other non-medical disciplines for medical practitioners.

As relative latecomers to university-based education, the non-medical professions do not have as strong a research base as the medical profession, nor do the university-based health professional schools have the generous funding that medical schools have been able to garner. However, university-based education and the development of clinical academics in the non-medical professions mean that the scientific base of these professions is increasing, as is their visibility in the workplace and in policy formation. In the long term, these changes may begin to address some of the power imbalances in the health sector and provide a sounder basis for more equitable teamwork in health care. This will be to the long run benefit of patients and other consumers.

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