Contemporary issues in the workforce and education of Australian midwives

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Abstract

This paper, which is based on the preliminary findings of the Australian Midwifery Action Project (AMAP), outlines the issues around the midwifery labour force and education in Australia. One of the most alarming features is the lack of comprehensive data on midwives. Where data is available it demonstrates the shortage of midwives and the lack of consistency in educational programs for midwives within states and nationally. It is difficult to form a national picture with published sources of data because there are differences in definition and a lack of relevant information. Strategies for educational reform are discussed in relation to improving the supply and preparation of midwives.

Australian population data

The practice of midwifery is integral to the care of women in childbirth. In Australia during 1998 there were 249,600 live births, the majority of which occurred within the hospital setting (ABS 1999). The crude birth rate has declined from 21.7 per 1,000 people in 1971 to 13.9 per 1,000 in 1996 (AIHW 1998). Since 1984 the infant mortality rate has almost halved from 9.24 deaths per 1,000 live births to 5.86 in 1994 for non-Indigenous mothers. However it remains nearly double that rate for Indigenous women (AIHW 1998).

Over the decade 1984-1994 the overall fertility rate remained stable at 2.1. The latest figures show this has dropped, however, to 1.76 for non-Indigenous women in 1998 (a figure slightly higher than some European countries), and remains at 2.2 for Indigenous women (AIHW 1998, ABS 1999). The population projections of the Australian Bureau of Statistics show that the fertility rate could fall to 1.75 in the years 2005-6, but should remain constant at that rate (ABS 1999).

Despite fertility being below replacement level, Australia's population is projected to grow through natural increase until at least 2041 because of the large numbers of women of childbearing age. This is an echo effect of the post war 'baby boom' caused through the grandchildren of the large number of people born in the 1950's and 60's having their children (ABS, 1996). Population projections demonstrate a continuing need for maternity care that is dependent on various levels of skill and expertise. Australia's high standards of maternity care assume the presence of qualified midwives who offer safety and support for women in childbirth and the puerperium in collaboration with medical colleagues, and increasingly as alternative providers (AMWAC 1998). The shortage of registered midwives will inevitably impact on the quality of care provided in maternity services.

An ageing midwifery labour force

The Australian Institute of Health and Welfare report, "Nursing Labour Force, 1993 and 1994" showed that the proportion of nurses aged less than 25 years had declined from 33.3% in 1981 to 6.0% in 1994 (AIHW

1995). This change in the structure of the workforce was largely due to 'nurse training moving from hospitals to universities and to increases in retention and labour force participation resulting from improved part-time employment opportunities' (Harding 1997p129). The latest figures show that the trend has persisted, and the average age of all employed nurses was 39.9 years (AIHW 1999).

Where data is available it shows that the midwifery workforce reflects this profile even more strongly. For example a recently published study by Watson et al found that nurses were five times more likely to be in their twenties than midwives - 26% compared to 5% (Watson et al 1999). The study of 240 practising midwives in Victoria found that at least half of those in full time employment were over 40 years (Watson et al 1999).

The midwifery labour force data that exists - AMWAC and other sources

The availability of data on the midwifery labour force is one of the most pressing issues. The capacity to draw meaningful conclusions is compromised because of the use of non-standardised terminology and the incompatibility of databases and data domains (NSW Health 2000). The Australian Medical Workforce Advisory Committee (AMWAC) recently published its study of the supply and requirements of the obstetric and gynaecology medical workforce in Australia (AMWAC 1998). It attempted, but had difficulty in providing baseline data on midwives for this study. All States and Territories who responded indicated that there was an under supply of midwives. However, Victoria, South Australia and Queensland were unable to respond at all (AMWAC 1998). As in other nursing workforce publications, the AMWAC study data does not differentiate between enrolled and registered nurses working in midwifery and obstetrics in Australia. In Australia, a midwife is a specialist in the field of midwifery, who has gained a general nursing qualification (about three years) and then post graduate qualifications to enable her to register as a certified midwife (one to three years - depending on what course she takes.) The data specific to the profile of midwives showed that in 1995, 99.0% of the midwifery workforce were female, 25% of midwives were aged between 35 - 39 years, 65.5% of midwives are aged over 35 years.

Data which was not specific to midwives showed that in 1995, 74.1% of nurses employed as clinicians in midwifery and obstetrics were based in capital cities, 23.9% were located in rural areas and 1.9% were in remote areas.

A more complete picture of the midwifery work force was derived from all available sources of published data, including the AMWAC Report 1998.

Table 1 illustrates the numbers and average ages of registered and practising midwives by State and Territory; the vacancies known to exist, and in some cases the students needed to maintain the workforce. It is drawn from several referenced sources and by combining available published data it provides a representational overview of the situation. It is not a quantitative measure of the current workforce and should be viewed only as a crude estimate.

Table 1. Available data to illustrate numbers and average ages of registered and practising midwives by State /Territory in Australia 1995-1999

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
#Births	86,263	62,732	47,864	25.090	19,310	6,682	4,830	3,607
Registered Midwives	ϕ10,400	***13,347	♣8,125	ϕ2,814	♦	*870	♦	♦
Practising Midwifery	ϕ3,044	†3,566	♣2,600	ϕ931	§1521	ϕ357	±343	ϕ167
Vacancies	ϕ90	♦	♣128	ϕ66	♦	♦	♦	ϕ37
Average Age	ϕ35-39	**40-49	♣41	ϕ42.7	§40	ϕ45	♦	♦
Students needed	ϕ320	♦	♣180 -200	ϕ70	§109	♦	♦	♦

Sources:; #AIHW 1998; ± AIHW 1999 Nursing Labour force 1998; ϕAMWAC Report 1998; ♣Qld Health 1998 Midwifery Workforce Planning for Queensland; **ACMI 1999 Reforming Midwifery; ***Nurses Board of Victoria Annual Report 1998; †Victoria Department of Human Services 1999 Nurse Labour force Projections Victoria 1998-2009; § Rawinski et al South Australian midwifery training Requirements 1997-2001; *ACMI (Tas) 2000; ♦ Data unavailable

The Australian College of Midwives Inc. estimate the actual number of registered midwives in Australia to be about 70,000 (ACMI 1999). This figure is taken from registers held by the state and territory Nurses Boards and does not reflect the actual or even potential midwifery workforce. For example the Nursing Labour Force document for 1998 cites 28,125 employed registered nurses who identified practice skills used in the past five years for longer than twelve months as 'midwifery skills' (AIHW 1999). The same document also reports the number of registered and enrolled nurses employed outside nursing to be 9,094 in the same year. The recently completed "NSW New Graduate Study" reports that 30% of newly qualified midwives did not seek midwifery related employment on graduation (NSW Health 2000). Historically and until recently, midwifery was commonly undertaken in Australia as a second certificate in nursing not necessarily with the intent to practice as a midwife (Barclay 1995).

The information held by the state Nurses registration boards pertaining to actual numbers of registered midwives and practising midwives is collected for the Australian Institute of Health and Welfare and is not freely or publicly available. The latest published data on the nursing labour force from the AIHW reported in 1999, includes a table with percentages of registered and enrolled nurses employed as 'clinicians' in Australia. The figures quoted for nurses clinically based in midwifery are 13,209, or 6.7% of the registered and enrolled nurse force (AIHW 1999). The difficulty with this data is that it is not possible to separate out those nurses who are enrolled nurses practising in the area of obstetrics and maternity nursing, those who are registered nurses practising obstetrics and those who are registered or certified midwives practising midwifery.

Calculating the numbers of midwives needed using a rudimentary model.

Currently there are 3,000 midwives who are members of the Australian College of Midwives Inc., and the College believes their membership to be approximately 30% of all practising midwives. This estimate suggests there could be possibly 9 - 10,000 midwives at present in Australia, a significant number of whom are employed on a part time basis, who report their main area of work as 'midwifery practice'.

A projection of the number of full time equivalent midwife positions needed in Australia is based on the known statistic of 249,600 live births (AIHW, 1999). Allowing for one full time midwife in practice per 40 births, the estimated number of full time practising midwives needed to provide services for these women alone would be around 6,500. A number of midwives are also employed where their midwifery knowledge and skills are necessary, in teaching, neonatology, gynaecology, women's health, early childhood services, family planning and research. In addition, a group will move into leadership through management positions.

We undertook a rudimentary modelling exercise, which built in attrition rates of 10% and part time employment based on 25% of the workforce. The attrition rate is lower than the 30% attrition rate found in "The New Graduate Midwives Survey" undertaken by the NSW Health Department (NSW Health 2000). The part-time estimate is also more conservative than figures from the nursing workforce data showing only 42.9% of registered nurses employed in midwifery, obstetrics and gynaecology were working full time (AIHW, 1999); or the AMWAC Report 1998 showing only 47.0% were working 35 hours or more; or a recent study of practising midwives in Victoria showing only 27% in full time work and 73% in part-time employment. (Watson et al 1999).

We based our calculations on the need for 8,558 midwives just for direct clinical midwifery care (excluding gynaecology and obstetric nursing). This figure agrees broadly with some of the other estimates that were made using New South Wales's specific data (NSW DOH, 1996). We estimate we are currently educating about five hundred and fifty (550) student midwives in Australia. This is based on estimates of 22 pre-registration programs with an average of 25 students in each course (AMAP figures 1999).

Using a conservative estimate of 10% of the current workforce needing to be educated annually to maintain a steady supply, and 10% more needed to cover attrition, and assuming 8,558 midwives are needed to fulfil the needs of clinical services, the number of students required in programs today would be around nine hundred and forty (940). Our conservative, 'best estimate' suggests we are currently educating 550 students, which is less than two-thirds of the number required. The recently released "New Graduate Midwives Survey" confirms that 'the pool of new graduate midwives supplying the midwifery workforce is considerably less than the predicted numbers required to adequately sustain the workforce' (NSW Health 2000 p 7).

There are further complications in basing estimates on student numbers because of the difficulty in separating out overseas students from those who intend to work in Australia. We cannot determine the actual number of overseas fee paying students in midwifery programs at present, although we know that 46.4% of students commencing post-basic nursing courses in 1998 were overseas students (AIHW, 1999).

Issues in rural Australia and in particular concerning Indigenous midwives

Rural and remote Australian women are suffering most as a result of shortages of midwives according to health service leaders and Government figures showing regional skill shortages (Serghi 1998). Where maternity services have been closed down it is socially disruptive, expensive and distressing for Anglo Australian women to travel great distances to larger centres. However, the results for Indigenous Australians show up even more starkly in statistics. Data on the health of Indigenous mothers and babies demonstrate a crisis in providing acceptable services for these people. Although there have been reductions in infant and maternal mortality among Indigenous people, the differential in birth outcomes between the Indigenous population and other Australians has not been eliminated. The proportion of low birthweight babies (under 2500 grams) born to Indigenous women has remained two to three times higher than for non-Indigenous women (ABS 1997, AIHW 1998). Similarly the stillbirth rate and the death rate for babies in the first 28 days of life are two to four times higher (AIHW 1998). In the Northern Territory the perinatal mortality rate for normal birthweight babies of Indigenous mothers is 20 times greater than that of babies of non-Indigenous mothers (Markey et al 1996). Other States also report alarming differences in perinatal mortality rates between Indigenous and non-Indigenous people (ABS 1997, Crowley 2000).

Three of the most recent reports on health and birthing services available to Indigenous women draw consistent conclusions and make similar recommendations (Kildea 1999, Hecker 2000, Standing Committee on Family and Community Affairs 1999). They include:

- an acute shortage of midwives and inadequate numbers of Indigenous people training to become health workers and health professionals. Although more than 40% of Indigenous people live in either rural or remote areas of Australia (AIHW 1998), 42.1% of nurses employed in these areas are enrolled nurses compared with 26.8% registered nurses. (AIHW, 1999).
- a lack of educational opportunity for Indigenous health workers and maternal and child health workers to be educated as midwives (Kildea, 1999, Hecker 2000).
- a need to build better links between Aboriginal women, support people and labouring women (Kildea 1999, Hecker 2000).

Nearly 30% of Indigenous mothers from remote communities have to travel away from their home location to give birth (Markey et al, 1996). This is not a problem in some places where cultural needs are fully met (Brodie 2000). However, for many women the loneliness of the separation from families, and the fear of strange surroundings are overwhelming. Many Aboriginal people fear that if they give birth somewhere other than on their homeland they may relinquish rights of traditional ownership (Kildea 1999).

The discussion paper from a recent Inquiry into Indigenous Health suggests that 'a vertically integrated system for the recruitment, education and training of rural and remote health professionals should be developed, based on the collaboration of governments and training institutions' (Standing Committee on Family and Community Affairs 1999 p20).

Similarly, a report on equity issues and universities' inclusion of Indigenous Peoples' rights and interests, funded by the Commonwealth government, recommended that 'universities need to accommodate Indigenous interests and rights across all facets of their operations-teaching, research, administration and community service. This requires more than cross-cultural awareness training, the incorporation of Indigenous perspectives in the curriculum or the employment of Indigenous educators. There is a need to create a space from where efforts can be made to reflect and entrench Indigenous values and protocols across all sectors of the university. No doubt this raises questions about making fundamental changes to the core values and ethos of the university so as to ensure that Indigenous knowledges and Indigenous ways of relating, seeing and doing are included and

given legitimacy. This is not only about inclusion, it is also about acknowledging the sovereignty of Indigenous peoples' (Anderson et al 1998 p4).

Both the cultural and financial barriers to the training and education of Indigenous midwives are significant. The cost, duration and geographic location of the present midwifery training programs disproportionately disadvantage Indigenous women.

The financial burden of postgraduate midwifery education: and the HECS

In 1996 the Higher Education Contribution Scheme (HECS) was altered and full fee charges were levied for the first time for postgraduate education. Midwifery is classified as a postgraduate qualification and therefore it now attracts full course fees. This places a considerable personal financial burden on nurses who wish to study midwifery, and affects both the recruitment and attrition rates of Australian students..

Disciplines were placed into differential HECS bands according to the cost of the course and on the average earning potential of graduates from those disciplines. Nursing was grouped with arts and education in HECS Band 1 with a $3,300 contribution. Despite the relative high cost of nursing education it was placed in Band 1 because of its relatively low earning potential. 'Other characteristics of the HECS arrangements were retained. That is, HECS is deferrable and payable through the taxation system-no qualified student would be prevented from entering higher education because of an inability to pay at the time of enrolment' (Andrews 1997 p17). However, in a later report, "Does HECS Deter?, Andrews found that only 19-21% of students entering Band 1 (nursing, education) were from low socio-economic groups (Andrews, 1999).

A recent discussion paper produced by DETYA stated that although the participation of women in higher degrees had increased steadily over recent years, this was mainly within HECS funded courses. The gains made by women in the postgraduate sector are tenuous because of the trend to reduce such courses (DETYA, 1999).

Similarly, Andrews found that while the level of (mature age) applicants from those entering higher education did not appear to have been affected by the introduction of HECS in 1989, they may have been subsequently affected by the changes in HECS funding. 'The number of mature age applicants is tentatively estimated... to have fallen by 10,000 persons or 10 per cent of mature age applicants due to the changes to HECS announced in 1997' (Andrews 1997 p 33). Analysis shows that the level of unsatisfied demand in the work place did not affect this fall in the number of applications from mature age students (Andrews 1997).

Many women and students from Indigenous and/or rural and isolated backgrounds are already either not making it into postgraduate study or facing financial hardship following further education (DETYA 1999). Research conducted by the Council of Australian Postgraduate Associations (CAPA) found that women in female dominated professions feel particularly disadvantaged by up-front fees where a relatively low level of employer support combined with low incomes pose serious equity problems (CAPA 1999).

Current attrition rates in midwifery education

Although there are no published data specific to attrition rates within midwifery courses, Table 2 is derived from several tables showing completion rates of Australian students entering nursing education (AIHW 1999 pp. 20-23).

Reliable anecdotal reports from universities in New South Wales suggest attrition rates in some midwifery programs are as high as 25%, enrolments in some programs as low as 50% and overseas students may fill up to 25% or more of the postgraduate midwifery places in some programs. The current competitive climate makes this sort of sensitive information difficult to verify.

Table 2. Percentage of Australian (permanent resident) students completing the basic and postgraduate courses in nursing in Australia from 1994-97.

COURSE	ENROL 1994	COMMENCE 1994	ENROL 1995	COMMENCE 1995	COMPLETE 1997 (%)
3 YR Basic Nursing	23,629	8277	-	-	5,323 (64.05)
Grad. Certificate	-	-	321	301	324 (100.0)
Grad. Diploma			2641	1843	1622 (88.0)
MA +	-	-	1217	637	298 (46.0)

Source: Nursing labour Force 1998, AIHW 1999

The addition of 23 in the Grad.Cert. course could correspond to those who were enrolled in a Masters course, but subsequently left to complete a Grad.Cert.

Inconsistencies within midwifery education

There are a number of post basic midwifery courses on offer in the universities of Australia. It is apparent there is no overall consistency in design, duration or level of award both nationally or within each separate state. Examples are as follows.

- The Master of Midwifery course in one state has the prerequisite Bachelor of Nursing (three years general nursing) with a practising certificate and offers 'contact time' 208 hours.
- In the same state, a Master of Midwifery prerequisite is a postgraduate Diploma of Midwifery, with one years' clinical experience in midwifery (three years general nursing, one year to certify as a midwife, one year practising as a midwife). This program offers 'contact time' of 200 hours.
- In another state, a Master of Midwifery prerequisite is described as a nursing degree with one year's post registration clinical experience in nursing (three years general nursing, one year practising as a nurse) and offers 'contact time' 672 hours (Ashenden and Milligan 1998).

The ACMI advises that preparation for practice should be at graduate diploma level. However, a number of the programs that are attached to licensing are now offered at master's level, affecting both the duration and cost of the program (Barclay 1995).

At present there is no national monitoring system to guarantee comparability or an adequate baseline of competence. Not all states and territories have adopted the current ACMI midwifery competencies (NSW Health 2000).

Retention of graduates through evidence-based models of care

In "Education Strategies for the Midwifery Workforce", a recently released draft document from the New South Wales Health Department, the tensions between the primary health care model and the realities of tertiary midwifery services were reported. 'In many cases services are not developed with sufficient attention to the expressed concerns of birthing women, population or epidemiological data' (NSW Health 2000 p25).

Research, including randomised controlled trials of midwifery care show that midwives offering continuity of care gain a significant increase in autonomy and work satisfaction (Flint et al 1989, McCourt et al 1996, Turnbull et al 1996, Rowley et al 1996). Where midwives care for women through the entire antepartum, intrapartum and postpartum episode, the maternal and fetal outcomes have been found to be safe, less interventionist and more satisfying for both the woman and the midwife involved (Flint et al 1989, Hueston et al 1993, Kenny et al 1994, Rowley et al 1995, Turnbull et al 1996, Harvey et al 1996, McCourt et al 1996, Waldenstrom et al 1998, Guilliland et al 1998, McDorman & Singh 1998, Hodnet 1999,Homer et al 2000) . Continuity of care models encourage midwives to use their skills cross community and hospital settings. Being based in the community provides a viable option for rural settings in Australia instead of the more costly 'roster

based' system within hospitals. It encourages a greater emphasis on 'problem prevention' and health promotion through community-based antenatal and postnatal care. This model of midwifery care is ideally suited to outcome based funding as opposed to fee-for-service funding.

Strategies to address the labour force shortfall through midwifery education

The first and most obvious strategy is to remove the postgraduate fee attached to midwifery education. Preliminary research suggests this is a major barrier for registered nurses.

A second strategy is to offer a three-year Bachelor of Midwifery (B Mid) or undergraduate midwifery degree program without the pre -requisite three-year nursing registration. (This is completely unrelated to the 'direct entry' midwifery program of thirty years ago which was a program of limited nature and has persisted in negatively influencing the perception of 'direct entry' education in Australia for the thirty years since the program was phased out (Barclay 1995).

In the last decade there has been resurgence in undergraduate degree programs in midwifery. The UK now prepares the majority of midwives in comprehensive three-year undergraduate degree programs (ENB 1997). Other Western countries have demonstrated a long-standing and more consistent commitment to specialist degree courses in midwifery; for example the Netherlands, France, Denmark and Canada offer midwifery education only and not as an 'end on' to nursing. In each of these countries undergraduate education to degree level for midwives is considered standard practice. New Zealand and the UK currently offer a dual route of preparation for nurses and non-nurses, however a number of universities plan to close postgraduate nursing midwifery courses in favour of the direct entry model (DOH 1998, Pairman 2000).

The context of innovation and improvements in midwifery education

Any changes in the current situation must consider the economics of a contracting funding base for the university sector. Nursing education, and by inference, midwifery education, has a high cost factor and a relatively low earning potential (Andrews 1999). If midwifery undergraduate programs were introduced they would share core subject teaching across midwifery and health programs. For example pre-registration midwifery graduates could move into shortened general nursing pathways, and to post graduate education in either nursing or midwifery. The BMid program would educate midwives who can provide a breadth of practice across tertiary, remote and rural areas.

The needs of women who seek low intervention, midwifery models of maternity care also have to be considered. A recent Senate Inquiry in Australia found that the availability of birth centre facilities are so limited for women in many areas, they are required to submit to a 'ballot' system, or a lucky draw to gain access to these birthing facilities (Crowley 1999). New models of education for Indigenous midwives would begin to address the alarming problem of poor outcomes in maternity care for Indigenous women and their families (Hecker, 2000).

A government-funded national review of specialist nurse education in Australia in 1997 revealed a range of factors to take into account in the planning and delivery of specialist nurse education in order to meet changing community and workforce needs. Amongst the main findings, it was recommended that 'the following factors be taken into account by the health and higher education sectors, government and the nursing profession in the planning and delivery of specialist nurse education:

- changing nature of health care delivery within the Australian community;
- emergence of new areas of nurse specialisation which meet the criteria given above for approval of nursing specialties;
- future development/s of the role/s of nursing specialists;
- demand by potential students in conjunction with workforce requirements (that is, market forces); and

- appropriate spread of nursing specialist programs across Australia in terms of: demographic trends and geographical location' (Russell et al 1997).

The "New Graduate Survey" recommends that Area Health Services work with universities to ensure that midwifery education programs meet service needs (NSW Health 2000).

An undergraduate degree program in Midwifery - Bachelor of Midwifery (BMid)

A proposed undergraduate degree program in Midwifery (direct entry midwifery) is one way to address issues of cost in postgraduate training of midwives. It will produce graduates in three rather than five plus years and will not attract current postgraduate fees. In countries other than Australia, where the Bachelor of Midwifery is the preferred education model for midwives, course enrolments are at full capacity while attrition rates have fallen significantly. (Page 2000, Pairman 2000).

Although several Australian university nursing schools are opposed to the concept of an undergraduate degree for midwives, the Victorian branch of the Australian College of Midwives in collaboration with women and consumers paved the way for public discussion with their release of a comprehensive discussion paper called "Reforming Midwifery" (ACMI Vic. 1999). A meeting was called in Adelaide in December 1999, to 'launch' the BMid. All interested universities were represented in the initial working party to consider the philosophical, professional, strategic, educational and financial gains to be had by launching the first B. Midwifery courses simultaneously. There was a unanimous vote to proceed in a unified manner to establish national guidelines for the new midwifery education. It was also agreed the standards would be implemented in partnership with the regulatory authorities.

Following this meeting the Australian College of Midwives released the following press statement on the 28th April 2000. "An ACMI Taskforce composed of midwifery educators from each state and territory has been formed to oversee the development of consensus guidelines that will form a national framework for the introduction of Bachelor of Midwifery education programs across Australia. This national framework will establish and articulate professional standards for the accreditation of the three-year Australian Bachelor of Midwifery (BMid) programs. These programs will enable graduates to practise competently in a range of settings within the full scope of practice defined by the International College of Midwives. The purpose of the national framework is to establish and articulate professional standards for the accreditation of Bachelor of Midwifery (BMid) programs that will proceed with the support of the Australian College of Midwives" (ACMI 2000).

The professional and political environment has to support the need for urgent action on the midwifery component of our maternity care workforce. In Australia we cannot continue to operate in professional isolation and risk the consequences of remaining out of step with the developments of our profession internationally. The proposal for a B Mid is likely to confront those who believe that midwifery is only a post nursing specialisation. Therefore the process will require both politically sensitive and respectful negotiation. The recent licensing of a number of overseas-educated 'direct entry' midwives in a number of Australian states has, however, already forged the route for registration for pre-registration, undergraduate degree midwifery students. To highlight some of the discrepancies occurring at present, overseas educated midwives who are not trained as nurses are required to register as 'nurses' to work as midwives. This assumes some competency in nursing for which they have no educational preparation.

Conclusions

There are three overriding factors that influence our current crisis in the shortage of midwives and problems with midwifery education. Firstly, it may take five years and considerable cost to the student and the university, to produce a beginning practitioner through our postgraduate educational pathways.

Secondly there is an urgent need to increase the number of midwives. The shortage of midwives is a global problem and Australia can no longer rely on migration from other countries to correct the serious shortfall. Already there is a substantial 'waiting list' of prospective students eager to enrol in the new Bachelor of Midwifery program (Leap, 2000)

Thirdly there is a serious lack of culturally appropriate midwifery training at tertiary level. The tension to be addressed in Australian higher education is, 'what is the balance between Indigenous peoples' desires for autonomy and self-determination and the overall institutional commitment to ensuring that those efforts are realised within the federated structures of universities' (Anderson et al 1998 p 9).

Research is essential to guide developments in Australian maternity care. A national database of midwifery courses and students is required to monitor trends and predict supply.

Further investigation is needed to assess the direction and quality of education for midwives, recognising an increasing use of new models of care. Midwifery models based on evidence of safety and cost effectiveness promote communication and co-ordination between health care professionals, linking hospital and community care. They are more clearly focussed in primary health care rather than hospital illness or trauma. Midwives educated through pre-registration undergraduate degree programs with a social/family-oriented approach to care practice in collaboration with medical colleagues and other health providers, in all aspects of maternity care.

Australia's lack of Indigenous midwives working within remote and urban communities needs to be addressed urgently. Education for midwives through pre-registration undergraduate degree programs that provide Indigenous communities with their own midwives could contribute significantly to improving perinatal health care for mothers and their infants. Such an initiative would reduce the social disruption to remote area women who are transported hundreds of miles to give birth to their infants.

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