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Dental hygiene in Australia: a global perspective

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Dates:
Accepted 22 March 2004

To cite this article:
Int J Dent Hygiene **2**, 2004; 165–171
Luciak-Donsberger C, Aldenhoven S:
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Abstract: *Aim:* This article reports on the practice of dental hygiene in Australia from a global perspective. The aim is to examine how access to qualified dental hygiene care could be improved and how current professional challenges might be met. *Method:* Secondary source data were obtained from a survey questionnaire presented to members of the House of Delegates of the IFDH or by fax and e-mail to experts involved in the national professional and educational organization of dental hygiene in non-IFDH member countries. Responses were followed-up by interviews, e-mail correspondence, visits to international universities, and a review of supporting studies and reference literature. *Results:* The introduction of dental hygiene in Australia was inspired by the delivery of preventive care in Great Britain. Today dental hygiene is a paramedical profession, generally studied at institutions of higher education. Study duration is 2 (diploma and associate degree programmes) and 3 years (Bachelor of Oral Health Programs). A recent trend to combine dental therapy and dental hygiene education poses the challenge to maintain a stand-alone degree in dental hygiene as it is practiced worldwide. Low access to qualified dental hygiene care may be a result of insufficient funding for preventive services, social and cultural lack of awareness of the benefits of preventive care, and of limitations inherent in the legal constraints preventing unsupervised dental hygiene practice. These may be a result of gender politics affecting a female dominated profession and of a perception that dental hygiene is auxiliary to dental care. Changes are expected to reflect the global trend towards a decrease in supervision and towards higher education. An example of innovative practice of public health is the involvement of dental hygienists in the educational process of aboriginal health workers in order to promote access to oral health education for indigenous populations.

Key words: dental hygiene care; dental hygiene education; international; oral health; Australia

Introduction

From a global perspective, the dental hygiene profession was introduced in Australia in 1975, at a time when preventive dentistry was increasingly recognized as being effective in controlling dental disease. It was at a time when several other countries introduced the profession (Table 1), a movement inspired by the delivery of preventive care in the US. Today dental hygiene is practiced in over 30 countries worldwide. While the scope of practice is internationally similar, legal, educational and organizational aspects that influence the delivery of dental hygiene care vary (1–3). Global comparisons show that dental hygiene is a paramedical profession, which is generally studied at institutions of higher education. The average duration of study is moving towards 3 years and academic diplomas, with the aim to qualify students for clinical, teaching, administrative and scientific tasks, and also for public health service. In most countries, graduates receive course credit towards higher studies. Internationally, there is a lack of access to dental hygiene services. Reasons range from insufficient funding for preventive services and limitations inherent in the legal constraints of the profession, to a social and cultural lack of awareness of the benefits of preventive care. The image of the female-dominated dental hygiene profession may be affected by gender politics and by a perception that dental hygiene is auxiliary to dental care. In some countries, such as the United States, Canada and Sweden, hygienists increasingly work as highly regarded academics and engaged public health specialists. Particularly, in European countries, supervision requirements have lessened to the point of facilitating independent practice. However, in Asia and in the Middle East, dental hygienists more often work as rigidly controlled and supervised auxiliaries who frequently perform dental-assisting functions. Overall, in an effort to increase access to care and on the recognition that dental hygiene education qualifies for safe and effective professional conduct, there is a global trend towards a decrease in supervision, in some countries in correlation with an increase in educational requirements. The following article examines the current practice of dental hygiene in Australia as it compares with global trends for the profession.

Table 1. **Global oral hygiene education and legislation**

Country	First training	First legislation of practice	No. of programmes in 2001
USA	1913	1907*, 1917†	234
Norway	1923	1979	3
Canada	1951	1947*, 1952†	27
Japan	1948‡, 1951	1948	125
United Kingdom	1954	1954	19
Nigeria	1961	1993	–
R.of Korea	1965	1973	27
The Netherlands	1968	1974	4
Sweden	1968	1991	9
Denmark	1972	1986	2
South Africa	1972	1969	6
Switzerland	1973	1975§, 1991§	4
Australia	1975	1972	5
Finland	1976	1972	3
Italy	1978	1988	17
Israel	1979	1978	3
Iceland	Educ. abroad	1978	–
China (Hong Kong)	1982	1982	1
Portugal	1983	1983	1
Spain	1989	1986	25
New Zealand	1993	1988	1
Latvia	1996	1996	1
Czech Republic	1996	1996	3

*Legal recognition of profession in first State or Province.
†First license issued.
‡First training at US Allied Headquarters.
§For selected cantons first; in 1991 for all cantons.

Method

The information presented was gathered for a study about global dental hygiene education which was commissioned by the Austrian Federal Ministry of Education, Science and Culture (3). As Austrian delegate of the IFDH and as a member of the education committee, the author is involved in communicating with representatives of the dental hygiene profession worldwide. These contacts facilitate a global comparative analysis of the trends for practice and education of dental hygiene profession. Information incorporated in this report consists of secondary source data obtained from a survey questionnaire presented to the IFDH delegates at a symposium in Sydney, Australia. Survey results were followed up by interviews, e-mail correspondence, visits to international universities, supporting studies and reference literature. In some countries experts not affiliated with the IFDH but

instrumental in the professional and educational organization of dental hygiene or of dental public health initiatives were consulted. Results are subject to risks inherent in the use of secondary source data.

Results

Introduction of the dental hygiene profession in Australia

Dental hygiene was initiated by a group of Australian dentists who had worked in the US and in the UK together with dental hygienists. Upon their return they lobbied the Australian Dental Association, the Dental Board of South Australia and the Health Minister to introduce legislation to allow dental hygiene practice. Important individuals supporting dental hygiene were Dr Graham Mount who actively campaigned for the introduction of the profession as well as Dr John McIntyre who was the first director of the education programme in Adelaide and a loyal supporter of the profession. He is considered the 'father of dental hygiene' in Australia. There is no known controversy, which would have delayed the implementation of dental hygiene in Australia, as it was the case in many other countries.

Legislation governing dental hygiene practice was first enacted in 1972 (4, 5). The first course of education commenced in 1975 when the Department of Further Education and the Adelaide Dental Hospital collaborated to provide the education and training facilities. The first curriculum was guided by the US and British dental hygiene curricula. The first course was 12 months in duration and awarded a certificate in dental hygiene. Among early instructors were two dental hygienists educated in Great Britain.

Legislation and regulation of dental hygiene practice

While legislation governing dental hygiene practice was first enacted in 1972, it was not until 1996 that it took effect in all states on the mainland. Completion of legislation came into effect in 2001 with the inclusion of Tasmania. All jurisdictions require that dental hygiene care is to be provided under the direct supervision of dentists. Only in South Australia, in 1992, the law was changed to allow dental hygienists to provide care in nursing homes and places of long-term residential care without direct supervision of dentists but only on their prescription (5). The regulatory authority of dental hygiene in Australia is the dental board.

Currently, all dental acts are under review because of new equal opportunity and anti-discrimination legislation. Expected changes are extended functions for the dental hygienists (i.e. administration of local anaesthesia) but no changes are expected in the requirements for supervision. Changes in the law now permit dental therapists to provide services not only in the public sector, but in the private sector as well. Since 1986, dental therapists have been able to undertake a conversion course to gain dental hygiene qualifications.

Licenses are issued in each separate jurisdiction and dental hygienists may apply for registration with this license in other jurisdictions. There is no national licensing process. Most dental boards, with the exception of New South Wales, require an annual renewal of registration, which is generally accomplished through payment of a fee. It is possible to register in more than one state.

Dental hygiene education and academic tradition in Australia

Dental hygiene education is currently offered at five educational institutions. These are located in Brisbane, Queensland, in Adelaide, South Australia, in Melbourne, Victoria, and in Perth, Western Australia. (Source: http://www.audha.org/9/2004). Entry requirements into the programmes vary slightly but include academic entry (12 years) and in some states, dental-assisting experience (4).

There are 3-year degree programmes in Adelaide and in Brisbane, which are offered at university level. Students graduate with a Bachelor's of Oral Health and develop competencies in dental hygiene, dental therapy and oral health promotion. Prerequisites include 12 years schooling and coursework in english, physics, chemistry, biology, or health and physical education. In Perth, courses are offered at university level and award an Associate Degree in Dental Hygiene after 2 years of study. In Victoria, dental hygiene is taught at the University of Melbourne at diploma level in a 2-year study course in oral health therapy (dental hygiene). Entry requirement also require academic entry and personal and academic aptitude. In 2005, a Bachelor of Oral Health (BOH) will commence at the University of Sydney, faculty of Dentistry in New South Wales. This program is designed to produce oral health professionals to work in oral health promotion, dental hygiene in the private and public sectors, and dental therapy in the public sector in NSW, and in the private and public sectors in other states and territories. The course is completed over three-years on a full-time basis.

There is a voluntary accreditation process for dental hygiene programmes in Australia which is conducted by the Australian Dental Council (ADC). ADC has accredited all dental schools in Australia and it is now accrediting auxiliary programmes.

ADC is comprised of presidents of all dental boards in Australia and the dean of dentistry from each dental faculty. A dental hygienist and a dental therapist attend ADC meetings as observers. There is hope to have a dental hygienist and a dental therapist as full members of the ADC in the future.

The Diploma in Dental Hygiene, the Bachelor of Oral Health at the Adelaide University (first year) and the dental hygiene programmes in Melbourne and in Brisbane have been accredited. The programme at the University of Western Australia is currently undergoing an accreditation process. Each accreditation committee is comprised of university educators from programmes outside the one being accredited and in the case of dental auxiliary programmes it includes a dental hygiene or dental therapy educator from another programme.

The Australian Defence Force offers a Certificate in Dental Hygiene. Entry requirements are completion of 12 years of schooling and dental-assisting education. Graduates may only practice within the defence force. The duration of the programme is 5 months with an additional year of preceptorship training. According to IFDH standards for educational curricula, this programme would not qualify as a dental hygiene programme. Defence-trained dental hygienists, who cannot work outside the forces, frequently retrain at dental hygiene programmes. There they get no exemptions and must complete the entire coursework (Source: http://www.dhaa.asn.au /07/2002).

Dental hygiene education in Australia is unique in that it offers two tiers of training. One option is to attain a pure dental hygiene diploma or associate degree; the other option is to enter a dual education programme for dental therapists and dental hygienists. Traditionally, dental therapists provide dental treatment to children (in public institutions) but were not permitted to treat adults or to work in the private sector. Dual education or retraining in dental hygiene leads to dental therapists being able to deliver dental care to children and dental hygiene care to children and adults at private settings.

Dental hygiene students are now often comprised in part of dental therapists, in part of foreign-trained dentists unable to become licensed to practice in Australia, in part of dental assistants who, after graduation wish to return as dental hygienists to the dental offices in which they have assisted, in part of defence trained hygienists who want to become licensed to work in the private sector, and in part of high school graduates wanting to become dental hygienists. Only about 2% of the student body are males.

Approximately 1–2% of dental hygiene graduates pursue higher education, most often in primary health. Some go on to become dentists. Academic credit is given for dental hygiene coursework to be applied towards further education.

Access to dental hygiene care

Australia, as a large country with a scattered population, has unique problems in attracting dental personnel to rural communities to provide care. Dental therapists were expected to play a large role in this sector. They were introduced to combat the high incidence of caries among the school population and traditionally were trained to inexpensively provide dental treatment exclusively to children in the public sector (usually at school dental services). As their education is government subsidized, after graduation, they are assigned to serve 2 years in rural areas. Their services are also government subsidized and are rendered to schoolchildren between the 5 and 18 years of age. This differs from the prevention-oriented dental hygienists whose education is not subsidized and who have no government affiliation and therefore must seek work in the private sector. In addition, while dental hygienists may only operate under direct supervision, dental therapists may offer services under indirect supervision. This means that their services must be prescribed and supervised by dentists who do not have to be on the premise during the delivery of care. They should, however, be within reach in case of need. In practical terms, in rural, low access areas, dental therapists operate school clinics which dentists only visit every few weeks.

Access to dental hygienists, who provide preventive services to children and adults and are trained in the provision of care to adult periodontal patients has – because of a nationwide shortage – not been very good and virtually non-existent in rural and indigenous areas. For this reason dentists in Canberra, Sydney and Melbourne, wishing to employ dental hygienists, lobbied to retrain dental therapists to acquire dental hygiene skills in order to increase the dental hygiene workforce. These trainings commenced in 1986 and set the stage for today's dual training programmes. There is concern, if dental therapists may work in the private sector, that they might seek to work in more desirable urban areas and that there will be even less access to care in the rural areas.

Today, there are approximately 500 dental hygienists registered to work in Australia. The ratio of dentists to dental hygienists is approximately 1 : 20, but it is important to bear in mind that some of the newly graduated dental hygienists are also dental therapists and may not be working in the private sector. The ratio of dental hygienist to population is only about 1 : 47 000. Statistically, between 1987 and 1998, there has been an increase in the dental hygienist workforce of 35% (3) which is expected to increase slightly with the new programme expected to open in Sydney. Opportunities for employment are very good.

Current issues and challenges in Australia

The biggest challenge in Australia appears to be access to qualified dental hygiene care, especially for rural populations who often live in remote areas. An additional challenge is the care of indigenous populations, who at the turn of the last century were predominantly free of dental disease and have exhibited an increase in caries as a consequence of adapting to European foods and dietary habits by the 1960s (6). An interesting public health initiative to meet this challenge is the training of aboriginal health workers (AHW) in the fundamentals of dental hygiene, which is predominately conducted by dental hygienists. The course is offered at the University of Western Australia's Centre for Rural and Remote Oral Health and is attended by AHW who are community-based health workers who in the past had not been trained in dental health. They receive instruction about primary prevention, health foods, good oral hygiene, basics of dental language, basic dental anatomy and simple intra-oral diagnostic skills. Their ability to recognize dental disease and to educate about oral health may create awareness about oral health and preventive care among indigenous and rural populations, which in turn may increase the demand for qualified dental hygiene care.

Internationally, it was shown that access to care increases when supervision requirements for dental hygienists decrease (4) and that independent dental hygienists deliver safe and effective care (7–9). On that recognition, supervision requirements were legally decreased in South Australia in 1992, in order to promote access to care in nursing homes or in long-term care facilities. It was shown that less supervision allows dental hygienists to provide more independent public health initiatives and care. Direct supervision means that care has to be provided by two people on one premise, which in remote areas, has been shown to be impractical and expensive. While dentists, dental specialists and dental hygienists continue to collaborate as a team in providing patient care, this must not occur in the same setting or in employer/employee relationships. Dental hygienists have shown excellent diagnostic abilities for dental disease (8) and frequently recognize treatment needs for which they refer their patients to dental care.

Dental hygienists have been recognized internationally as a key resource for improving access and technical efficiency in providing oral health services (1). On a global scale, most dental hygienists work in private dental offices, either because it is legally required to be supervised, or because many worry about the financial burdens of running separate offices. Because of the revenues generated by dental hygienists, dental boards in the past have objected vehemently against any regulations allowing dental hygienists to become operators of their own practice or to enter an equal partnerships or co-ownership of the same business location. Costs for supervised practice have been calculated by the Alberta Dental Hygienists' Association in Canada to add approximately 25% to the cost of dental hygiene fees (10). At the same time it was shown, that dentists could actually benefit from the diagnostic accuracy and motivational skills of independent dental hygienists. In a pilot study, 80% of patients who had visited an independent dental hygienist were successfully referred to dental care within 1 year (9).

Low access to qualified preventive care has been documented worldwide (1). Evidence suggests an increase in the demand for cost-effective diagnostic and preventive services (11) coupled with a lack of access to care. This fact supports the argument that there will be a need for larger numbers of dental hygienists with the skills to practice independently. They would be less expensive to educate than more dentists who, according to foreseeable trends, will end up providing dental hygiene care at a higher cost to the public.

A challenge for the dental hygiene profession in Australia is for dental hygiene to become more self-regulating, as it appears that at this point, the 'fate' of stand-alone dental hygiene education is exclusively in the hands of dental boards. As Australia is unique in offering two tiers of training, there are concerns, that in the future all programmes will become dual degree programmes and that practicing dental hygienists will have to retrain to gain dental therapy skills. Dental hygienists are campaigning to retain stand-alone degrees in dental hygiene in order to preserve the profession as it is practiced worldwide. Last but not the least, it would serve the overall image of the profession if its attractiveness were to be recognized by males. Being predominantly practiced by women (Table 2), role stereotyping may have an impact on autonomy and professional image. This article shows, that today, in Australia and globally, dental hygienists are highly skilled providers of preventive care and not auxiliaries who assist someone above them in the provision of care.

Table 1 points to the fact, that the date the dental hygiene profession was established often does not coincide with the date it was governed by legislation, i.e. in several countries dental hygienists were providing patient care under the supervision of dentists before their scope of practice was legally regulated. The legal acceptance of the profession, which was often opposed by dental boards, in some cases required years of lobbying by supporters, most of them having been dentists.

Worldwide, dental hygiene has evolved to be a profession predominantly chosen by women. Thus, women have become

Table 2. **Percentage of women as providers of primary preventive dentistry. Global distribution of oral hygienists by sex**

Country	Women (%)	Men (%)
Australia	98	2
Canada	98	2
Czech Republic	99	1
Denmark	95	5
England	98.5	1.5
Finland	99	1
Iceland	100	0
Israel	99.9	0.1
Italy	90	10
Japan	99.9	0.1
Latvia	100	0
The Netherlands	99	1
New Zealand	99.9	0.1
Norway	99	1
Portugal	80	20
Korea	99	1
South Africa	98	2
Spain	99	1
Sweden	98	2
Switzerland	98	2
USA	97	3

primary providers of professional preventive care. While the scope of practice is similar, the image of the profession varies from work roles as independent professionals, highly regarded academics and engaged public health specialists in Western regions to rigidly controlled and supervised auxiliaries who frequently perform dental-assisting functions, more frequently found in Asia and the Middle East. Dental hygiene care in private practice has been shown to be conducive to part time scheduling and job sharing, ideal when managing family and professional demands. Apart from the interesting variety of professional and academic application, global changes in sexual-role stereotyping may make this profession more attractive to males who may also value the flexibility and the variety of career options of this profession.

Summary and conclusions

On a global scale, dental hygiene in Australia has evolved into a highly skilled profession with an increasingly academic orientation, and serves as an excellent example of the evolution of a profession in less than 30 years. The profession appears to be growing with a new programme to open in Sydney in 2003. Innovative projects are being created to bring oral health education and care to rural communities where access to qualified preventive care has been especially scarce. An international comparison of the educational process for the profession and of the level of professional autonomy suggests that Australia belongs to a few countries which have implemented academic orientation at bachelor degree level in order to meet the growing challenges of the profession. These skills, however appear to not have promoted autonomy of practice and a decrease in supervision, a trend successfully established in the majority of the European countries in which dental hygiene is practiced and gradually, on a state-by-state basis, introduced in the US and in Canada. A recent trend to combine dental therapy and dental hygiene education poses the challenge to maintain a stand-alone degree in dental hygiene as it the practice worldwide. Access to qualified dental hygiene care may be promoted by public health projects to combat a social and cultural lack of awareness of the benefits of preventive care, and by removing the limitations inherent in the legal constraints preventing unsupervised dental hygiene practice.

Acknowledgements

The authors thank Dr Marc Tennant, Director of the Centre of Rural and Remote Oral Health, Dr Leslie Steele, Aboriginal Oral Health Education Consultant, and Dr Arna-Lee Jensen and all contributing delegates of the IFDH for the time, effort and information which they have provided. The research was sponsored through a grant from the Austrian Ministry of Education, Science and Culture, Vienna, on the initiative of Dr Sigurd Höllinger, Director General Higher Education.

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