

# Community dentistry and public health dentistry—roles and current discipline issues

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**ABSTRACT** This paper aimed to describe the specialty of community dentistry and to highlight some of the knowledge base and research that makes it an indispensable part of modern dentistry. In addition, some important global issues will be discussed. Community dentistry is a varied and changing field. It derives its knowledge base and methods of inquiry from dental as well as socio-behavioral disciplines. The combination of these provides a fertile ground for being involved in decision-making at the highest levels of society, when choices are made and plans devised to improve the health care system that will eventually positively impact the oral health of the population. Community dentists will often be asked to translate incomprehensible research data into practical everyday preventive recommendations that are relevant to society's financial constraints. The acceptance of this discipline as a specialty in its own right—as in the United States, United Kingdom, and Australia—is a just recognition of the many contributions community dentistry makes to the dental profession, to society, and to the population as a whole.

## Introduction

Dentists who want to undergo specialty training in orthodontics will, without any difficulty, find a training program named as such anywhere in the world. In contrast, there is little agreement on what constitutes community or public health dentistry. In the United States, 'public health dentistry' is the accepted term for the specialty and related bodies; in the United Kingdom it is 'dental public health'; in Australia, the term 'population oral health' is increasingly used; in Hong Kong, the College of Dental Surgeons of Hong Kong is considering a specialty under the name of 'community dentistry'. Some decades ago, a number of other names were proposed, such as ecological dentistry or social dentistry, but despite the fact that this was Blackerby's original suggestion<sup>1</sup>, the terms have remained marginal. Although confusion remains about the terminology, there appears to be general agreement about the broad definitions of this field. The main purposes of this paper were: (1) to describe the discipline and to identify some of the knowledge base and research that makes it an indispensable part of modern dentistry and (2) to outline some of the global issues considered to be important in community dentistry. Community dentistry will be used

as the terminology to be consistent with the expected outcome of the College deliberations.

## Definitions and relationships

Community dentistry is the specialty of dentistry that concerns the promotion of oral health, the prevention of oral disease, and the provision and administration of oral health and dental care services in defined populations and communities. The specialty recognizes the role of behavioral and environmental factors as determinants of oral health. The goals of the specialty are to identify and measure the oral health problems and oral health care needs of the community; to identify means by which these needs can be best met within the constraints of resources; to provide and manage services to meet these needs; and to evaluate the extent to which these needs have been met. In this specialty, epidemiological principles are applied to describe and define dental public health problems, as well as to formulate and evaluate oral health programs and policies. This approach aims to achieve significant improvements in the oral health of communities as much as individuals. It also aims to advance the oral health of the population through the practice of evidence-based dentistry, and the effective and efficient management of oral health care services and resources<sup>2-4</sup>.

There are several components of this definition that refer to the 'mother disciplines' with which community dentistry is closely related. One of the characteristics of community dentistry is that it relies heavily on the basic oral health disciplines such as

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**Table** Complementary functions of clinical and epidemiologic skills in addressing oral health problems of individuals and communities<sup>5</sup>

Clinical (individual)	Epidemiologic (population group)
Examination of patient: Interview and examination of individuals by history-taking, physical and psychological examinations, laboratory tests, X-ray, and other special techniques	Survey: State of health of community and families, using questionnaires, physical and psychological testing, and special facilities for mass investigation
Diagnosis: 1. Usually of a patient; differential diagnosis to determine main cause of patient's complaint 2. Appraisal of oral health status of a "well" person, such as pregnant women, well children, periodic examinations of adults	Community diagnosis: 1. Health status of the community as a whole or of defined segments of it, e.g. health of expectant mothers, school children, life expectancy rates, etc. 2. Usually problem-oriented; differential distribution of a particular condition in the community and the causes of this distribution
Treatment: 1. According to diagnosis and dependent on resources of patient and the medical institutions/insurance eligibility 2. Intervention, usually follows on the patient seeking care for illness or health advice	Treatment: 1. According to the community diagnosis and depending on resources of the health service system 2. Intervention on basis of survey findings often before any illness is notified or recognized
Continuing observation: Evaluation of treatment success and patient's progress, sometimes for further diagnostic workup	Continuing surveillance: Surveillance of health state of community and ensuring continuing action to address stated health goals

cariology, periodontology, and microbiology to provide the substance framework for many of its activities in relation to oral health promotion and prevention. Nevertheless traditional non-dental disciplines such as epidemiology, sociology, psychology, finance, economics, and political science also provide much of the knowledge base for understanding the relationships on which community dentistry focuses. It is especially the relations to and the use of the non-dental disciplines that have often given community dentistry a 'mysterious' or 'different' image in the dental profession. For many practicing dentists, carrying out dentistry is not political, it is health care, helping other people. If a discipline makes a special effort to uncover untraditional relationships or to point out real inequities in society in relation to dental care, we are transgressing the undrawn boundaries for dental activities. It is exactly these perspectives of community dentistry that make it valuable and expand our understanding of how we can help improve the health of the population.

### Population—individual approach

The author has worked in community dentistry for more than 30 years and has often come across the attitude from colleagues that we use foreign concepts from general practitioners and that our methods are different and irrelevant. For most people, dental care in the community describes a service that meets the demands of individuals who turn to a practitioner or clinic for dental treatment or advice. The dentist will often ask

"What is the matter with the patient?" "What can I do for the patient?" "What will be the outcome?". The especially curious dentist will ask "Why did it happen?" as a precursor to understanding causation and prevention. It seems important to emphasize that looking at one self-referred patient and a community are complementary activities even though the inferences drawn from these activities may differ. As illustrated in the Table<sup>5</sup> the methods applied by the general practitioner to individuals and by the community dentist to a population group are philosophically identical and parallel in sequence. On both sides, we follow a systematic path to identify the health challenges represented by the patient and by the community. The important differences relate to the character of the populations being studied. Patients seeking care have usually defined their dental care needs themselves, whereas few populations have the ability to express a demand to have a community diagnosis established. Rarely will the general practitioner be able to validly generalize patterns of disease or systematic trends in his patient group, because it is not a random or representative selection of people. In contrast, the community dentist attempts to select a population group for study that will represent the general population in order to generalize findings or recommendations from the study. Similarly, the community dentist will approach a total population with an oral health promotion or clinical preventive program rather than identifying each individual's needs and demands.

The really interesting challenge arises in the translation

of the findings from population studies or observations to the individual as part of practicing evidence-based dentistry. If we are able to identify general risk factors at a population level, for instance by demonstrating that smoking is an important risk factor for the development of periodontal disease, can this risk factor approach be then applied to the individual? Rose, a British epidemiologist and philosopher, presented this as the “prevention paradox” that states that “a preventive measure that brings large benefits to the community offers little to each participating individual”<sup>6</sup>. With respect to prevention of dental caries, considerable debate is taking place as to whether a high-risk approach that targets individuals or a population approach with broad preventive methodologies to all is the preferred option in community dentistry. Several authors have pointed out shortcomings of the high-risk approach and have advocated a population-based approach in the prevention strategies for dental caries. Thus Hausen *et al*<sup>7</sup> found that intensifying prevention on an individual basis produced practically no additional benefit. Offering all children only basic prevention, virtually the same preventive effect could have been obtained with substantially less effort and lower cost<sup>7</sup>. In another analysis, Batchelor and Sheiham<sup>8</sup> found that the changes in caries experience observed occurred in all populations and were not confined to subgroups. Strategies limited to individuals ‘at risk’ failed to deal with the majority of new caries lesions<sup>8</sup>. The main emphasis should be centered on a population approach<sup>7,8</sup>.

## Issues of societal importance

Some of these problems only scratch the surface of the many issues that confront community dentistry as a discipline. It may assist the appreciation of this to further consider some of the major societal issues in dentistry that are being discussed in many countries all over the world. Characteristically, although any member of the dental profession might get involved in these issues, often community dentistry finds itself at the center of the debate because of its position between the traditional dental disciplines and society, because of its broad science base, and because of the social engagement inherent in its philosophical basis.

## Oral disease developments

In many western countries, oral health has been improving during the last two to three decades as demonstrated by epidemiological studies of both children and adults<sup>9-11</sup>. The dramatic decrease in dental caries prevalence in children has especially been related to both fluoridation of drinking water in some communities and to the general increase in total fluoride use from all sources as well as broad socio-economic factors<sup>12,13</sup>. The later

effects in adults are lower tooth extraction rates due to caries and an increasing number of remaining teeth with the expected increase in demand for dental maintenance, risk for later periodontal disease, and often demands for high-tech solutions, such as implants, when a tooth is lost. On a global scale, community dentists partially predicted this development in the 1970s and 1980s, and there was considerable concern that developing countries, with their resources for oral health even more limited than those of developed countries, would show a repetition of the unfortunate oral disease cycle seen in the western world. This has not yet happened, although this may only be because descriptive population oral health surveys have fallen out of fashion that our information base is insufficient or diminishing. Some of the challenges to success are the trends of polarization of disease that are found in many societies. This refers to the phenomenon that the large majority of the population has indeed experienced an improved oral health situation, but that a small minority of 10% to 20% has an enormous disease burden, often hidden because of our tendency to continuously display only average disease rates. This does not capture the distribution of disease in the population. Despite this, newer epidemiological measures of distribution (e.g. the Significant Caries Index<sup>14,15</sup>) and qualitative measures intend to capture these newer trends in disease distribution. One of the facets of this phenomenon is its relationship to access to and inequities in dental care.

## Access to and inequities in dental care

Without doubt, one of the first reports of the new millennium, the United States Surgeon General's report on oral health<sup>16</sup>, was a dramatic anticlimax to a lot of self-praise in the dental profession. He introduced his report by stating that “we can be proud of the strides we have made in improving the oral health of the American people... Yet, as we take stock of how far we have come in enhancing oral health, this report makes it abundantly clear that there are profound and consequential disparities in the oral health of our citizens. Indeed, what amounts to a ‘silent epidemic’ of dental and oral diseases is affecting some population groups. This burden of disease restricts activities in school, work, and home, and often significantly diminishes the quality of life. Those who suffer the worst oral health are found among the poor of all ages, with poor children and poor older Americans particularly vulnerable.” Recently, the President of the American Association of Public Health Dentistry<sup>17</sup> added that “it is not at all surprising that dental care in a market driven, fee-for-service system, funded primarily with out-of-pocket payment or private insurance, is delivered in large part to the well employed and well to do. Dentists need to make a living. This paradox that exists in the current dental care delivery system, that those with the

highest needs are often the least able to obtain treatment, is a symptom of a financing and training system that has become outdated and non-responsive to the health care realities we now face as a nation."

Some may find it inappropriate to make such extensive use of American examples in this kind of presentation, but to an extent the American dental care setting is the archetypal model of the western style of dentistry that is being emulated in most of the world, including Hong Kong. It could be said that it is an amazing situation that the predominant mode of delivering dentistry and its basic ethical tenets are as similar across such a variety of cultures as they are. It naturally means that a number of successes in dentistry can be demonstrated on a worldwide scale. But it also means that the failures of this unified approach to dentistry can be found globally, and unfortunately the inequities and lack of access become even more exaggerated in those parts of the world or in those segments of the population that can least afford to address them appropriately. This is exemplified in detail from Australia by Spencer<sup>18</sup>, and Petersen<sup>9</sup> who have illustrated the extensive global perspective of this development from the World Health Organization. Weyant<sup>17</sup> also stated that "organized dentistry needs to work together with government and the public to find sustainable, systemic solutions [to the access and inequality issues] that derive from a broad-based public will that dental care is 1) an essential part of health care and 2) an essential service for all citizens and as such is worthy of significant public financial support." This naturally brings us to the third major issue of interest to community dentistry—what resources are allocated for oral health.

## Resources for oral health

The resources available in any country are limited. If land, capital, and manpower are used for one purpose they will not be available for another. Indeed the cost of using them for one purpose is the lost benefit from using them in the best alternative way. This idea of opportunity cost lies at the very heart of economic thinking. Choices have to be made in socio-economic planning between alternative uses of resources. For example, which use of resources would do most for the poor—more health services, more education services, more support for agriculture? And what should be cut back to find the resources for any developments<sup>19</sup>? Applying this and the above statements to dentistry will force us to look at dentistry as only one of many obligations that society needs to consider. For many in the dental profession it would seem that societies in many parts of the world have already decided that dental care is a non-essential part of health care, and thus is not worthy of significant public financial support. This, however, is a rather simplistic observation. As Spencer<sup>18</sup>

has pointed out, the Australian Commonwealth Government spends hundreds of millions of dollars on a dental care scheme that benefits only private insurance holders, i.e. the most affluent in the population, whereas public dental services in most states that cater to the poorest part of the population struggle with enormous waiting lists, insufficient manpower, etc. This is clearly a political choice that may have nothing to do with any perception of oral health. In addition it further emphasizes that the notion of dental care as being in an apolitical sphere is invalid. During the 1980s a perception was created in many countries that dental caries had been eradicated. Health administrators were quick to redirect resources to other more urgent preventive programs. When it was realized 20 years later that dental caries had not disappeared, but was now one of the most disabling diseases in childhood, resources were no longer available to easily address the problem<sup>20</sup>. Even when resources are available for the provision of dental care, will there be agreement on where the money should be directed? Without doubt there needs to be an agreed approach that allows decision-makers to consider essential cost-benefit and cost-effectiveness issues with proper input and advice from researchers and practitioners in community dentistry. Thus, community dentists cannot avoid becoming engaged in political discourse and advocating an understanding of oral health as an important part of general health and for the necessity to consider it on an equal footing.

## Oral health manpower

Finally, it seems reasonable to discuss issues of manpower, for without oral health manpower in the appropriate numbers and kinds we cannot hope to address the oral health problems of the population. Traditionally, dental associations have mostly concerned themselves with dentists and have defined dentists as the only independent practitioner that should be educated to address the population's oral health problems. It is nonetheless a very tricky and complex situation. It is not only a question of whether we have dentists or not, it is where they are located, what they are supposed to do, and whether the people who have dental disease will seek dental assistance at the right time during the development of those diseases. Simply increasing the number of dentists will not solve society's oral health problems, as the last 30-plus years of experience in various countries have shown. Ten years after WWII many countries started to produce more dentists. A decade later there were perceived to be too many dentists and dental schools were closed or cut down. During the last 10 years schools have been re-opened. But the cycle is very long because once dentists are trained, they stay in the system for 30 to 40 years. Cutting down programs does not actually impact the existing dental supply, only the future. We never seem to get it

right! If we said today that we need to start training more dentists, it would still take between 5 and 10 years before those dentists would have a major impact on the dental care system. In addition to this uncertainty, neither community dentistry nor the dental profession nor society at large have ever been able to correctly plan or predict the appropriate mix of dental manpower. So the issue clearly is beyond increasing or reducing the number of dentists; the answer lies in a combination of increased awareness of oral health issues among the general population, a better balance of oral health professionals, and a government (i.e. political) commitment to look at public sector funding as necessary. The recent development in Australia—where there is presently perceived to be a shortage of dental manpower—has been to use a combined approach of increasing the number of dentists by education, importation of foreign dentists, and the creation of new practitioners: the oral health therapist, who combine the traditional roles of oral health educator, dental hygienist, and dental therapist. Nonetheless no attempt has been made to initiate these activities under a nationwide scheme and no formal body exists to monitor whether unstated manpower goals are reached. During the next 3 to 8 years, we will discover if the choices made were indeed wise or whether there will still be a high demand for more oral health manpower. The role of community dentistry caught in the cross fire between society's demands and expectations and the professional sense of self-preservation is especially precarious because community dentists in research and practice will be expected to assist in building the models and creating the evidence on which the decisions will be made. As has been shown experientially it will require robust science and reasonable models to solve these issues—and it will still be difficult to include all the uncertainties that sudden changes in the economic situation or the whims of the public create.

## Conclusion

Community dentistry is a varied and changing field. It derives its knowledge base and methods of inquiry from dental disciplines as well as socio-behavioral disciplines. The combination of these provide a fertile ground for being involved in decision-making at the highest levels of society, when choices are made and plans are laid to improve the structures of our health care system that will eventually positively impact the oral health situation of the population. The challenges to the discipline are manifold. We are often trying to satisfy both scrutinizing health administrators under financial pressure and newer research developments, such as the exploration of quality-of-life measures in the totality of oral health or the new-found potential associations between periodontal infection and general health problems such as cardiac arrest

or low-birth-weight babies. Community dentists will often be asked to translate incomprehensible research data into practical everyday preventive recommendations that are commensurate with society's financial constraints. Indeed, a tall order. The acceptance of this discipline as a specialty in its own right, as in the United States, United Kingdom, and Australia, is a just recognition of the many contributions community dentistry makes to the dental profession, to society, and to the population at large.

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