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The teaching of Dental Public Health – 50 years on

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Abstract: In 1966, James published an article in the British Dental Journal (and reprinted here) which made recommendations on the teaching of dental public health. The following commentary reviews the ideas put forward by James and how these relate to concepts of dental public health in the undergraduate dental curricula of 2016.

Key words*: public health dentistry, education dental, dental curriculum, history of dentistry*

Introduction

In today's busy professional environment, taking time to reflect on the past is something that we do not do sufficiently often. Not only does thinking about where we have come from give a sense of perspective, it can guide thoughts on where we are now and where we should be going to. The invitation from the Editor to write this commentary on the paper by P.M.C. James, "*The teaching of dental public health and its relation to children's dentistry",* which was published in the British Dental Journal in 1966 is timely (James, 1966). A working group of the European Association for Dental Public Health (EADPH) is currently considering the ideal curriculum for Dental Public Health (DPH) (EADPH, 2016). It is therefore useful to compare concepts on what a contemporary dental graduate should know about DPH, with the thoughts of a leader in the field fifty years ago.

Fundamental issues in Dental Public Health teaching

As James highlighted, dentistry by its nature centres on a one-to-one relationship between clinician and patient. This is I suspect, how the majority of students entering a dental school see their future working life. From this starting point, there are two fundamental challenges that face those engaged in DPH education at undergraduate level:

- helping students to see oral health and dentistry from a perspective beyond the confines of the dental clinic
- refocus upstream so that oral disease is seen as something to be prevented rather than treated.

These issues were of primary concern to James and are as pertinent now as they were half a century ago.

Engaging students with dental public health

James opened his paper with the criticism that the undergraduate dental curricula of the mid-1960s failed to develop a sense of community and placed too much emphasis on the diagnosis and treatment of individual dental patients. He pointed out that it is necessary for the student to be able to "*stand back and observe the whole, as well as take a close look at the part*", but noted that educators were "*experimenting with curricula that will enable their graduates to be more responsive to the needs of society*".

The concept of a holistic approach to patient care and disease prevention is something that continues to evolve and should in 2016, be a fundamental component of the modern dental curriculum. In the United Kingdom, dental students spend a considerable proportion of their time, learning and practicing in clinics remote from their traditional base in the dental school. These outreach placements are often sited in disadvantaged communities. In the most progressive current day dental curricula, dental students are paired with third sector organisations and charities, in order to gain insight into the social and economic circumstances of others, whose lifestyles and life-circumstances are different from those in which the dental students themselves grew-up.

However, I expect that most teachers of dental public health still encounter the occasional student, whose sole focus is on the technical aspects of dentistry and who fails to see the bigger picture and the relevance of DPH as a subject.

The shift from a restorative to a preventive philosophy

James quotes contemporary authors who were discussing the need for a shift to "*prevention and maintenance*" rather than focusing on "*clinical symptomatic techniques*". This is a paradigm that concerns dental health service commissioners even more today than it did in 1966. Much of the work that is currently ongoing to reform state funded dental care in England and Wales, is concerned with this issue. How do we re-orientate routine dental care from a restorative to a preventive approach? (Department of Health, 2009).

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On the balance between clinical and public health teaching, James cautions that the "*pendulum must not swing too far in one direction to the detriment of the other*". The learning outcomes for undergraduate dental curricula in the UK are defined by the General Dental Council in their publication, "Preparing for practice, dental team learning outcomes for registration" (GDC, 2011). While this guidance sets out in great detail what is required of a graduating dental professional in relation to communication, professionalism, management and leadership, I have heard colleagues who teach restorative dentistry complain that the document is insufficiently prescriptive as far as clinical learning outcomes are concerned.

The overcrowded curriculum.

A constant challenge for dental educators is the "overcrowded curriculum". This is often the driver for major curriculum reviews in dental schools, as educators try to maintain currency in what they teach, while avoiding educational overload. It is often easier to add to than to take away from what we feel students should be taught. It appears that concerns over the amount of material needed to be covered by students was an issue 50 years ago and attention was drawn to how this is added to "*by the continuous process of improvement and discovery adding a little more each year"*. Cleary DPH has advanced significantly since 1966 and Table 1 lists some of the major advances in DPH since James wrote his paper. These have influenced the DPH curriculum in a number of ways.

The content of the DPH curriculum

James set out four main areas for special instruction in DPH (Table 2). This contrasts with the nine key disciplines of the subject set out in a recently published undergraduate textbook (Chestnutt, 2016). The relationship between the curriculum of 1966 and 2016 is now discussed in the context of the most significant changes-advances in DPH.

Table 1. Some important factors influencing the principles and practice of dental public health in the UK and Europe since 1966

- Routine surveys of oral health
- Widespread availability of fluoride containing toothpaste
- Ottawa Charter
- Evolution of the evidence-based approach to healthcare
- Changes in population approach to the use of fluoride as a caries preventive measure including failure to maximise the potential of water fluoridation.
- Common risk factor approach to promoting health
- Legislative changes in relation to tobacco use
- Skill-mix and team approach to the delivery of dental care
- Changed public attitudes to dental and oral health
- Establishment of
  - British Association for the Study of Community Dentistry
  - Dental Public Health as a distinct dental specialty in the United Kingdom
  - European Association for Dental Public Health
- Significant health and social care reorganisations in 1974 and 2012

Table 2. The key disciplines and components of dental public health curricula as described in 1966 and 2016

Key curricula disciplines/components of DPH	
1966, (James, 1966)	*2016, (Chestnutt, 2016)*
Public health	Oral epidemiology
Social and preventive dentistry	Demography
Health education	Medical statistics
Epidemiology and statistics	Health promotion and health improvement
	Sociology
	Psychology
	Health Economics
	Health services management and planning
	Evidence-based practice

Epidemiology and disease prevalence

Clearly epidemiology is central to the discipline. In 1968, two years after James wrote his article, 37% of the adult population in England and Wales were edentulous and in 1973 the average 15 year-old had 8.4 decayed, missing or filled teeth (DMFT) (Todd 1975; Todd and Walker 1980). In 2009 just 6% of adults were edentate (Fuller *et al*., 2011) and the mean DMFT in 15 year olds in the latest survey in 2013 was 1.4 (Pitts *et al*., 2015). These improvements are on a scale that in 1966 would, presumably, have been difficult to imagine.

In 1966 there was no organised or regular mechanism for monitoring the oral health of the nation. Routine oral health surveys of nationally representative samples of the population had not been initiated. As James pointed out, epidemiology is a sophisticated subject. He lamented the fact that dentists were inclined to undertake prevalence surveys and clinical trials without adequate knowledge of the potential pitfalls. He made the insightful comment that their results may only be useful as a demonstration of faulty experimental technique leading to unjustified conclusions. Peter James went on to be part of the team which conducted the 1968 survey and establish the strong repository of dental epidemiological data that has been acquired in the UK in the past 50 years.

In the modern dental curriculum, dental students are taught the basics of how epidemiological surveys are conducted. They are also made aware of the difference between oral health surveys and screening for oral disease. In the latter case, they should learn how routine screening for oral disease in children has been dramatically reduced or stopped in many areas, although practice varies widely across the UK. In Scotland for example, a national screening programme at ages 5 and 11 years is maintained as part of their dental inspection programme.

Health Education vs Health Promotion

James discussed oral health improvement largely in the context of health education. However, the benefits of using the experience and persuasion of advertising experts to deliver health education messages was recognised. The benefits of having someone who is not a dentist instruct students on health education is discussed as is the need, "*to control students' over-enthusiasm in health education without proper advice*". Understanding of behaviour change has advanced significantly in the past 50 years, although perhaps not always with the degree of success that would ideally be desired from

a public health perspective. Many academic dental public health departments now have sociologists or psychologists on their teaching staff or have access to such expertise and so it would be expected that current graduates do understand the complexities and subtleties in promoting behaviour change.

Wider determinants of oral health

From a 21st century perspective, it is clear that in 1966 health improvement was primarily regarded as health education. Health promotion, the upstream and common risk factor approaches were still some 20 or more years in the future (Sheiham and Watt, 2000; WHO, 1986). However, even in the mid-60s, James had identified issues such as "*standard methods for measuring the health and socioeconomic status of populations*". He talked of the need to place dental practice in the context of overall social services, encouraging visits by dental students to locations such as waterworks (in relation to fluoridation), ante-natal classes and schools. Addressing inequalities in oral health is a primary objective of contemporary DPH practice. While James did not explicitly use the term "inequalities", he does discuss the need for a dental graduate of the mid-1960s to receive instruction in "*differences in prevalence of the main* [oral] *diseases between one community and another and between different sections of the same community"*.

The changes in disease prevalence referred to above have of course not occurred uniformly across society, resulting in pronounced inequalities in oral health. This has led to different approaches to disease prevention; the high-risk individual approach, the targeted population approach, the whole population approach, and, proportionate universalism, arising from the work of individuals such as Rose and Marmot (Marmot, 2010; Rose, 1985). Current day dental graduates are expected to have an insight into schemes to improve population health and how inappropriately applied programmes may worsen rather than improve inequalities in oral health.

Changes in population approach to the use of fluoride as a caries preventive measure

It is generally accepted that the improvements in oral health in the UK observed over the past 50 years can be attributed to the widespread use of fluoride toothpaste. It is unlikely that James could have envisaged this. When he was writing, fluoridation of the public water supply held the greatest promise for oral health improvement, a promise whose potential has never been fully realised. While the history of fluoridation makes a fascinating case study for the current generation of dental students, giving an insight into how politics can impede science, and conspire to thwart public health efforts. They also need to be aware of alternative approaches such as school-based toothbrushing programmes.

Evidence-based dentistry

James was writing six years before Cochrane published "Effectiveness and Efficiency" (Cochrane, 1972) and twenty years before Sackett published his seminal work on evidence based medicine (Sackett *et al*., 1996). However he clearly states, "*the study of statistics even at the most elementary level, encourages clear thinking on scientific problems and a more critical appraisal of the literature*". Present day academics in DPH spend a considerable proportion of their time teaching critical appraisal skills – now regarded as a core component of current dental curricula.

Where, when and by whom DPH should be taught in the dental curriculum

The vast array of topics that the subject now comprises means that it needs to be taught by specialist teachers. The need for integration of DPH concepts throughout the dental curriculum and the benefits of teaching the subject in a longitudinal manner over the 5 years of the course needs to be considered against the practice of teaching DPH in a concentrated series of lectures *en bloc* in the mid or latter part of the programme. James argued that the principles of public health should permeate all dental teaching and cautioned on the dangers of public health teaching becoming compartmentalised.

DPH and children's dentistry

James discusses the traditionally close relationship between DPH and children's dentistry and indeed that is highlighted by the title of his article. He proposed a number of reasons for this including the philosophy that prevention in infancy, childhood and adolescence is the obvious way to secure oral health in adulthood. This philosophy prevails today and much of DPH is concerned with preventive programmes targeted at young children. The national oral health improvement programmes in Wales (Designed to Smile) and Scotland (Childsmile) are examples.

A major change in population demographics in Europe over the past 50 years has affected dentistry. Increased longevity, increased tooth retention, advances in restorative dental technology and changed attitudes to oral health and dentistry have resulted in a cohort of older people, with largely complete, though heavily restored dentitions. This presents challenges for oral health systems and DPH in a way that was not the case in 1966. Then as noted previously, the majority of elderly people in many European countries were edentulous. It is therefore important that disease prevention and treatment provision are now taught from a lifecourse and whole lifetime perspective.

Conclusions and reflection

Reflecting on what was written 50 years ago it is useful to consider James's comments from three perspectives: what we know now that we did not know then; what has changed; what has not changed. Overall, my impression of his commentary is that James was a man ahead of his time. There are few concepts in current day DPH that he did not mention or infer in his commentary. In the year he wrote that paper, he was appointed to a Chair in Dental Health in the University of Birmingham. Anderson and Beal have reported that at the time of his appointment, "the hope was that the new Professor would devote the major portion of his time to research projects concerned with the prevention of dental disease." (Anderson and Beal, 1993). Peter James went on to make a significant contribution to the establishment of Dental Public Health in the UK, and was the chairman of the founding committee and First President of British Association for the Study of Community Dentistry in 1973 (Gallagher, 2013). Professor James died on 30th September 1993.

He was one of the first to introduce many of the things he was recommending into the undergraduate curriculum and established one of the first post-graduate courses in dental health in England.

Clearly James was an advocate of the specialty and of the need to see dentistry and oral health beyond the confines of the dental surgery. At the present time our specialty is under pressure from a number of fronts. The current cohort of DPH academics and indeed, all involved with the discipline, have a responsibility to advocate for the place and approach of DPH in the dental curriculum and beyond, with the insight and enthusiasm displayed by Peter James. As he put it, "*a greater understanding of DPH* [by dental graduates] *will benefit the public, health services and the dental profession itself*."

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