

Teaching dental public health to undergraduates using community profiles and patient case studies

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Objective: Provide an example of how dental public health can be taught to undergraduates. **Research design:** Educational case study. **Clinical setting:** General dental practice. **Intervention:** Dental outreach placement and supporting project work. One project required students to study patients in the context of their environment via the social history. **Results:** The student learned about the social determinants of health and differentiated between the causes of disease in the patient and the determinants of health affecting the practice population. **Conclusions:** Outreach training can help students learn about the social determinants of health. Dental schools may have missed an opportunity to use outreach to help their students learn from and about their environment and its impact on the health of their patients.

Keywords: Outreach Training; Dental Public Health; General Dental Practice

The place of dental public health (DPH) in undergraduate dental curricula has been debated for many years (Slack, 1969). There has even been debate about whether it should be an undergraduate subject. Hitherto, it had been possible to regard the scope of DPH to be beyond the remit of newly qualified dentists. However, in England, the recent DPH workforce review regards all members of the dental team in clinical practice as contributors to aspects of DPH such as disease prevention and oral health improvement (Department of Health, 2010).

It is clear that dental undergraduates need to understand how factors outside the dental clinic will influence the health of their patients and the types of treatment they provide. The UK General Dental Council (GDC, 2008) requires dental schools to take account of “developments in oral health need and the role of dentists in promoting the health and well-being of the public”. In addition it expects dental undergraduates to understand the principles of health promotion and disease prevention, knowledge of managing patients from different social and ethnic backgrounds, familiarity with the importance of community-based preventive measures and with the social, cultural and environmental factors which contribute to health and illness.

Relatively little has been published about the effectiveness of teaching in DPH. However, challenges in medical education may also apply to dentistry (see Gillam and Maudsley, 2009 for a review). As in dentistry, some staff do not regard public health as an undergraduate endeavour. Students may not recognise the relevance of public health to clinical practice and it may be undermined by a hidden curriculum and negative role-modelling by other teachers. Moreover, public health may lack cohesion in the eyes of students, appearing to them as an unrelated series of topics (Ben-Shlomo, 2009). Gillam and Maudsley recommend a mixture of teaching methods,

including group, project and practical work to overcome these challenges.

One approach that has been adopted to help students understand the role of environmental factors on oral health and the practice of dentistry is the use of ‘outreach training’. Students are placed in primary care settings to provide treatment for the patients in those placements (Bailit, 1999; Holloway and Dixon, 1977). Such a programme at Sheffield’s School of Clinical Dentistry places students in up to three placements for a total of 21 weeks. The programme has four aims; (a) to encourage students to appreciate the ethical responsibility of dental professionals for the oral health of the whole community; (b) to increase student understanding of the principles and practice of public health dentistry; (c) to give students an appreciation of the responsibilities and requirements of the practice environment and (d) to consolidate awareness and develop students’ skills in the provision of comprehensive dental care for a range of patient groups.

In a randomised controlled trial, the programme improved students ability to capture patients’ social histories and use them to formulate appropriate treatment plans (Smith *et al.*, 2006). Learning is supplemented with a project that aims to develop students’ awareness of social, behavioural, environmental and economic influences on oral health and dental care. Students write a 4000 word report that profiles the local community at their first placement, presents case studies of two patients, including social histories, that consider the management of the patients as part of their everyday lives and reflects on the student’s experience of the placement. This project is supported by preparatory lectures that bring together the teaching from behavioural and social sciences and set out the project requirements. Students can discuss the patients they select for their case studies with staff

at the school and the placement and each student is assigned a member of staff whom they can contact for advice. They are encouraged to focus on the patient as a whole in his/her community and to present only sufficient clinical information to describe their involvement in the patient's care.

The aim of this paper is to demonstrate how the use of case-study based project work in Outreach training can promote learning and teaching about aspects of DPH. It presents one undergraduate Outreach project and then briefly discusses the potential advantages and disadvantages of using this approach.

The Student's Outreach Project

Introduction

This project was based at Southey Hill Dental Practice, which has provided dental services in the Southey Green, Firth Park area for more than 70 years. Commissioned by Sheffield PCT, it is predominantly an NHS practice that also offers private treatment. Students have had the privilege of an outreach placement here since 2008.

Community Profile

In 2007 Southey Green was ranked 1488 out of 32,243 neighbourhoods using the index of multiple deprivation, which places it in the top 10% most deprived areas in England. It is classified as 'Type 48' in the ACORN classification where families of low income, high unemployment and single parenting are prevalent.

Among the economically active, the rate of unemployment (7.4%) and households that claim income support (28.8%) in Southey Green are nearly double that of Sheffield (4.2% and 17% respectively). Many dental patients are exempt from NHS charges by dint of receiving income support and tax credit.

Almost half (46.3%) of adults have no qualifications, compared to 32% for the rest of Sheffield. The closest primary school is Southey Green Community Primary School. In the 2008 national Key Stage 2 tests only 38% of students achieved the expected level in English and Maths. Reports on local schools found regular attendance to be poor.

Southey Green is in the highest 10% for crime rates in England. The Sheffield Department of South Yorkshire Police has set up *Safer Neighbourhood Teams* to work closely with the local community to tackle issues of concern

The average age of mothers at first delivery is 24 years old, almost 3 years younger than for the rest of Sheffield. Life expectancy at birth is marginally below the Sheffield mean (79 vs 80.9 years). It is in the highest quartile for elective admission to hospital and emergency admissions to hospital. The area is regarded to have poor health and poor healthcare awareness; for example, only 1.9% of smokers in Southey Green quit in the Smoking Cessation programmes. Mean 5 year dmft in Southey Green is 2.5 (Sheffield mean 1.77).

Thus it is evident that deprivation is prevalent in Southey Green and many individuals are exposed to threats to health. However, it is important to highlight that the above statistics broadly describe the population, whereas individuals within it vary substantially. The fol-

lowing case study demonstrates how some of these factors apply to one individual and his treatment.

Case Study – Mr Y.

Patient Details- 31 year old male, living in Parson Cross, an area of social housing adjacent to Southey Green

P/C- Staining and missing teeth. Keen 'to 'av my teeth done'. 'Ashamed' of teeth.

HPC- Recently had 6 teeth extracted as causing severe toothache. They were 'no good.. crumbly' and 'broken to gum level'

DH- Last dentist seen in prison due to serious tooth ache. Before this, Mr. Y readily explained that he had not cared for his teeth or been to a dentist for many years.

MH- NAD

Medications- None declared at assessment

SH- Mr Y said he now had no problems attending dental appointments. He was unemployed and received sickness benefits. His treatment was provided under the terms of the NHS and he was exempt from payment as he received income support.

He had no qualifications. He lived with his mother and step-father; however was soon to move in with his girlfriend and their 5 children. He had come out of prison 3 months ago, following a 7 month sentence and was still seeing his probation officer. He smoked 10 cigarettes a day and drank 21 pints of beer a week.

At a later appointment Mr Y revealed that he was taking methadone. He said he had not taken part in any recreational drug use for 4 years, and was currently taking 30ml of methadone compared to 120ml when he started. He was aware that it could damage his teeth and had requested sugar-free methadone. He was monitored by a drug councillor.

On examination: 15 teeth missing, roots upper right second molar, BPE scores up to 3 in all sextants

X-Ray Report- Horizontal Bone loss and secondary caries LL6. UL7 roots present.

Diagnosis- Chronic Periodontitis, Caries, Missing teeth

Prognosis- Good if patient maintains motivation

Aims- Periodontal Management, Caries Management, Replace missing teeth

Treatment Plan

Oral hygiene instruction and dietary advice. Encouragement of smoking cessation and seeing drug councillor. Concomitant throughout treatment. Mr Y readily accepted a referral for smoking cessation and made a positive attempt to reduce his alcohol intake.

- 6-point charting, root surface debridement as required
- Primary impressions and preliminary conservative treatment
- Crown prep LL6 and extraction UL7
- Crown fit LL6, Secondary impressions and wax registration
- Complete upper and lower partial acrylic dentures

Outreach Project Discussion

Whilst Mr Y exemplifies some common features of patients at the Southey Hill Dental Practice, he is an individual and must not be seen as a stereotype.

Mr Y was subject to multiple factors associated with deprivation such as unemployment, imprisonment and being a father of 5. Although these factors are common in deprived areas their adverse health consequences are not inevitable. Therefore what makes a person more likely to adopt behaviours such as smoking which lead to ill health? Why is health a priority is some people's lives, while others do not recognise their problems? Why may some people in Southey not have high expectations and ambitions?

Psychosocial factors form a link between the environment and health. People constantly exposed to these circumstances can experience acute and chronic stress. The resultant psychological and biological processes directly increase the risk of physical and mental illness via biological pathways such as the sympatho-adrenal pathway and hypothalamic-pituitary-adrenal axis (Brun-

ner and Marmot, 2006). They also indirectly increase the risk of disease by predisposing people to behaviours such as smoking, drugs and unsafe sex. Drug-use is a possible cause of his previously high caries rate as oral hygiene tends to be reduced (with simultaneous decrease in fluoride exposure), people tend to develop a sweet-tooth, opiates can cause xerostomia and oral methadone solution has high sugar content (Robinson *et al.*, 2005). Brunner and Marmot (2006) have modelled this intricate relationship between social structure and well-being and included biological pathways of disease aetiology. Factors in Mr Y's social history can be used to populate this model (Figure 1). For example, multiple risk factors such as tobacco use and dietary sugar may cluster together in individuals and can have direct pathophysiological consequences for his mouth and other organs. Ultimately, his well being was affected by these diseases (he was ashamed of his teeth). The community profile of Southey Green shows how many of the 'upstream' factors (to the top and left of the model) and adverse health outcomes are also prevalent in this area.

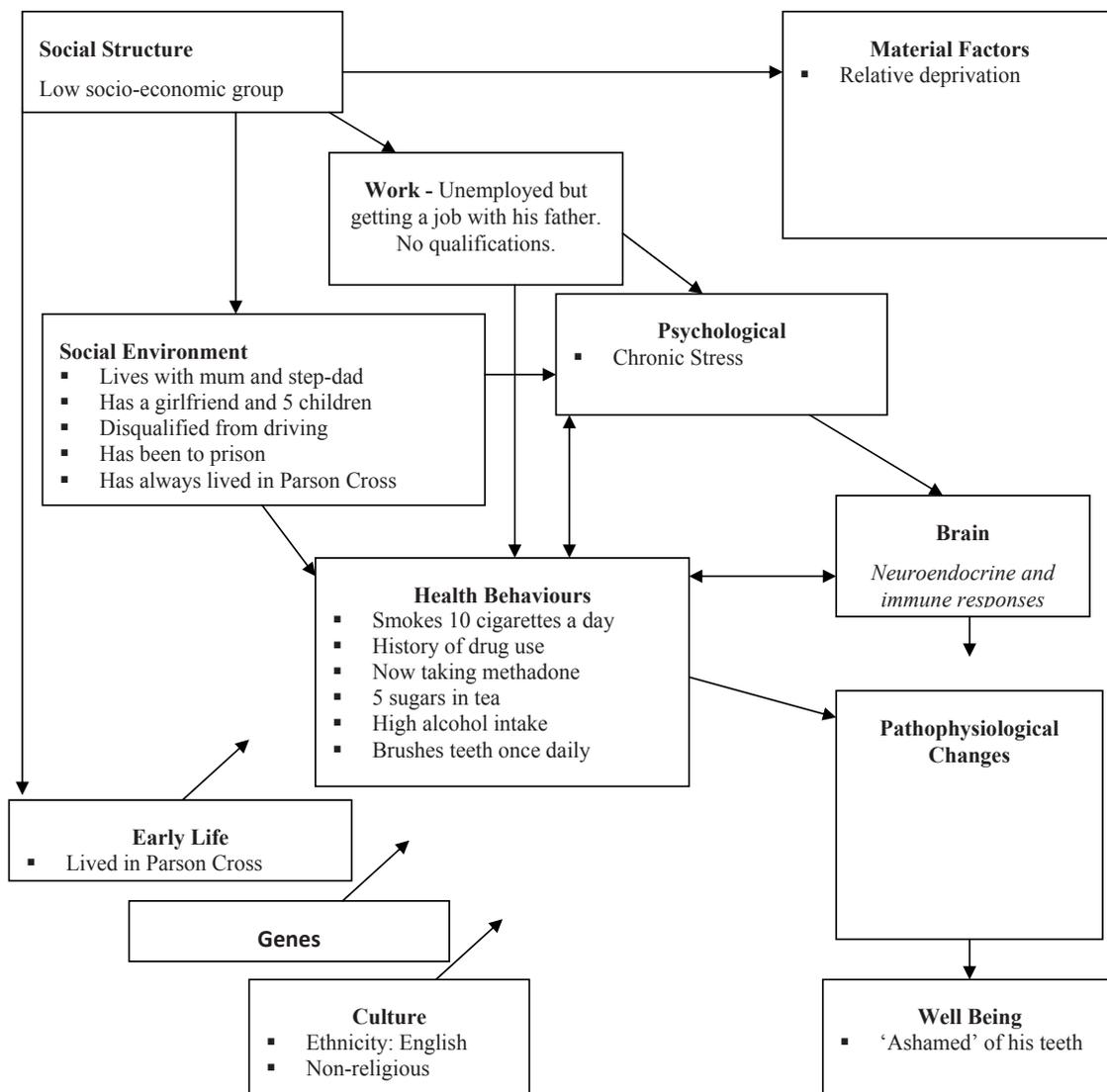


Figure 1. How Mr Y may fit Marmot and Bruner 2006 model of Social Determinants of Health

They suggest how various factors in Mr Y's life may have led to poor health. His life chances were restricted in many ways. He may have had low expectations of life and health but the renewed dental attendance and desire to have his teeth "done" indicated an important change of perspective (Gregory *et al.*, 2005). Although he was exempt from paying he may not have wanted to take time off previous work commitments. He may have been burdened with financial insecurity. As a parent of five his life may have been too hectic and busy to fit in dental appointments. He may have lacked the social capital to help him out. Chronic stress as a result of his circumstances may have led him towards behaviours such as smoking and infrequent dental attendance. Negative experiences and emotions can lead to a sense of hopelessness and lack of expectations. The biological pathways triggered as a result of the stress itself can directly lead to disease (Brunner and Marmot, 2006). This may explain his previous lack of concern over his own health. In contrast people in other circumstances may have more opportunities and the power to act on choices about their physical and social environment.

Focussing on people's lifestyles can be perceived as victimising and widens inequalities. Many aspects of people's lives are not chosen and so are not easily changed. This is emphasised by the reaction of another patient to a smoking cessation referral, who was insulted and said he would "go to my MP" if the topic was brought up again. The difference between these responses exemplifies how social factors are apparent at the practice population level, yet individuals differ widely. Whilst personal behaviours are individual decisions, they are still influenced by the socio-economic and environmental conditions in which people reside. Thus, the determinants of health must be addressed for people to be given the opportunity and resources to change their behaviour (Brunner and Marmot, 2006).

Oral health promotion advocates the construction of an environment favourable to oral health using the Ottawa Charter as an outline (Watt and Sheiham, 1999). Such policies have been adopted in Southey Green in a variety of ways. *Southey and Owlerton Area Regeneration* is a local community and charity organisation that provides numerous services including key workers to support unemployed people seeking work and Stop Smoking Advisors. Southey Hill Dental Surgery participates in a project involving Oral Health Action Teams. Health Care Promoters and dental students lead activities in the local primary schools to increase oral health awareness. Healthy public policies such as the Smokefree legislation of 2007 also play a vital role.

Other methods that could be considered in the future include water fluoridation and nutritional guidelines on school meals (Watt and Sheiham, 1999). In order to maximise resources and address many conditions at once, the common risk factor approach could be adopted. This method also encompasses a broader range of recipients (Sheiham and Watt, 2000). Resources such as the new health inequality toolkit for interventions can be used to target and plan local services (Association of Public Health Observatories and Department of Health, 2010).

Mr Y was enthusiastic about his dental treatment and regarded it as an essential step to his rehabilitation

into society. Although he had adopted a series of health-damaging behaviours, he utilised social and community networks to take greater control of his life and attempted to change these behaviours and the conditions surrounding him. He acquired help from his father to find a job, accepted a smoking cessation referral, regularly saw his drug councillor and probation officer and found a dentist. Optimism may promote health by reducing stress-induced inflammatory mediators (Brydon *et al.*, 2009). Mr Y did not reveal what prompted him to make these changes, however drug-users may disregard their health until in treatment or a rehabilitation unit (Robinson *et al.*, 2005).

In this case a detailed social history proved essential to holistic patient care. Understanding the patient's background and environment enables the clinician to tailor treatment and management to the individual, and direct them to other relevant resources where appropriate. However, unlike highly structured medical history pro formas, formats for social histories are rarely described in text books. A structured format might ensure that these important features are included in patient assessments, but it may be that social histories are so diverse that they are not well suited to such structures.

Undoubtedly a GDP's primary role is the personal care of individuals. However, as healthcare professionals we need to be mindful of the social determinants of health as ultimately affects the health of our patients. To address this we must work in conjunction with a range of organisations, including the government, to successfully promote health (Daly *et al.*, 2007).

Reflection

Outreach was a challenging yet satisfying experience. I expected to develop clinical speed and confidence, which I am delighted I achieved. However I was unwary of the physical demands of full working days plus travelling and the culture shock that awaited me. Nonetheless, facing and overcoming this has been fulfilling.

The stark differences between the dental school and working in practice were soon evident. While treatment at the Dental School exemplifies the highest standard of technical work one might aim for, it was unrealistic in practice. In Outreach, patients were not always so motivated and practical constraints such as timing and costs were present. Consequently, 'high quality' was seen as the optimal compromise between what might be achievable and what was acceptable. Such efficiencies created time for other essential features of management such as prevention and establishing a relationship with the patient, which might be very important for patients with challenging social histories. In this case, Mr Y eventually felt able to disclose his history of drug use and methadone maintenance. Both these factors are crucial aspects of his social and medical history which would impact directly on the state of the mouth and approach taken by the dentist (Robinson *et al.*, 2005).

Outreach presented a gamut of patients with a spectrum of medical and social histories. However, it was apparent that the practice location had a huge impact on the patients and their needs, as illustrated by my case study. This in turn reflected the treatment that was being provided. For example, I noticed that none of my

patients at outreach questioned my treatment options or plans by reading additional sources such as the internet. They accepted my explanations and treatment in an almost passive manner. At the dental school my patients are well informed and are eager to be more actively involved in their treatment.

I learnt that the management of a patient needs to be holistic and patient-centred. It is a fine balance between what the patient wants and what we as professionals think is required. I have learnt to integrate health education into appointments. Whilst this is important one should not be disappointed if patients do not change their behaviour.

I feel the insights gained from understanding social determinants of health will help me to be a better clinician.

End of student's written report

Discussion

The project summarised in this paper reveals how work in Outreach training can help students learn about the social determinants of health. Whilst this student was insightful and assiduous, and not all students may share these qualities, this project indicates the potential of this approach. It further suggests that dental schools that have regarded outreach merely as a means to increase their students' clinical activity may have missed an opportunity to help them learn from and about their environment and its impact on the health of their patients and the type of work they will do.

An earlier report of a similar undergraduate report described the use of a social history as a vehicle to study DPH (Harris *et al.*, 2003). The use of case studies and local epidemiological data to study concepts such as the social determinants of health might invoke the ecological fallacy, whereby inferences about individuals could be based upon data for the group to which those individuals belong. That is to say, that there is a danger of stereotyping, where all patients might be assumed to have the average characteristics of the local population.

Conversely, this risk can be used as an opportunity to distinguish between individual and population-based causes and determinants (Rose, 1985). Dental clinicians and students are concerned with the treatment of individual patients and with acquiring the skills to do this. There will be distinct differences between such individuals and different causes of disease will be evident among them. Nevertheless, clinicians are also concerned with populations, such as the patient-base at a practice. Population-based determinants will influence the health and needs of this generality of patients, so that generalisations can be made at the level of the practice and contrasted with individual causes. The teaching that supports the dental outreach program at Sheffield is explicit about this distinction, and whilst not all students recall everything, the case study presented in this paper shows good understanding of the ecological fallacy and the danger of stereotyping.

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