Summary of: Modelling workforce skill-mix: how can dental professionals meet the needs and demands of older people in England?

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FULL PAPER DETAILS

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VERIFIABLE CPD PAPER

Background There is an urgent need to consider the skill-mix of the dental team to meet the oral health needs and demands of the population in general, and older people in particular. As people live longer and retain their teeth there will be a progressive change in both the volume and type of dental care required, and the demand for care. Operational research modelling provides the opportunity to examine and test future scenarios for National Health Service (NHS) care. **Aim** The aim of this research was to explore the required skill-mix of the dental team to meet future need and demand of older people in England to 2028 utilising operational research methods and to examine a range of future scenarios. **Method** A three-stage computer model was developed to consider demand for dental care, workforce supply and skill-mix. First, the demand model combined population demography and a marker of oral health with attendance and treatment rates based on NHS activity data. Monte Carlo simulation was used to give an indication of the uncertainty surrounding this projected demand. Second, projections on workforce supply and other assumptions relating to clinical hours, NHS commitment and workforce whole time equivalents (WTEs) were analysed to produce a range of estimates for the current and future workforce. Third, staff skill-mix competencies were examined and the data fed into an optimisation model. Linear programming was used to give the optimal workforce makeup and predictions for workforce requirements. Five future scenarios were run from 'no skill-mix' through to 'maximum skill-mix' in the dental team, and the outputs compared. **Results** The results indicate that by 2028 there will be an increase in demand for care among older people of over 80% to almost 8.8 million hours; however, Monte Carlo simulation suggests considerable uncertainty surrounding the demand model outputs with demand deviating from the average in terms of treatment hours by as much as 22%. Modelling a healthcare system with 'no skill-mix' resulted in the lowest volume of clinical staff equivalents (dentists: 8,668) providing care for older people, whereas maximum skill-mix involved more staff (clinical staff = 10,337, of whom 2,623 were dentists, 4,180 hygienist/therapists and 3,534 clinical dental technicians) if all care is provided at the relevant level of competence. **Conclusion** The model suggests that with widening skill-mix, dental care professionals can play a major role in building dental care capacity for older people in future. The implications for health policy, professional bodies and dental teamworking are discussed.

EDITOR'S SUMMARY

Regular readers of the *BDJ* will have noticed that both the potential of dental care professionals (DCPs) to contribute to workforce skill mix, and oral healthcare in older people, have been the subject of a number of articles in recent years. Both topics are important issues in modern dental practice, with concerns expressed about the lack of oral care that many elderly people receive and continuing debate about the roles of DCPs and the evolution of the modern dental team.

This paper by Gallagher *et al.* shows how careful workforce planning could

make a positive impact on both areas. The authors used operational research methods to model the skill-mix required to meet the dental demand of older people in future, examining a range of possible scenarios. They show that with widening skill-mix, DCPs have the potential to play a major role in meeting the dental needs of older people.

This type of modelling has much to contribute to future workforce planning, as this detailed study shows. The implications for health policy are significant and the authors recommend that policy makers need to explore skill-mix, its

challenges and its potential. By highlighting the potential of operational research in modelling future healthcare skill-mix, and through this the potential of DCPs to make an impact on dental demand, this paper has made a potentially important contribution to future NHS oral care.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 208 issue 3.

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IN BRIEF

- Highlights the need to plan the future dental workforce to address the needs of the changing population demography.
- Demonstrates the benefits of using skill-mix within the dental team.
- Raises the issue of embracing clinical dental technicians within NHS dental services to meet the needs of older people.

COMMENT

Over the next 20 years both need and demand for dental treatment by people over the age of 65 in the UK is likely to dramatically increase in line with demographic changes. This age group (the 'baby boomer generation') has benefitted from significant improvements in public health during its lifetime, arguably the most notable being the introduction of the NHS in 1948. They will not only have more teeth than their predecessors but are likely to have more heavily restored teeth than their successors, who will have benefitted from widespread use of fluorides in toothpaste and drinking water and an increasing focus on prevention by the dental profession throughout their lives. This paper is timely and highlights the need for policy makers and planners to actively address this significant public health issue.

Workforce planning in healthcare is notoriously complex and difficult, and dental workforce planning cannot always be accommodated by existing models developed for medicine, nursing and allied health professionals. To date, national dental workforce planning has largely focused on supply side demand predictions for dentists alone rather than detailed considerations of the potential for provision of care by the dental team. This paper addresses population health status and predicted oral health needs together with the difficulties encountered in determining current workforce supply. It attempts through proven and sophisticated mathematical modelling techniques

from the field of operational research to consider variations in skill-mix and to apply these to a range of possible scenarios.

This paper looks at just one section of the population, which is likely to be the most critical in relation to deciding how many and what sort of dental professionals we should be training now. There is a very long lead in time for planning training for dentists in particular, and models such as this need to be used repeatedly and often and to be constantly updated to incorporate the latest information and intelligence about the current workforce, society's expectations and changes in demography and health.

No prediction is ever perfect, but the better informed we are, the more likely it is that sensible decisions can be made about investments for the future.

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**AUTHOR QUESTIONS
AND ANSWERS****1. Why did you undertake this research?**

The lead author (JG) was challenged to undertake this research having sat as the dental public health member of a National Working Party for Older People in England. From a strategic perspective, meeting the oral health needs and demands of older people presents the health service and dentistry with an increasing challenge. Within the UK, we have begun to formalise and expand the skill-mix of the dental team including clinical dental technicians (CDTs). JG was interested to look at models of the future whereby skill-mix could be harnessed to provide dental team care to older people. This project built on an active collaboration with operational researchers (PH & EK) and was undertaken as an MSc project (EK).

2. What would you like to do next in this area to follow on from this work?

Operational research modelling provides researchers and health planners with a tool that can examine possible futures. This study suggests that there is much to be gained from using skill-mix teams; hence, the next challenge is to undertake pilot studies building upon this model and test the contribution of dental care professionals in the real world. Important areas to look at will be cost-effectiveness, quality of care and acceptability to patients. CDTs need to be recognised as dental care providers and performers. This would enable commissioners in England to use current procurement opportunities and commission innovative models of care.