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Recruitment and retention in dentistry in the UK: a scoping review to explore the challenges across the UK, with a particular interest in rural and coastal areas

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Title

Recruitment and retention in dentistry in the UK: A scoping review

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IN BRIEF

- Identifies factors affecting recruitment and retention in the dental workforce in the UK, including future challenges and potential strategies for assisting workforce planning.
- Discusses the consequence of recruitment and retention issues leading to reduced patient access to dental care.
- Highlights geographical dental workforce imbalances in the UK with a particular interest in rural and coastal areas.

ABSTRACT

Introduction

There is currently reduced access to NHS dental services in the UK, particularly in England with rural and coastal areas significantly affected. Recruitment and retention in dentistry has been highlighted as an issue contributing to the problem and requiring urgent action.

Objectives

The objective of this review is to explore what is known or unknown about recruitment and retention of the dental workforce in the UK, with a particular focus on rural and coastal areas.

Methods

Searches for peer reviewed literature and reports were undertaken across a range of databases and UK websites. Diverse types of information were included when they met the eligibility criteria. Data was extracted and the findings narratively synthesised.

Discussion

The findings suggested broad recruitment and retention issues of the dental workforce in the UK. The majority of issues were associated with dentists working in the NHS; followed by dental nurses across both the NHS and private sectors. The worst affected parts of the country for recruitment and retention were in rural and coastal areas.

Conclusion

It appears from the evidence types found, that there are many dental professionals aware of and discussing recruitment and retention issues, followed by stakeholders. However, there is limited research and data to initiate change.

INTRODUCTION

Access to NHS dental services in the UK is currently reduced, particularly in England, with demand massively outstripping capacity (1). Recruitment and retention (R&R) in NHS dentistry has been highlighted as an issue of concern (2) and has been a chronic problem in certain areas for many years, exacerbated by the pandemic (3).

It has been reported that staff morale dramatically declined during the pandemic (4), with high levels of stress and burnout (5). There is evidence that the impact has increased the number of dental professionals considering leaving the profession, through early retirement or a change in career (6).

Many factors affect access to NHS dentistry, but the R&R of dentists is undoubtedly a major issue. This is particularly challenging for rural and coastal (R&C) practices where recruitment is already a longstanding issue.

Most research into R&R in rural areas has been conducted in Australia, the USA and Canada, and frequently focusing on medical services. Remote areas of the UK are geographically less isolated and potentially face different challenges compared to those reported in the international literature.

R&R in dentistry has been brought into focus within the UK recently due to severe problems of NHS access. GDC figures (7) indicate an increase in the number of dentist registrants, but this data is likely to be flawed as it fails to reflect changes in working patterns, with increasing numbers of dentists working part-time (8). There is currently a paucity of high-quality research on R&R in dentistry, particularly in relation to the specific challenges facing R&C areas.

We therefore undertook a scoping review, which are used to explore broad topics found across wide varieties of literature types and study designs; as well as to map the most important concepts and types of evidence to the area being investigated.

It is important to identify what evidence exists on R&R in UK dentistry, to inform future workforce decisions.

Objectives

The objective of this review was to explore what is known or unknown about R&R in the dental workforce in the UK, with a particular focus on R&C communities. The review addressed five focused questions, used to guide the selection of results, the extraction of data and present the findings:

1: What factors affect R&R in the dental workforce in the UK?
2: What do we know about the current geographical distribution of the dental workforce across the UK?
3: What are the anticipated challenges to R&R in the dental workforce in the UK?
4: What strategies are there to assist workforce planning in the UK?
5: What is the extent of empirical research in this field?

In order to maintain currency, this review focused on evidence from the past five years.

METHODS

Protocol and registration

The protocol was developed *a-priori* in accordance with the Joanna Briggs Institute guidelines for scoping review protocols (9). It can be accessed at: https://osf.io/ctb7v/.

Eligibility criteria

All types of evidence, including empirical studies, secondary research, reports, opinion pieces and webpages, were considered. Inclusion criteria are described in Table 1.

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Discusses or describes workforce planning, recruitment or retention in dentistry in the UK • Discusses or describes geographic distribution of dental workforce across the UK • Proposes, discusses or describes factors affecting current or future recruitment or retention or workforce planning in the UK • Proposes, discusses or describes strategies aimed at recruitment or retention in dentistry in the UK	• Predated 2017 • Not related to the United Kingdom • Not written in English

Website searches

A number of websites were searched (see Table 2).

Table 2: Websites searched to gain evidence for the scoping review

Websites searches to gain evidence for the scoping review
General Dental Council; Health Education England; Health Education and Improvement Wales; UK Committee of Postgraduate Dental Deans; Association of Dental Groups; Dental Schools Council; Faculty of Dental Surgery of the Royal College of Surgeons of England; Faculty of Dental Surgery of the Royal College of Surgeons of Edinburgh; Faculty of Dental Surgery of the Royal College of Physicians and Surgeons of Glasgow; College of General Dentistry (formerly FGDP(UK)); NHS England; NHS Education for Scotland (NES); Health and Social Care Committee; British Dental Association; Local Dental Committees; the Review Body on Doctors' and Dentists' Remuneration; National Audit Office; Rural Services Network; Healthwatch.

Literature searches

Three bibliographic databases were searched: Scopus (Elsevier), Web of Science (Clarivate) and Dentistry and Oral Sciences Source (EBSCOhost). The search strategy comprised terms for dental care professionals, recruitment and retention, and the UK. Searches were undertaken by an Information Specialist on the 13th March 2022. The search histories are detailed in the Appendix. Results were de-duplicated in EndNote and transferred to Rayyan for screening (10).

Selection of sources of evidence

All results from the database and web searches were single screened against the eligibility criteria by the lead author of the review (DE).

Data items

The following data items were extracted: author, year, type of evidence, geographical location discussed, factors affecting recruitment or retention, geographical distribution of dental professionals across the UK, future challenges to the workforce, strategies, recommended or implemented.

Critical appraisal of individual sources of evidence

No critical appraisal was undertaken. This has less merit in scoping reviews, where the aim is to explore broad conceptual questions across a range of evidence types (11).

Synthesis of results

The findings are synthesised narratively and presented to address each of the review questions in turn.

RESULTS

1. What factors affect Recruitment & Retention in the dental workforce in the UK?

Factors affecting R&R in the dental workforce were widely discussed in the literature.

a. ***The NHS UDA contract*** was deemed the most common factor in England (5, 12, 13), including its associated workload (14). The literature pointed to a relationship between stress-related R&R issues and the NHS working environment (15), reporting that stress and burnout commonly affects dentists across the UK (16). This was widely corroborated, with sources stating that dentists are "*deeply discontent with the NHS primary care systems*" in England (13), and are *"fed up with a system that is fundamentally flawed"* (17). Ultimately, it was found that in England the contract is "*driving people out of the profession*" (5).

b. ***Limited opportunities*** for career progression impacts retention relating particularly to dentists in the NHS and dental nurses across both NHS and private sectors (8). One study found that many dentists working for NHS dental services were keen to upskill (13), but are discouraged by the lack of financial incentives to do so under the current NHS contract (18).

c. ***Financial factors*** include the increase in the cost of expenses and indemnity fees (19) and the long-term reduction in nett income (20). Remuneration was identified as an important factor in attracting and retaining dental hygienists and therapists (21). Dental nurses report feeling "underpaid", but "overworked and undervalued" (20); and the general feeling of being undervalued was commonly noted across the workforce (2). Many also expressed worries about costly and stressful litigation (17).

   Financial factors were also found at the systems level (22). In England, with government funding reduced in real terms by 29% since 2010 (23), and dentistry the only part of the NHS now operating on a lower budget than previously (24).

d. ***BREXIT and the pandemic*** were widely discussed with issues including legislative uncertainty, the need for work permits and financial aspects (25). The number of applicants from the EU entering the UK dental register fell from 1,249 in 2016-17 to 686 in 2017-18 (25), the same year that the Prime Minister formally triggered Article 50 (26). The decline has continued with only 357 applicants added to the register in 2020 (27).

   The situation deteriorated markedly in 2020 due to suspension of the Overseas Registration Examination (ORE) due to COVID restrictions (4). The ORE process was already under pressure and had previously been criticised for its lack of effectiveness, limited capacity and laborious processes for recognising overseas dentists (2, 28, 29).

It was also reported during the pandemic, that the morale of the dental workforce (4) and the risk of burnout increased (5).

e. ***Specific geographical challenges for rural and coastal areas*** have historically been more prevalent (2) and have been amplified by the factors presented. Some additional factors, however, have a greater impact in these locations and are believed to have added to the severe shortage of dentists in these areas (30).
    - Poor transport links (31)
    - The urban prominence of dental schools, teaching hospitals and training opportunities (19)
    - The tendency for dentists to work within urban areas, where they have strong family ties (32) and personal connections (19).
    - That dentists often settle where they complete their Foundation Training (31) coupled with a lack of R&C placements, for example in the South West (33).

2. What is the geographic distribution of the dental workforce across the UK?

An uneven geographical distribution of the dental workforce is highlighted within the literature and this maldistribution is not a new phenomenon (28, 34). The National Audit Office reported that the UK has the lowest number of dentists per capita in Europe, with England having the fewest NHS primary care dentists per person (1). From 2020-21, a fall in dentist numbers was found in all regions in England (12), taking the headcount to its lowest level since 2013-14 (35). Further data also suggests there are NHS dentist shortages across Wales (34). In Scotland, practice owners were not confident staffing levels could be maintained and in Northern Ireland there is evidence that dentists are considering leaving NHS dentistry (36).

Urban working preferences were noted and in 2018 an "oversaturation of dentists in urban areas" was reported (14), particularly in London (37). A proposed explanation was that 22-23% of dental school applicants are from London (38) and that students tend to return to their hometowns after graduating (39). Furthermore, 46% of speciality registrars chose London as their preferred location, closely followed by Manchester (34).

Locations with severe issues with recruitment were Lincolnshire (17), Cornwall (40), Somerset (41), Scarborough, Hull and the Isle of Wight (42). Overall, the worst affected parts of the country were R&C areas (42). A practice in Barrow had permanent, unfilled vacancies for five years (43) and a recruitment agency in Cumbria was unable to fill any vacancy in a twelve-month period (44). There were many sources describing difficulties attracting the dental workforce to rural areas (2, 20, 34), however these problems have become more prevalent and are now affecting major cities (35).

3. What are the anticipated challenges to Recruitment & Retention in the dental workforce in the UK?

Anticipated challenges to the future dental workforce include:

a. GDC data shows the number of registered dentists fell by 961, from 2021-22 (15). Furthermore, in 2021, 58% of NHS dentists reported their intent to leave or reduce their NHS commitment in the next five years (13). The impact of these numbers are difficult to understand fully as the GDC does not collect information regarding how registrants work e.g. part-time, percentage NHS/-private, or those on the register not currently practising clinically (45).

b. ***The pandemic*** has had a large influence on the challenges to R&R, by exacerbating existing problems and raising new issues.

- The recruitment of dentists from outside Europe is a challenge, as they may not be able to complete their ORE in time (46). This is reported to be due to a combination of inflexible legislation and the backlog from the pandemic (4). It is believed that due to its limited capacity (28), the ORE will be unable to process the 2,000 waiting dentists (4) before the strict legal time limit, set within government legislation, runs out (46).
- During the pandemic, many dental professionals began to feel that dentistry was a less secure career choice. A number of hygienists, therapists and technicians believed that they would not be in their current roles in the next 12 months and younger professionals were considering career changes (6). In 2020 it was suggested that the worst effects of the pandemic on the mental health of the dental workforce was yet to materialise (47). A more recent source reinforced this view, stating dentists were "exhausted and demoralised" (48).
- Exacerbation of limited NHS dentistry capacity (49) along with reinforced financial and workload pressures (50), further contributes to the perception that NHS dentistry is an unattractive and stressful working environment (2), particularly if there is a requirement to work longer hours/shifts (47). These factors act as a driver for many to reduce their NHS commitment and work in private practice (18), where it was reported dentists feel there is less pressure (51).

c. ***Change to working patterns with newer qualified dentists*** not wanting to work clinically five days a week (52) and a higher percentage of female dental professionals, statistically more likely to work part-time (14).

d. ***Perceived lack of opportunity in R&C areas*** including young dentists' concerns regarding stress and burnout and wishing to start careers in urban areas with a perceived better quality of life (39); and that those wishing to undertake further training and hospital based jobs will locate near to teaching hospitals (31), mainly in urban areas (19).

4. What strategies are there to assist workforce planning in the UK?

Strategies to assist workforce planning were reviewed. There were many suggestions, however few had been implemented.

a. ***Grass roots programmes in Schools and Colleges,*** to attract and train the future workforce through raising awareness of the profession (30).

b. In England, the ***Advancing Dental Care Review*** aims to support retention by restructuring education to fit trainees' preferences, via flexible training and upskilling (53). The development of "integrated Centres for Dental Development" was promoted, with hubs providing additional training opportunities in areas remote from dental schools (53).

c. ***Training more dental professionals***, particularly in areas with poor access (28), commonly R&C (53). A change in the competitive Dental Foundation Training (DFT) method was discussed, to address uneven workforce distribution (53). A number of sources also highlighted the need for more Dental Foundation Trainers, to maintain a pool of experienced practitioners to support DFT (19).

d. It was recognised that ***work engagement*** could reduce dental nurses intentions to leave (54), by creating avenues for career progression (55).

e. ***National strategies*** were proposed by the BDA, who "urged the government to factor dentistry into its' NHS plan" (24) and The College of General Dentistry to "support workforce retention through its Career Pathways programme" (56). It was also noted that the NHS has recruited "thousands of reservists", to help with the staffing problems caused by the pandemic (57), however there was no evidence found of these resources being directed towards dentistry.

f. ***Contract reform*** was the most frequently mentioned factor in England for improving working conditions across the dental team (5) and addressing recruitment problems (56). Workforce retention is considered to be "intimately related" to the NHS dental contract (58) and if there are no "significant changes" introduced imminently, the drift to private dentistry will continue at pace (18).

g. In the wake of Brexit, commentators called for an easier system for ***assisting overseas dental professionals*** to practise in the UK. This would involve extending the recognition of qualifications (28) and reforming the ORE (46). These calls have been partially addressed by the Professional Qualifications Act (2022) allowing regulators in different countries to mutually recognise qualifications.

h. ***Local level strategies*** had been implemented across several regions, such as the South West, where recruitment campaigns have been organised to attract people to the region (31) and funding offered for post-graduate courses (31). Joint initiatives with various Local Dental Networks and authorities (60) were also identified.

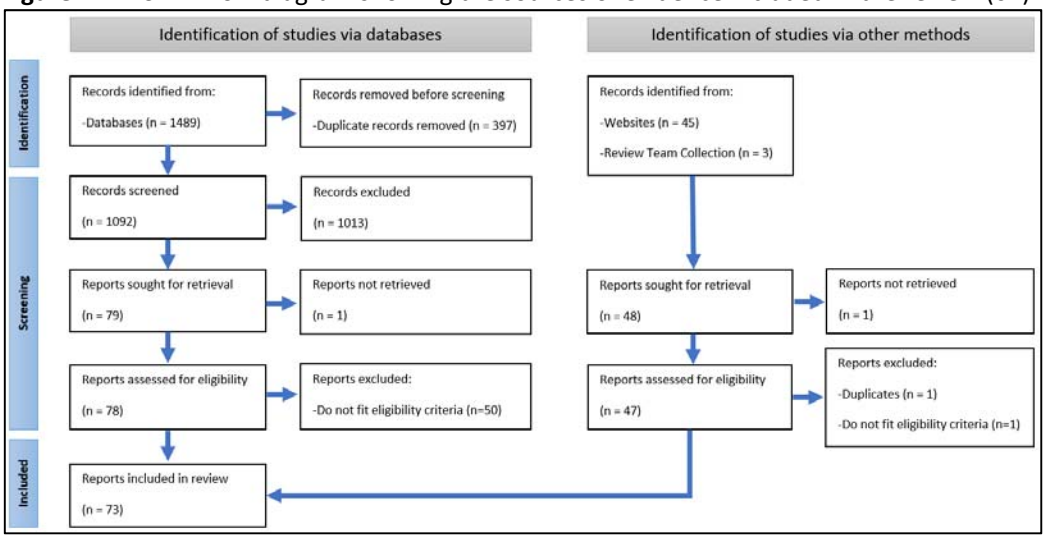
5. What is the extent of empirical research in this field?

A summary of the evidence sources found for the review based on the PRISMA process is in Figure 1.

Of the 73 included sources, most were editorial and opinion pieces (n=37), mainly in dental publications. The audience assumed to be mainly dentists. The second largest proportion came from official reports and documents (n=21). There was a limited amount of empirical research (n=15), of which 13 were quantitative and 2 qualitative.

The quantity and type of evidence identified within this scoping review provides some indication of the level of interest and debate around R&R at the present time. Unfortunately, there has been limited empirical research in this area and inadequate statistical evidence and data supporting these discussions.

Figure 1: PRISMA Flow diagram showing the sources of evidence included in the review (61).



DISCUSSION

Many sources highlighted that most R&R issues were associated with NHS dentists, followed by dental nurses across both the NHS and private sectors. Due to the issues raised, a number of sources discussed that many NHS dentists in particular were planning or had already moved into private practice (18, 51, 55).

Escalating problems could be envisaged if more dentists move into private practice, with the impact felt by both NHS patients and practices. NHS access for patients will be further compromised, and practices will have increased vacancies or may have to close completely (32). Issues such as BREXIT, the pandemic, and financial pressures, affect both NHS and private practices, but the latter will be afforded a greater degree of control over how they can adapt and change. This is likely to lead to greater opportunities within the private sector, thereby accelerating the desire and willingness for dentists to transition from the NHS to private practice.

This will further impact on how new graduates view the NHS, which has long been perceived as unattractive and stressful (2). The likely consequences include new graduates migrating earlier in their careers to the private sector (51). Increased demand on private practices, due to the lack of NHS patient access, will place additional pressure on a depleted workforce and undoubtedly exacerbate recruitment issues within NHS practices. The rising challenges of R&R may not be isolated to NHS practice and reports of problems of recruitment within the private sector in rural areas has already been reported (1, 42).

Specific problems for R&C areas that have led to reduced numbers of dental professionals, include poor transport links (31), the location of dental schools, teaching hospitals and training opportunities (19) and lifestyle preferences (19, 32). For these reasons, many dental professionals choose to live in urban areas, directly impacting access for those patients living in R&C areas. The R&C patients most affected will be those in deprived communities (62) and those unable to travel to urban areas to visit a dental professional (30).

Priority for rural and coastal areas will aid deprived communities access to dental care and address existing inequalities (53, 62). It was reported in Australia that to develop a stable healthcare system,

the factors that influence R&R of dental practitioners in rural areas must be better understood (63). Although rural areas of Australia are geographically more isolated than the UK, strategies applied there could be explored in the UK (24). These included increased financial remuneration, the development of social bonds and an enjoyment of the rural lifestyle, achieved by successful integration within rural communities, via the rural placement of dental schools, placement programs and increasing career opportunities (63). The proposed "integrated Centres for Dental Development" by Health Education England (53), located in areas remote from dental schools, could provide training opportunities within these areas (53). This would obviate the need for dentists having to locate themselves in urban areas to access training (19) and could potentially increase the number of dental professionals in R&C and deprived communities (53, 62).

Government actions will be key to initiating and assisting the strategies found to improve R&R of the dental workforce in the UK.

Firstly, increasing overall funding within dentistry, as well as specifically towards new and established dental schools, could prevent the falling projected numbers of the future workforce and "increase reach and training in underserved areas" (15).

Furthermore, altering the legislation to enable more overseas dentists to complete the ORE (4, 28) and simplifying the recognition process, (29) would ease this barrier to recruitment.

Undoubtedly, the most common factor affecting both R&R of the dental workforce was the NHS working environment (15) and in particular the NHS UDA contract in England (5, 12, 13). Contract reform would directly address some of the recruitment problems (56) and aid retention of the existing workforce (58).

The reform would also be an opportunity to improve professional fulfilment and retention. Dental therapists (58) and nurses with additional qualifications are not recognised as "performers" under the current NHS contract. This is a barrier to NHS access, undermines team-working, and compromises the provision of preventative oral health advice, care and treatment.

Future Research is necessary to inform long term strategic decisions, but this must be supplemented by urgent action to address the current dental crisis. Research should include an exploration of the influences on graduates' choices, in particular location choices, to gain a better understanding of the barriers, drivers and facilitators which inform career choices. This is particularly relevant in relation to R&C areas, if we wish to address the current geographic inequalities (63).

Secondly, there is a "real need for reliable contemporaneous workforce data", to allow full understanding of the problem (53). This could be used more effectively to address both private and NHS R&R areas and help predict the workforce numbers needed in the future.

Addressing these knowledge gaps, gaining more qualitative data and performing longitudinal studies, would ensure that future R&R interventions can be more effective and target areas with the greatest needs. Ensuring collaboration across multiple stakeholders and joint working would produce both short- and long-term strategies, that are paramount in assisting the change needed to improve the R&R of the dental workforce in the UK.

Conclusions

In 2019, it was stated that “dentistry faces existential crisis”. Three years later, it is reported that only “urgent change can save NHS dentistry” (24). The current state of NHS dentistry is widely acknowledged, although there appears to have been little progress in addressing the underlying issues. Further delays will undoubtedly impact on patient care, leading to a deterioration in oral health and unnecessary suffering for many. This will predominantly affect the most vulnerable in society, resulting in greater oral health inequality.

Recruitment and retention of dental staff is critical in maintaining a viable dental service, and failure to act quickly and decisively will cause irreversible damage to NHS dentistry (23). The situation appears to be particularly acute within R&C areas, although data needs to be collected and analysed to provide a better understanding. Well-informed, evidence-based decisions are essential in mapping out the future of dentistry in the UK, but this must not delay immediate action at a local, regional and national level.

Limitations

Inevitably, reviews are constrained by the extent and nature of the literature. In this instance, there was a limited amount of empirical research, with most documents being from grey literature sources and with a lot being commentaries or similar. In addition, while the five-year timeframe we chose for the review ensured a focus on current workforce issues, it may have limited our access to longer term concerns. It was also found that many evidence sources discussed R&R issues affecting dentists only and not the rest of the dental team. As well as a number of evidence sources discussing issues within England and not the rest of the UK. Finally, the review focused on workforce issues across the whole UK and it is acknowledged that there may be specific issues or initiatives at local levels that merit further attention.

Declaration of interests

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Author contributions statement

DE- screening, data extraction, analysis, writing manuscript, writing abstract, referencing, revising and proof-reading manuscript.

LB- developing themes, methodology expert, principal investigator, conducting search, quality analysis, quality appraisal, writing methods, language editor, revising and proof-reading manuscript.

IM- developing themes, writing introduction, quality analysis, language editor, revising and proof-reading manuscript.

MB- developing themes, methodology expert, quality analysis, language editor, revising and proof-reading manuscript.

SH- developing themes, quality analysis, language editor, revising and proof-reading manuscript.

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Ethics declarations

This study was deemed not to require ethical review by the University of Plymouth Faculty of Health Research Ethics and Integrity Committee on the grounds that it involved only the synthesis of data obtained from/about human subjects already in the public domain through previous publication.

REFERENCES

1. National Audit Office. Dentistry in England: A National Audit Office memorandum to support a Health and Social Care Committee inquiry 2020 [Available from: https://www.nao.org.uk/wp-content/uploads/2020/03/Dentistry-in-England.pdf.
2. British Dental Association. Written evidence submitted by The British Dental Association (RTR0101): Health and Social Care Committee; 2022 [Available from: https://committees.parliament.uk/writtenevidence/42795/pdf/.
3. Healthwatch England. What people have told us about NHS dentistry 2021 [Available from: https://www.healthwatch.co.uk/sites/healthwatch.co.uk/files/reports-library/20211014_HWE%20Dentistry%20Update%20Dec%202021.pdf.
4. Westgarth D. The dental workforce: An assessment of the recruitment market. BDJ In Practice. 2022;35(3):14-8.
5. Witton R, Plessas A, Wheat H, Baines R, Delgado MB, Mills I, et al. The future of dentistry post-COVID-19: perspectives from Urgent Dental Care centre staff in England. British Dental Journal. 2021(20):1-5.
6. General Dental Council. Responding to the changing strategic context 2020 [Available from: https://www.gdc-uk.org/docs/default-source/corporate-strategy/responding-to-the-changing-strategic-context.pdf?sfvrsn=fe91126e_12.
7. General Dental Council. Registration report – January 2022 2022 [Available from: https://www.gdc-uk.org/docs/default-source/registration-reports/registration-report_january-2022.pdf?sfvrsn=bd140c06_5.
8. Holmes RD, Burford B, Vance G. Development and retention of the dental workforce: Findings from a regional workforce survey and symposium in England. BMC Health Services Research. 2020;20(1):255.
9. Peters MDJ GC, McInerney P, Munn Z, Tricco AC, Khalil, H.,. Chapter 11: Scoping Reviews (2020 version). In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis, JBI. 2020.
10. Ouzzani M, Hammady, H., Fedorowicz, Z. et al. Rayyan—a web and mobile app for systematic reviews. Syst Rev. 2016;5:210.
11. Munn Z, Peters, M.D.J., Stern, C. et al. . Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. . BMC Med Res Methodol. 2018;18:143.
12. Association of Dental Groups. New figures show workforce crisis as number of NHS dentists fall across the whole of England 2021 [Available from: https://www.theadg.co.uk/new-figures-show-workforce-crisis-as-number-of-nhs-dentists-fall-across-the-whole-of-england/.
13. Gallagher JE, Colonio-Salazar FB, White S. Supporting dentists' health and wellbeing - workforce assets under stress: a qualitative study in England. British Dental Journal. 2021; 20:1–12.
14. Puryer J, Sidhu G, Sritharan R. The career intentions, work-life balance and retirement plans of UK dental undergraduates. British Dental Journal. 2018;224(7):536-40.
15. Dental Schools Association. Written evidence submitted by the Dental Schools Association (RTR0030): Health and Social Care Committee; 2022 [Available from: https://committees.parliament.uk/writtenevidence/42610/pdf/.
16. Stagnell S, Patel N, Shah S. Is less-than-full-time training in dentistry swimming against the tide? British Dental Journal. 2019;227(5):347-51.

17. Payne D. PERSPECTIVES: The dental recruitment crisis. British Dental Journal. 2018;224(7):472-5.
18. Anon. NHS dentistry: I don't want to leave, but I feel there is no choice: British Dental Association; 2022 [Available from: https://bda.org/news-centre/blog/Pages/NHS-dentistry-I-don%E2%80%99t-want-to-leave-but-I-feel-there-is-no-choice.aspx.
19. Bupa Global & UK. Written evidence submitted by Bupa Global & UK (RTR0130): Health and Social Care Committee; 2022 [Available from: https://committees.parliament.uk/writtenevidence/42978/pdf/.
20. Sellars S. Workforce. British Dental Journal. 2021;231(6):321-.
21. Association of Dental Hospitals. Written evidence submitted by Association of Dental Hospitals (RTR0068): Health and Social Care Committee; 2022 [Available from: https://committees.parliament.uk/writtenevidence/42723/pdf/.
22. Hanks S, Cotton, Debby, Spowart, Lucy. Leadership in Dental Practice: a Three Stage Systematic Review and Narrative Synthesis. Journal of Dentistry. 2020;102(103480).
23. Cann R. The recruitment crisis in NHS dentistry needs to be addressed: British Dental Association; 2019 [Available from: https://bda.org/news-centre/blog/Pages/The-recruitment-crisis-in-NHS-dentistry-needs-to-be-addressed.aspx.
24. British Dental Association. Dentists urge government to act as NHS access hotspots go Blue in election 2019 [Available from: https://bda.org/news-centre/press-releases/Pages/Dentists-urge-government-to-act-as-NHS-access-hotspots-go-Blue-in-election.aspx.
25. O'Dowd A. Brexit delay is hurting dentistry recruitment. British Dental Journal. 2019;227(3):179-82.
26. UK Parliament. Brexit timeline: events leading to the UK's exit from the European Union House of Commons Library2021 [Available from: https://commonslibrary.parliament.uk/research-briefings/cbp-7960/.
27. General Dental Council. Registration Statistical

Report 2020 2020 [Available from: https://www.gdc-uk.org/docs/default-source/registration-reports/gdc-registration-statistical-report-2020---final311fef86-9e9f-44bb-81d8-68b3a44cae39.pdf?sfvrsn=918f77ec_5.
28. Sloggett R. 30 years of hurt: The urgent need to rebuild our dentistry workforce: Association of Dental Groups; 2020 [Available from: https://www.theadg.co.uk/wp-content/uploads/2020/12/30-Years-of-Hurt-Report.FINAL_.Dec20.pdf.
29. Journal. BD. UK dental practices are struggling to fill roles. British Dental Journal. 2018;224(2):60-.
30. Hussain I, Thomson A, Norfolk T. Recruitment and retention. British Dental Journal. 2020;228(2):59.
31. NHS England and NHS Improvement. Dental Access for Adults and Children in Devon: March 2021 2021 [Available from: https://democracyindevon.moderngov.co.uk/documents/s34891/2021%2003%2008%20Devon%20Briefing%20Paper%20Final.pdf?msclkid=2f0847e9bbe011ecb1d9c88738dd2418.
32. Lewis J. Rural recruitment issues: A Cumbrian perspective. BDJ In Practice. 2021;34(6):12-3.
33. NHS England and NHS Improvement. Dental Transformation SPRINT Workshop 1: Output 2021 [Available from: https://www.england.nhs.uk/south/wp-content/uploads/sites/6/2021/08/dental-sprint-1-output-report.pdf.
34. Jo O, Kruger E, Tennant M. Geospatial analysis of the urban and rural/remote distribution of dental services in Scotland, Wales and Northern Ireland. International Dental Journal. 2020;70(6):444-54.
35. King T. Problems recruiting associates are now endemic. British Dental Journal. 2022;232(1):7-.
36. Review Body on Doctors' and Dentists' Remuneration. Review Body on Doctors' and Dentists' Remuneration: Forty-Ninth Report 2021 2021 [Available from:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005003/DDRB_2021_Web_Accessible_v2.pdf.
37. Journal. BD. Dentists willing to sacrifice higher wages to work in richer areas, study shows. British Dental Journal. 2018;225(9):797-.
38. Gallagher JE, Calvert A, Niven V, Cabot L. Do high tuition fees make a difference? Characteristics of applicants to UK medical and dental schools before and after the introduction of high tuition fees in 2012. British Dental Journal. 2017;222(3):181-90.
39. Thomson F, Macey R, O'Malley L, Tickle M. Factors influencing dental trainees' choice of training programme and working patterns: a mixed-methods study. British Dental Journal. 2021;230(6):363-8.
40. King T. NHS recruitment crisis. British Dental Journal. 2019;227(9):759-.
41. Whitty C. Chief Medical Officer's annual report 2021: health in coastal communities: Department of Health and Social Care; 2021 [Available from: https://www.gov.uk/government/publications/chief-medical-officers-annual-report-2021-health-in-coastal-communities.
42. Carmichael N. Oral health in our coastal communities: Association of Dental Groups; 2021 [Available from: https://www.theadg.co.uk/oral-health-in-our-coastal-communities/.
43. Journal. BD. Three quarters of NHS dental practices failing to fill vacancies. British Dental Journal. 2019;226(7):480-.
44. Sellick J. IF ORAL HEALTH MATTERS, HOW CAN WE PREVENT RURAL RESIDENTS PULLING THEIR TEETH OUT? : Rural Services Network; 2021 [Available from: https://rsnonline.org.uk/if-oral-health-matters-how-can-we-prevent-rural-residents-pulling-their-teeth-out.
45. General Dental Council. Total number of registered UK dentists remains stable following renewal 2022 [Available from: https://www.gdc-uk.org/news-blogs/news/detail/2022/01/17/total-number-of-registered-uk-dentists-remains-stable-following-renewal.
46. Czerniawski S. The ORE: a flawed system made worse by the pandemic with further challenges ahead: General Dental Council; 2021 [Available from: https://www.gdc-uk.org/news-blogs/blog/detail/blogs/2021/12/17/the-ore-a-flawed-system-made-worse-by-the-pandemic-with-further-challenges-ahead.
47. Westgarth D. What does the future hold for the workforce of tomorrow? BDJ In Practice. 2020;33(7):12-7.
48. McColl D. Scotland: Preventing the collapse of NHS dentistry: British Dental Association; 2022 [Available from: https://bda.org/news-centre/blog/Pages/Scotland-preventing-the-collapse-of-NHS-dentistry.aspx.
49. British Dental Association. Written evidence submitted by the British Dental Association (CBP0034): Health and Social Care Committee; 2021 [Available from: https://committees.parliament.uk/writtenevidence/38571/pdf/.
50. Scales R. Financial and workforce impacts on dentistry will continue to be felt for some time: General Dental Council; 2021 [Available from: https://www.gdc-uk.org/news-blogs/blog/detail/blogs/2021/03/11/financial-and-workforce-impacts-on-dentistry-will-continue-to-be-felt-for-some-time.
51. Patel K. Young dentists: Breaking the silence. British Dental Journal. 2018;224(10):767-8.
52. Eaton KA. Oral healthcare workforce planning in post-Brexit Britain. British Dental Journal. 2020;228(10):750-2.
53. Health Education England. Advancing Dental Care Review: Final Report 2021 [Available from: https://www.hee.nhs.uk/our-work/advancing-dental-care :35.
54. Awojobi O, Movahedi S, Jones E, Gallagher JE. The evaluation of an innovative dental nurse training pilot scheme. British Dental Journal. 2018;224(11):875-80.
55. Anon. Calling it quits: only urgent change can save NHS dentistry: British Dental Association; 2022 [Available from: https://bda.org/news-centre/blog/Pages/Calling-it-quits-only-urgent-change-can-save-nhs-dentistry.aspx.

56. Pal A. College response to NHS England announcement of additional dentistry funding: College of General Dentistry; 2022 [Available from: https://cgdent.uk/2022/01/25/college-response-to-nhs-england-announcement-of-additional-dentistry-funding/.
57. NHS. Major drive launched to recruit NHS reservists 2022 [Available from: https://www.england.nhs.uk/2022/03/major-drive-launched-to-recruit-nhs-reservists/.
58. Association of Dental Groups. Written evidence submitted by the Association of Dental Groups (RTR0010): Health and Social Care Committee; 2022 [Available from: https://committees.parliament.uk/writtenevidence/42289/pdf/.
59. UK Parliament. Professional Qualifications Act 2022 House of Commons Library: Government Bill; 2022 [Available from: https://bills.parliament.uk/bills/2865
60. NHS England and NHS Improvement. ORAL HEALTH NEEDS ASSESSMENT: SOUTH WEST OF ENGLAND: APPENDIX 3 SOMERSET STP ANALYSIS 2021 [Available from: https://www.england.nhs.uk/south/wp-content/uploads/sites/6/2021/02/SW-OHNA-Appendix-3-Somerset-STP.pdf.
61. Page MJ MJ, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372(71):1006-12.
62. Jo O, Kruger E, Tennant M. Disparities in the geographic distribution of NHS general dental care services in England. British Dental Journal. 2021.
63. Godwin DM HH, Crocombe LA, Bell E. Dental practitioner rural work movements: a systematic review. Rural and Remote Health 2014;14(3):2825.

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Discusses or describes workforce planning, recruitment or retention in dentistry in the UK • Discusses or describes geographic distribution of dental workforce across the UK • Proposes, discusses or describes factors affecting current or future recruitment or retention or workforce planning in the UK • Proposes, discusses or describes strategies aimed at recruitment or retention in dentistry in the UK	• Predated 2017 • Not related to the United Kingdom • Not written in English

Table 2: Websites searched to gain evidence for the scoping review

Websites searches to gain evidence for the scoping review
General Dental Council; Health Education England; Health Education and Improvement Wales; UK Committee of Postgraduate Dental Deans; Association of Dental Groups; Dental Schools Council; Faculty of Dental Surgery of the Royal College of Surgeons of England; Faculty of Dental Surgery of the Royal College of Surgeons of Edinburgh; Faculty of Dental Surgery of the Royal College of Physicians and Surgeons of Glasgow; College of General Dentistry (formerly FGDP(UK)); NHS England; NHS Education for Scotland (NES); Health and Social Care Committee; British Dental Association; Local Dental Committees; the Review Body on Doctors' and Dentists' Remuneration; National Audit Office; Rural Services Network; Healthwatch.

Figure 1: PRISMA Flow diagram showing the sources of evidence included in the review (61).