

BMJ Open 'We do not seem to engage with dentists': a qualitative study of primary healthcare staff and patients in the North East of England on the role of pharmacists in oral healthcare

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To cite: Sturrock A, Preshaw PM, Hayes C, *et al.* 'We do not seem to engage with dentists': a qualitative study of primary healthcare staff and patients in the North East of England on the role of pharmacists in oral healthcare. *BMJ Open* 2020;**10**:e032261. doi:10.1136/bmjopen-2019-032261

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2019-032261>).

Received 10 June 2019
Revised 03 December 2019
Accepted 22 January 2020



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ABSTRACT

Objective To explore the attitudes towards, and perceptions of, primary care healthcare staff and patients, regarding the role of clinical pharmacists in the provision of oral health advice and collaboration with dentists in general practice.

Design Interpretivist methodology using qualitative semi-structured interviews and focus groups.

Participants 22 participants; 10 pharmacists; 3 general practitioners; 2 nurses; 1 practice manager; 6 patients.

Setting Primary care general medical practices in the North East of England and the University of Sunderland Patient Carer and Public Involvement group.

Methods One-to-one semi-structured interviews were performed with primary care healthcare staff. An iterative approach using constant comparative analysis facilitated the ongoing enrichment of data; salient themes were identified using Framework Analysis and related back to extant literature. A focus group was held with patients to further explore key themes.

Results Four salient and inter-related themes emerged: enhanced clinical roles; indicating rapidly changing roles of pharmacists working in general practice, increased responsibility and accountability of pharmacist prescribers and the delivery of advanced clinical services; limited knowledge; indicating basic understanding of appropriate oral health advice, but limited insight and provision of advice to patients with regards to links with systemic diseases and medication; geographical/situational isolation of the dental team; indicating the disparate contexts and challenges of multidisciplinary working in oral health, and patients' attitudes towards dental care; integration of oral health advice; indicating the potential of pharmacists to integrate oral health advice into current roles and to target specific patient groups in practice.

Conclusions The lack of integration between oral and general healthcare services potentially impacts negatively on patient care, requiring further interprofessional oral health education. The developing role of the pharmacist in general practice represents an opportunity to integrate oral health advice and/or interventions into the management of patients in this setting.

Strengths and limitations of this study

- There is limited research into the role of pharmacists in this setting; this is the first qualitative study that has explored the role of pharmacists as part of the general practice team in relation to oral healthcare.
- A wide range of general practice healthcare professionals and patients participated in this study; however, a limitation is that no general dental practitioners were interviewed.
- Semistructured interviews provided rich qualitative data and an iterative process of concurrent data collection and constant comparative analysis facilitated the simultaneous exploration, refinement and enrichment of key themes.

INTRODUCTION

Oral health conditions are thought to affect a significant proportion of the world's population, approximately 3.9 billion people worldwide and cost the National Health Service (NHS) in England £3.4 billion per year.^{1 2} The most recent Adult Dental Health Survey (2009) stated that 23% of the UK population do not attend a dentist.³ Oral health is important for general health and well-being, and there is increasing evidence that has linked periodontitis to a number of diseases, such as cardiovascular disease and diabetes.^{4 5}

Wilson and Soni's recent opinion piece in the *British Dental Journal* highlighted the potential for a collaborative approach between pharmacy and dentistry in the management of chronic diseases, such as diabetes and the potential capacity for pharmacists to encourage hard-to-reach individuals to become dental attenders.⁶ In the UK, dental treatment is available privately or provided as part of the NHS. However, even under NHS arrangements, the majority of patients pay a contribution towards the cost of

their care, and currently care is charged into one of three bands (band 1 £22.70; band 2 £62.10; band 3 £269.30) depending on the extent and complexity of treatment that is needed.⁷

Approximately half of the adults in the UK are affected by some level of periodontitis; a chronic inflammatory disease caused by bacterial infection of the supporting tissues surrounding the teeth.³ This condition is usually painless and often goes unnoticed and untreated until it reaches an advanced stage.⁸ The Cochrane Collaboration published a review in 2015, highlighting that randomised controlled trials have demonstrated that periodontal therapy is associated with a 3–4mmol/mol (0.3%–0.4%) reduction in HbA1c levels after 3 months⁹; this is a clinical impact equivalent to adding a second drug to a pharmacological regimen.¹⁰ There is evidence that even a modest reduction in HbA1c is associated with improving outcomes for patients with type 2 diabetes; a 1% reduction in HbA1c has been associated with a 21% reduction in diabetes-related death, 14% reduction in myocardial infarctions and 37% reduction in microvascular complications.¹¹ There is clear evidence of a bidirectional relationship between periodontitis and diabetes; poorly controlled diabetes increases the risk of periodontitis 2–3 times, and in turn periodontitis is associated with higher HbA1c levels and worse diabetes complications.^{12,13} There is also evidence of an association between atherosclerotic cardiovascular disease and poor oral health.¹⁴

A number of medications can negatively impact oral health, representing a significant opportunity for pharmacists to provide advice in relation to the prevention and management of these issues. For example, polypharmacy and a high anticholinergic burden are associated with the development of xerostomia and inhaled corticosteroids with oropharyngeal adverse events, such as oral candidiasis.^{15,16} Calcium channel blockers such as nifedipine, ciclosporin and phenytoin are all associated with development of drug-induced gingival overgrowth.¹⁷ Medication-related osteonecrosis of the jaw (MRONJ) is a rare, yet significant complication of antiresorptive and antiangiogenic drugs used in the treatment of osteoporosis and cancer.¹⁸ MRONJ is difficult to treat and significantly impacts on patient's quality of life¹⁹; therefore a multidisciplinary approach to prevention is usually recommended.¹⁸

Evidence suggests that pharmacists working in a community pharmacy setting see the provision of oral health promotion to be part of their professional role. An oral health promotion intervention in the North East of England demonstrated patient's acceptance to the pharmacist's intervention and a positive intention to change oral health habits.²⁰ To the authors' knowledge, no studies have explored the utilisation of pharmacists working in general practice to provide patients with oral health advice; however, a systematic review of pharmacists working in general practice found favourable results in various areas of chronic disease management and the optimal use of medicines.²¹

Following a successful pilot, NHS England's General Practice Forward view (2016) committed to the investment of £112 million to further develop this role with the aim of providing an additional 1,500 clinical pharmacists to the general practice workforce by 2020.²² The Primary Care Pharmacy Association's Clinical Pharmacist in General Practice Job Description sets out the duties and areas of responsibility for pharmacists in this setting in the UK²³; this includes managing long-term conditions, performing medication reviews, implementing medication safety guidance, supporting public health campaigns and signposting to appropriate healthcare professionals.

Each of these areas represents an opportunity for the provision of oral healthcare by clinical pharmacists. Potential oral health-related roles could include the provision of oral hygiene advice and the recommendation of appropriate products, which could be targeted to high risk patient groups or those in which the benefits of improved oral hygiene can impact on systemic health, for example, diabetes. Pharmacists could play an important role in the prevention or management of the oral health-related adverse drug effects outlined above; this includes the prevention of MRONJ through signposting and formal dental referrals, the prescribing of saliva substitutes or high fluoride toothpastes, deprescribing medications implicated with xerostomia and screening patients for oral cancer. The role of clinical pharmacists in the provision of oral health advice and collaboration with dentists in general practice is explored in our study.

Aims

1. To explore the attitudes towards and perceptions of primary care healthcare staff and patients, regarding the role of the clinical pharmacist in providing oral health advice in a general practice setting.
2. To explore any potential barriers and/or facilitators in using pharmacists in general practice to improve the interprofessional management of oral health.

METHOD

Design

An interpretive approach was adopted throughout this research; an initial topic guide (online supplementary file 1) was produced serving as a benchmark for semi-structured one-to-one interviews with healthcare professionals, which were audio recorded and transcribed verbatim. Constant comparative analysis, facilitated the concurrent and iterative process of data collection and analysis.²⁴ This process provided the opportunity for the further exploration of emergent themes through subsequent data collection. Ritchie and Spencer's Framework Analysis facilitated the process of constant comparative analysis and provided a systematic approach to the identification and analysis of salient themes.²⁵ Framework Analysis involved a five-stage process¹: familiarisation with the data—achieved via iterative cycles of listening to and rereading of transcripts²; development of a thematic

framework—the initial themes formed the basis of a thematic framework³; indexing data—data were indexed against the thematic framework⁴; charting—charts were produced of the data within the framework⁵; mapping of the data—themes were reviewed until definitive concepts were produced. A focus group was held with patients to explore key themes; a topic guide (online supplementary file 2) was produced following the collection and analysis of data from healthcare professionals.

Participants

General practice healthcare professionals were recruited from 12 practices across the North East of England. Four distinct professional groups were recruited to the study: (1) pharmacists working in general practice; (2) general practitioners; (3) general practice administrative staff; (4) general practice nurses.

An invitation letter (online supplementary file 3) and participant information sheet (online supplementary file 4) were posted to medical practices in the region; an initial convenience sample of participants who responded to the invitation was implemented with further recruitment facilitated via snowball sampling.

Patient participants were recruited from the University of Sunderland Patient Carer and Public Involvement (PCPI) group; participant information sheets were emailed to PCPI representatives and those that responded to the invitation participated in a focus group.

Analysis

Constant comparative analysis facilitated the identification and further exploration of salient themes through an iterative process of data collection and analysis. Ritchie and Spencer's Framework Analysis (2002),²⁵ provided a systematic five-stage approach to data

analysis; familiarisation with the data; development of a thematic framework; indexing data; charting of the data and mapping of the data. Themes were reviewed by the research team until definitive concepts could be produced from the data.

Patient involvement

The principal investigator met with a patient representative from the University of Sunderland PCPI group to discuss the initial design and ethical implications of the study. Following the collection and analysis of data from healthcare professionals, a focus group was held with six patients; the focus group facilitated the refinement of emerging concepts and the coconstruction of overarching themes.

RESULTS

22 participants were recruited to this study (tables 1 and 2). In-depth semistructured interviews were carried out between October 2018 and April 2019 until no new themes emerged and extant ones were exhausted. Interviews took place at participants' places of work or at the University of Sunderland, with two interviews performed via telephone for logistical reasons; 1 hour was designated for each interview. Six patients participated in a focus group, lasting 1 hour, held in April 2019 at the University of Sunderland.

Four salient inter-related themes emerged from the data and a coding tree was produced (online supplementary file 5): (1) enhanced clinical roles; (2) limited knowledge; (3) geographical/situational isolation of the dental team; (4) integration of oral health advice.

Table 1 Healthcare professional participant characteristics

| Participant | Identifier | Role | Years' experience (N) | Gender |
|-------------|------------|----------------------|-----------------------|--------|
| 1 | Ph1 | Pharmacist | 5–9 | Female |
| 2 | Ph2 | Pharmacist | 10–14 | Male |
| 3 | Ph3 | Pharmacist | <5 | Female |
| 4 | Ph4 | Pharmacist | >20 | Female |
| 5 | Ph5 | Pharmacist | 10–14 | Female |
| 6 | Ph6 | Pharmacist | 5–9 | Male |
| 7 | Ph7 | Pharmacist | 10–14 | Female |
| 8 | Ph8 | Pharmacist | 10–14 | Male |
| 9 | Ph9 | Pharmacist | <5 | Female |
| 10 | Ph10 | Pharmacist | 15–19 | Female |
| 11 | PM1 | Practice manager | >20 | Female |
| 12 | GP1 | General practitioner | 15–19 | Female |
| 13 | GP2 | General practitioner | <5 | Male |
| 14 | GP3 | General practitioner | >20 | Male |
| 15 | N1 | Nurse | 15–19 | Female |
| 16 | N2 | Nurse | >20 | Female |

**Table 2** Patient participant characteristics

| Participant | Identifier | Role | Age (years) | Gender |
|-------------|------------|---------|-------------|--------|
| 1 | Pt1 | Patient | 50–59 | Female |
| 2 | Pt2 | Patient | 60–69 | Male |
| 3 | Pt3 | Patient | 50–59 | Female |
| 4 | Pt4 | Patient | 60–69 | Male |
| 5 | Pt5 | Patient | 40–49 | Female |
| 6 | Pt6 | Patient | 60–69 | Female |

Enhanced clinical roles

Participants highlighted the accessibility of pharmacists as part of the general practice team, providing a complementary skill set to existing staff that enhances the provision of services provided at practices.

I'm directly contactable face-to-face by prescribers, GPs, nurse practitioners, nurses, admin team, everything. They can just come directly into my office and ask me for information. So, I'm probably more likely to be utilised clinically. In community pharmacy, you obviously have other responsibilities as well and the pharmacist also takes on the role of the manager. (Ph1)

Participants identified that general practice is a rapidly evolving role for pharmacists, who are increasingly involved with, and leading, more advanced, patient facing clinical services. These services require an enhanced level of clinical knowledge compared with more traditional pharmacy roles, with pharmacists increasingly inputting more into the clinical management of patients in this setting.

Our roles in the surgeries are evolving and perhaps new to some, but I found it on the whole to be very very positive and that the other staff have been accepting. (Ph8)

Many of the pharmacist participants described providing a higher level of clinical service facilitated through obtaining postgraduate prescribing qualifications resulting in a greater degree of clinical responsibility and accountability.

I'm in quite an advanced clinical role now. So I do a lot of diagnostics and treating myself. I'm a prolific prescriber. (Ph7)

Participants perceived the management of chronic long-term conditions, with a specific focus on optimising therapy and the provision of detailed, clinically focused medication reviews to be a key role for pharmacists in this setting.

I would see patients for medication reviews, particularly the complex ones, the ones with polypharmacy in particular come to me. It would be about making sure they are on the right regimens, making sure they

haven't got any adverse effects and maybe stopping drugs if no longer appropriate. (Ph4)

The management of high-risk medications and the reconciliation of medication provided on discharge or from a specialist setting was seen as an important part of the pharmacist's role. The services provided are integrated into the existing practice infrastructure and the access of pharmacists in this setting to full clinical records facilitates a higher degree of clinical input. Through working in this setting pharmacists can also clearly communicate with the rest of the practice team; this includes following up on monitoring requirements, liaising with community pharmacies and updating medical records to accurately reflect patient's current medication.

Some of my work is quite administrative, so dealing with queries, issues from community pharmacies, discharge prescriptions or hospital letters, things like that. Making sure that patient's medication lists are correct, particularly with medicines started on discharge or in outpatients, you know, ones with shared care agreements or high-risk drugs. (Ph3)

The provision of lifestyle and preventive advice was seen as a key role for pharmacists, complementing work done by practice nurses; this would typically include signposting patients and formal interprofessional referral where required.

There is an increasing amount of work for GPs, and I think the lifestyle issues seem to get shifted down the line as to what we are able to focus on, it's often not what the patient presents with. I think both pharmacists and nurses are good at doing that, it is about prioritising in that short time you have. (GP1)

Some of the patients had experience of having appointments with pharmacists in general practice. Those who had reported favourable experiences were positive towards the benefits for their care; with a particular focus on reviewing medications and reducing the known side-effects of prescribed medicines.

She (pharmacist) rang up to discuss the medication because they were changing my insulin. So, she was on about ten minutes going through everything that I was on to make sure I was happy, everything was balanced, no side-effects and she decided to change a couple of things that I'd been on for a number of years. She was really helpful and it's definitely better now. (Pt1)

Some patients had not experienced services provided by pharmacists in this role; a number of participants perceived that the benefit of pharmacists resulted from the accessible locations and opening hours of community pharmacies and were concerned that the pharmacist in general practice would become another healthcare professional with whom making appointments was challenging.

This was a common experience of patients when trying to make appointments with general practice staff.

You could get a doctor's appointment more easily when we were young. But I think people tend to just to pop in a pharmacy, I think there's more information in the pharmacy now, there is no wait for appointments and they are open all the time. (Pt3)

If you have to wait to get an appointment with the pharmacist at the doctor's surgery, you may as well just see the doctor or whatever else, the point of a pharmacist to me is that it's, like, around the corner and it's easy. (Pt6)

Limited knowledge

All healthcare professional participants reported limited knowledge of basic oral health advice and would try to signpost patients to dental services where possible, but perceived that they were able to manage common conditions, such as a mouth ulcer, and provide basic oral hygiene advice.

You will get people presenting to surgery with queries around the mouth generally. Perhaps unexplained problems. It might be anything from halitosis, to soreness, to ulcers, to even presenting with dental abscess because they'd rather come to us than go to a dentist. We try to signpost them to a dentist, but we can deal with some of the minor issues. (N1)

The primary care staff participants described the presentation of patients in general practice with dental problems, such as dental pain and likely infections. Participants described limited knowledge in the assessment and management of dental infections; GPs would typically signpost these patients to a dentist, but did report a perceived duty of care to help this patient group if the patient was unable/unwilling to attend a dental appointment.

Even if a GP thinks, 'actually, I think it's an abscess' he or she's got a duty of care to treat that infection and not to leave it, even if we don't know a great deal about more complex dental issues. Especially when they say they don't have a dentist. (Ph10)

Participants had limited knowledge of the links between oral and systemic health; with oral health advice not usually forming part of discussions with patients in high risk groups, such as those with diabetes and with multidisciplinary diabetes teams not including dental professionals.

I haven't really heard of links between the two. I see lots of patients with diabetes and it is definitely not something that I would tell patients about. (Ph5)

Although not a direct focus of interventions, pharmacists described a key role in the deprescribing of medications in patients with a high anticholinergic burden. These patients would typically have symptoms of a dry

mouth and this would be used by some as an incentive to stop or reduce implicated medicines.

I look to stop some medicines during medication or falls reviews, medicines that have antimuscarinic side-effects, so like those for urinary incontinence or tricyclic antidepressants that cause, like a drying effect, and patients experience dry mouth. (Ph1)

The pharmacists were aware of MRONJ, mainly due to historic Medicines and Healthcare products Regulatory Agency safety alerts. The actioning of these alerts was described as a key role of the practice pharmacist; participants reported that following safety alerts patients were identified and provided signposting advice, however, pharmacist and GP participants acknowledged that these alerts are often forgotten or lose focus and need to become longer term initiatives, not isolated alerts.

I remember a couple of years ago, there was an alert and where we set it up so that all new patients going on a bisphosphonate got told to have a dental check-up before they went on. Now, I don't know—I haven't seen anything around that lately and I've got a feeling that might have lapsed a bit. Or at least I'm not aware of it happening. (Ph4)

The patient participants identified that their knowledge in relation to oral health had almost exclusively come from their dentist or their parents as a child. None of the participants described receiving any oral health advice from other healthcare professionals.

I think it would be from my mum and dad and then the dentist. I don't think anyone else has ever talked about oral health with me, maybe the school nurse a long time ago. (Pt5)

All participants described a need and willingness to receive further education and training on oral health; this was perceived as a deficit in both undergraduate training in post-registration continuing professional development.

I think it would be useful to have more training—directed at general practice. I think most of us know the basics, but not really much depth, especially around how oral health and just general health and wellbeing are related. (Ph3)

Geographical/situational isolation of the dental team

General practice staff reported limited collaboration with dental colleagues in primary care, with no formal referral pathways between medical and dental services and a lack of communication between the professional groups. These were all seen as significant barriers to providing high quality and safe oral healthcare to patients.

I would say there is anonymity really. If you compare it with, for example, local opticians where we have frequent interactions, albeit by paper, we don't really



get any, sort of, direct contact. Not that I can recall. (GP3)

We don't seem to engage with dentists. In fact, the only time that I ever had a proper conversation with a dentist was when I worked in community pharmacy and that would have been over an incorrect prescription or an out of stock item. And I just think, you know, there is a lot of cross-conversations that we could have. (Ph10)

There were concerns about the lack of information shared between primary medical and dental services and the impact that this has on patient safety; with dentists not having access to patient's Summary Care Records (SCRs) and general practice staff not receiving information about the care or interventions provided in a dental setting. This included a lack of information on medication prescribed by dentists.

We would never know if the dentists had prescribed any antibiotics or anything for a patient. Yet, if anyone else in the primary healthcare team prescribes anything for our patients, we know. We would get either a letter or a fax summary, something sent over to say this is what's happened in this patient. (Ph7)

Both patients and the healthcare professionals described their own and their patient's reluctance to engage fully with dental services; barriers include the cost of both preventive and remedial dental work, dental phobias and a lack of education on the benefits of good oral health.

The area I am in is very deprived and actually, I would say that the majority don't ever visit the dentist, I think they just don't see it as important and loads of them just don't have the money, and fear, loads of people hate seeing a dentist unless it's absolutely necessary. (Ph5)

The patients also reported a perceived segregation between the dental and medical professions, with historic stereotyping contributing to their formative understanding of each role. This was described as a barrier in engaging with oral healthcare outside of a dental setting, as historically this is not an environment that patients associate with dental care provision.

I think it's just the way society has brought us up in that there are two defining people, dentists and doctors. Anything to do with dentists, you go to the dentist. Anything about your health you go to the doctors. They have always been seen as separate. (Pt6)

Integration of oral health advice

Pharmacists working in general practice have better access to patient medical records than their community pharmacy colleagues and are therefore well placed to identify patients who may be suitable for targeted interventions. For example, the practice diabetes register or

those patients prescribed medications with oral health-related adverse effects, such as bisphosphonates, could be easily identified and invited for review by the pharmacist.

In GP practices, people are coded appropriately, as smokers, or based on specific conditions, or you could look at medications that are associated with oral complications and target those people. It is easy enough to identify potential higher risk patients. (Ph1)

Participants described the role of the pharmacist in optimising medication regimens and their specific focus on providing input into patient care through chronic disease management clinics and medication reviews. All participants agreed that the provision of appropriate lifestyle advice should form a key element of these consultations.

Generally, I think pharmacists can focus on medicines and do a really good job getting those right, but with the, let's call it, soft interventions, lifestyle advice etc., they seem to work better when they're repeated by various people. (GP3)

Participants reported that consultations with the pharmacist are typically less time pressured than GP appointments; with most pharmacist participants not routinely involved in providing acute care. This time could facilitate the provision of more detailed consultations, representing an opportunity to incorporate oral health advice into current practices.

My clinics could easily be timetabled for 20 min instead of 10, and as I don't really see acute patients or have the same time pressures as some of the GPs or practice nurses. I can talk longer and to go into more detail about things, there is scope to take more time and really reinforce the key messages. (Ph2)

I don't see any reason why you can't promote oral hygiene at a doctor's practice, you can promote it, give people the information so they are properly informed. Then it is up to them. (Pt2)

The incorporation of basic oral health advice can be integrated into the current role of the pharmacist; however, participants reported a need for more direction from professional bodies or the commissioners of local or national services to provide more complex interventions and to improve interprofessional collaboration with dental professionals.

There is loads that we could do and as a practice we could just do it to give a better quality of care, but if it is a paid service or linked to certain targets etc then there may be more incentive to focus on it. (Ph2)

DISCUSSION

Our research has highlighted the disparate contexts of provision of oral and general healthcare in the North East of England. This is further hindered by a lack of

communication between medical and dental service providers, a lack of clear referral pathways and no shared access to medical records. All of these are significant barriers to the provision of high quality and safe oral healthcare. Further consideration and action are therefore needed at the level of policy and practice if patient safety and quality care in an oral health context are to be implemented and sustained in a non-dental setting.

The evolving role of the clinical pharmacist in general practice is facilitating the provision of additional clinical services and is improving patient care.^{21 26} The provision of oral healthcare by pharmacists in general practice is limited at present, but this role represents an opportunity to target at risk patients and incorporate appropriate advice into current services.

The limited knowledge of oral health reported by our participants is similar to findings published in the literature.²⁷ In particular, our findings in relation to the limited knowledge of general practice staff of the bidirectional relationship between periodontitis and diabetes match those by Bissett *et al.*⁸ Their study did not specifically include pharmacists and the subsequent enhancement of the clinical pharmacist in general practice role discussed in our study represents an unexplored opportunity to improve medical and dental collaboration.

Previous studies have identified a role for pharmacists working in a community pharmacy setting to provide oral health advice to patients.^{20 28–31} Our study has explored the expanding role of the pharmacist in the general practice setting; this has received significant funding from the NHS and forms a key component of NHS England's General Practice Forward View (2016).²¹ Further exploration of the potential roles of pharmacists in this setting is required to establish the impact made on patient care.

Further consideration needs to be made by both clinicians and policymakers to better integrate oral health into holistic healthcare provision. Research by Bissett *et al* identified that dentists tend not to contact GPs regarding the management of patients with diabetes, and when they do so, they typically communicate through the patient, as opposed to through formal referral channels.³² Participants in our study reported little collaboration between general practice and dentists, with a lack of formal referral pathways and the limited sharing of patient information. A lack of shared information between medical and dental services was identified by participants in our study as a risk to patient safety. More than 96% of the population of England have a SCR that can be accessed from a variety of NHS service providers; however, NHS dental practices do not currently have access to SCRs.³³ This represents a barrier to optimal patient care, but also potentially results in a risk to patient safety; dentists are currently reliant on patients to be able to provide accurate medication histories and general practice staff are potentially unaware of medication prescribed by dentists. Access to medical records in dental practices could improve collaboration,³⁴ facilitate a reduction in patient safety concerns that arise as a result of incomplete or inaccurate information. For

example, accurate medication histories could reduce the risk of dentists and doctors inadvertently prescribing medication that negatively interacts with existing therapy or missing dentally important drugs such as bisphosphonates and could encourage better communication between settings. Participants in our study described a key role for pharmacists in general practice in relation to the reconciliation of medicines and the maintenance of accurate medication histories; this represents an opportunity to ensure the flow of correct information between care settings and could be utilised if records were shared between medical and dental service providers.

Participants described the presentation of patients in general practice with oral health complaints; this was perceived to be due to issues with patients accessing dental services, the cost of dental treatment in the UK and patients' phobias of dentists. The healthcare professional participants reported some knowledge in relation to basic oral health advice, however, there is a clear need for further education of non-dental health professionals to address the limited knowledge of the associated links between oral health and systemic diseases.

This is the first study that has explored the role of the pharmacist in general practice in relation to the provision of oral health advice, but these findings are consistent with those in the literature in relation to community pharmacists and other healthcare professionals.^{8 20} There is also a need for further interprofessional education between the professional groups, as identified our previous qualitative studies and in research outside of the UK.³⁵ This could act to improve collaboration, reduce the perceived isolation of dental services and optimise patient care.

Pharmacists are now providing more complex clinical services in general practice, representing an opportunity to enhance service provision, taking both increased responsibility and accountability; this represents an opportunity to facilitate the provision of oral health advice by this professional group and optimise patient care.

Our study has shown that pharmacists in general practice represent a new avenue for the provision of oral healthcare. Further enhancement of this role could improve the quality and safety of oral healthcare through effective collaboration between pharmacists, other members of the primary care health team and the dental profession. Professional bodies and the commissioners of healthcare services at both a local and national level should consider using pharmacists in general practice to provide oral health-related advice and/or interventions. Further research to explore the potential for this group to impact on patient care is needed; however, the integration of this could potentially have significant benefits for patients.

CONCLUSION

Our findings suggest that clinical pharmacists working in general practice are not currently providing optimum

care in relation to oral health, with limited incorporation of oral health issues into current clinical practices. However, the disparate contexts of oral and general healthcare services, and a lack of clear referral pathways, are a significant barrier for the provision of high quality and safe oral healthcare in a primary care setting. The limited dental input into the multidisciplinary primary care team, a lack of communication and the absence of access to medical records by relevant primary care health professionals are potentially impacting on capacity to provide optimal patient care.

Further education in relation to oral health is required and could enable improved oral healthcare in this setting; the established links between periodontitis and diabetes, and the association of specific medicines with oral health-related adverse drug reactions represent a key focus for pharmacists who are becoming increasingly responsible and accountable for patient care in general practice.

The role of the clinical pharmacist working in general practice is rapidly developing and growth of this professional group is part of the NHS General Practice Forward View²²; this represents an opportunity to integrate oral health advice into the management of patients in this setting. Further work to explore the benefit and impact of providing oral healthcare by this professional group in general practice ought to be explored.

Acknowledgements We thank the participants who generously gave their time.

Contributors AS, SW, CH and PMP designed the study. AS recruited the participants and carried out the study. AS identified the thematic framework and interpreted the data. AS, SW, PMP and CH reviewed and refined the data. AS wrote the paper and all authors revised it. AS received training in qualitative research skills by the research team and through attendance at a Qualitative Research Methods in Health Course at University College London.

Funding This work was supported by an internal research award from the University of Sunderland.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Ethical approval was obtained from the University of Sunderland Research Ethics Committee (REF: 002856).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement No data are available. Participant information sheets and invitation letters are included (Supplementary Documents 3 and 4); no further data shared.

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REFERENCES

- 1 Marcenés W, Kassebaum NJ, Bernabé E, *et al*. Global burden of oral conditions in 1990-2010: a systematic analysis. *J Dent Res* 2013;92:592-7.
- 2 NHS England. Improving dental care – a call to action, 2014. Available: <http://www.england.nhs.uk/wp-content/uploads/2014/02/imp-dent-care.pdf> [Accessed 03 May 2019].
- 3 O'Sullivan I, Morris J, Chenery V. Service considerations—a report from the Adult Dental Health Survey 2009. In: O'Sullivan I, ed. *Adult dental health survey 2009*. London: NHS Information Centre for Health and Social Care, 2011: 1-19.
- 4 Tonetti MS, Van Dyke TE, Working group 1 of the joint EFP/AAP workshop. Periodontitis and atherosclerotic cardiovascular disease: consensus report of the joint EFP/AAP workshop on periodontitis and systemic diseases. *J Clin Periodontol* 2013;40 Suppl 14:S24-9.
- 5 Chapple ILC, Genco R, Working group 2 of joint EFP/AAP workshop. Diabetes and periodontal diseases: consensus report of the joint EFP/AAP workshop on periodontitis and systemic diseases. *J Clin Periodontol* 2013;40 Suppl 14:S106-12.
- 6 Wilson N, Soni A. Interprofessional working: a spearhead opportunity for dentistry and pharmacy. *Br Dent J* 2016;221:607-8.
- 7 NHS Business Service Authority. Help with NHS dental costs, 2019. Available: <https://www.nhsbsa.nhs.uk/help-nhs-dental-costs> [Accessed 02 Sep 2019].
- 8 Bissett SM, Stone KM, Rapley T, *et al*. An exploratory qualitative interview study about collaboration between medicine and dentistry in relation to diabetes management. *BMJ Open* 2013;3:e002192.
- 9 Simpson TC, Weldon JC, Worthington HV, *et al*. Treatment of periodontal disease for glycaemic control in people with diabetes mellitus. *Cochrane Database Syst Rev* 2015;80.
- 10 Chapple ILC, Wilson NHF. Manifesto for a paradigm shift: periodontal health for a better life. *Br Dent J* 2014;216:159-62.
- 11 Stratton IM, Adler AI, Neil HA, *et al*. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ* 2000;321:405-12.
- 12 Mealey BL, Oates TW, American Academy of Periodontology. Diabetes mellitus and periodontal diseases. *J Periodontol* 2006;77:1289-303.
- 13 Preshaw PM, Bissett SM. Periodontitis and diabetes. *Br Dent J* 2019;227:577-84.
- 14 Dietrich T, Webb I, Stenhouse L, *et al*. Evidence summary: the relationship between oral and cardiovascular disease. *Br Dent J* 2017;222:381-5.
- 15 Tiisanoja A, Syrjälä A-M, Komulainen K, *et al*. Anticholinergic burden and dry mouth among Finnish, community-dwelling older adults. *Gerodontology* 2018;35:3-10.
- 16 Rachelefsky GS, Liao Y, Faruqi R. Impact of inhaled corticosteroid-induced oropharyngeal adverse events: results from a meta-analysis. *Ann Allergy Asthma Immunol* 2007;98:225-38.
- 17 Seymour RA. Effects of medications on the periodontal tissues in health and disease. *Periodontol* 2000;40:120-9.
- 18 Scottish Dental Clinical Effectiveness Programme. *Oral health management of patients at risk of medication-related osteonecrosis of the jaw. dental clinical guidance*. Dundee: Scottish Dental Clinical Effectiveness Programme, 2017. <http://www.sdcep.org.uk/wp-content/uploads/2017/04/SDCEP-Oral-Health-Management-of-Patients-at-Risk-of-MRONJ-Guidance-full.pdf>
- 19 Sturrock A, Preshaw PM, Hayes C, *et al*. Perceptions and attitudes of patients towards medication-related osteonecrosis of the jaw (MRONJ): a qualitative study in England. *BMJ Open* 2019;9:e024376.
- 20 Sturrock A, Cussons H, Jones C, *et al*. Oral health promotion in the community pharmacy: an evaluation of a pilot oral health promotion intervention. *Br Dent J* 2017;223:521-5.
- 21 Tan ECK, Stewart K, Elliott RA, *et al*. Pharmacist services provided in general practice clinics: a systematic review and meta-analysis. *Res Social Adm Pharm* 2014;10:608-22.
- 22 NHS England. General practice forward view, 2016. Available: <https://www.england.nhs.uk/publication/general-practice-forward-view-gpfv/> [Accessed 03 May 2019].
- 23 Primacy Care Pharmacy Association. Clinical pharmacist in general practice job description, 2018. Available: <https://pcpa.org.uk/open-access-resources.html?ResourceType=Guides> [Accessed 03 May 2019].
- 24 Boeije H. A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and Quantity* 2002;36:391-409.
- 25 Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Huberman M, Miles M, eds. *The qualitative researcher's companion*. Thousand Oaks: Sage, 2002: 305-29.
- 26 Mann C, Anderson C, Avery AJ, *et al*. Clinical pharmacists in general practice: pilot scheme independent evaluation report 2018. Available: <https://www.nottingham.ac.uk/pharmacy/documents/generalpracticeyearfwdev/clinical-pharmacists-in-general-practice-pilot-scheme-full-report.pdf> [Accessed 03 May 2019].
- 27 Galazi A, Siskou O, Karagkouni I, *et al*. Investigating physicians' and patients' oral health knowledge: a field needed interdisciplinary policy making approach. *Int J Health Promot Educ* 2019;57.

- 28 Maunder PEV, Landes DP. An evaluation of the role played by community pharmacies in oral healthcare situated in a primary care trust in the North of England. *Br Dent J* 2005;199:219–23.
- 29 Steel BJ, Wharton C. Pharmacy counter assistants and oral health promotion: an exploratory study. *Br Dent J* 2011;211:E19
- 30 Mann RS, Marcenes W, Gillam DG. Is there a role for community pharmacists in promoting oral health? *Br Dent J* 2015;218:E10
- 31 Taing M-W, Ford PJ, Gartner CE, *et al.* Describing the role of Australian community pharmacists in oral healthcare. *Int J Pharm Pract* 2016;24:237–46.
- 32 Bissett SM, Presseau J, Rapley T, *et al.* Uptake of best practice recommendations in the management of patients with diabetes and periodontitis: a cross-sectional survey of dental clinicians. *Br Dent J* 2019;226:131–7.
- 33 Pharmaceutical Services Negotiating Committee. Summary care record (SCR) home. Available: <https://psnc.org.uk/contract-it/pharmacy-it/electronic-health-records/summary-care-record-scr-home/> [Accessed 03 May 2019].
- 34 Seitz MW, Listl S, Knaup P. Development of an HL7 FHIR architecture for implementation of a knowledge-based interdisciplinary EHR. *Stud Health Technol Inform* 2019;262:256–9.
- 35 Sippli K, Rieger MA, Huettig F. Gps' and dentists' experiences and expectations of interprofessional collaboration: findings from a qualitative study in Germany. *BMC Health Serv Res* 2017;17:179.