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"We don't seem to engage with dentists": A qualitative study of primary care healthcare staff and patients in the North East of England

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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 Public Involvement group.

Methods: One-to-one semi-structured interviews were performed with primary care healthcare staff. Integration of constant comparative analysis within a Grounded Theory approach facilitated the ongoing enrichment of data. Salient themes were identified using Ritchie and Spencer's 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: (1) 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; (2) limited knowledge; indicating basic understanding of appropriate oral health advice, but limited insight and provision of advice to patients with regards to the links with systemic diseases and medication; (3) geographical/situational isolation of the dental team; indicating the disparate context of multidisciplinary working in oral health and patients' attitudes towards dental care; (4) 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 general practice.

Conclusions:

The lack of integration between oral and general healthcare services potentially impacts negatively on patient care. The role of the pharmacist in general practice is rapidly evolving

and 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 limited number of general practitioners participated and no dentists were interviewed.
- Semi-structured 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.
- Participants were provided with a participant information leaflet in advance of data collection as part of the process of gaining informed consent, therefore exposing participants to the concepts before their scheduled interview.

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 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 wellbeing, 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)

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.(7) The Cochrane Collaboration published a review in 2015, highlighting that randomised controlled trials have demonstrated that periodontal therapy is associated with a 3-4 mmol/mol (0.3-0.4%) reduction in HbA1c levels after 3 months;(8) this is a clinical impact equivalent to adding a second drug to a pharmacological regimen.(9) 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.(10) 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.(11,12) There is also evidence of an association between atherosclerotic cardiovascular disease and poor oral health.(13)

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.(14-15) Calcium channel blockers such as nifedipine,

ciclosporin and phenytoin are all associated with development of drug-induced gingival overgrowth.(16) Medication-related osteonecrosis of the jaw (MRONJ) is a rare, yet significant complication of anti-resorptive and anti-angiogenic drugs used in the treatment of osteoporosis and cancer.(17) MRONJ is difficult to treat and significantly impacts on patient's quality of life;(18) therefore a multidisciplinary approach to prevention is usually recommended.(17)

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.(19) 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.(20)

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 1500 clinical pharmacists to the general practice workforce by 2020.(21) The Primary Care Pharmacy Associations, Clinical Pharmacist in General Practice Job Description sets out the duties and areas of responsibility for pharmacists in this setting in the UK;(22) this includes managing long-term conditions, performing medication reviews, implementing medication safety guidance, supporting public health campaigns and signposting to appropriate healthcare professionals. The provision of oral health advice, the delivery of targeted oral health interventions and referrals to dental practitioners could fall under all of these areas and are 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 utilising pharmacists in general practice to improve the interprofessional management of oral health

METHOD

Design:

A Grounded Theory approach was adopted throughout this research; an initial topic guide (Supplementary Document 1) was produced serving as a benchmark for semi-structured one-to-one interviews which were audio recorded and transcribed verbatim.(23) A key element of Grounded Theory is constant comparative analysis, facilitated by 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. Framework Analysis (Ritchie and Spencer, 2002) provided a systematic approach to the identification and analysis of salient themes.(25) A focus group was held with patients to explore key themes following the collection and analysis of data from healthcare professionals.

Participants:

General practice healthcare professionals were recruited from across the North East of England. Four distinct professional groups were recruited to the study: [1] pharmacists working in general practice; [2] GPs; [3] general practice administrative staff; and [4] general practice nurses.

An invitation letter (Supplementary Document 2) and participant information sheet (Supplementary Document 3) 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.

Ethical review:

Ethical approval was obtained from the University of Sunderland Research Ethics Committee prior to data collection (REF: 002856)

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 6 patients; the focus group facilitated the refinement of emerging concepts and the co-construction of overarching themes.

Results

22 participants were recruited to this study (Table 1 and 2). In-depth semi-structured 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. 6 patients participated in a focus group, lasting 1 hour, held in April 2019 at the University of Sunderland.

Table 1. Healthcare Professional Participant Characteristics

Participant	Identifier	Role	No. years' experience	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	Gender
1	Pt1	Patient	50-59 years	Female
2	Pt2	Patient	60-69 years	Male
3	Pt3	Patient	50-59 years	Female
4	Pt4	Patient	60-69 years	Male
5	Pt5	Patient	40-49 years	Female
6	Pt6	Patient	60-69 years	Female

Four salient inter-related themes emerged from the data: (1) enhanced clinical roles; (2) limited knowledge; (3) geographical /situational isolation of the dental team; (4) integration of oral health advice.

1. Enhanced clinical roles

Participants described the accessibility of pharmacists as part of the general practice team, providing a complementary skill set to existing staff that adds to 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)

The role was seen as rapidly evolving, with pharmacists involved with, and leading, more advanced, patient facing clinical services that contribute positively to patient care.

> 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 had prescribing qualifications and were utilising these skills in their role. This facilitates a higher level of clinical service, but it also results in a consequently greater degree of 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 described a key role of pharmacists in relation to the management of chronic long-term conditions; with a specific focus on optimising therapy and providing detailed, clinically focused medication reviews.

> 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. 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, its 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 and 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 its 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)

2. 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 complain of xerostomia 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 Healthcare 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 has 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)

3. 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.

> 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 past medical or medication history 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 the 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)

4. 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 minutes 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 service commissioners 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 and no shared access to medical records. The evolving role of the clinical pharmacist in general practice is facilitating the provision of additional clinical services and is improving patient care.(20,26) 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.

Our findings are similar to those of Bissett et al (2013) with general practice staff demonstrating limited knowledge of the bidirectional relationship between periodontitis and diabetes.(7) 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.(19,27-30) 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 (2019) 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.(31) 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. More than 96% of the population of England have a Summary Care Record (SCR) that can be accessed from a variety of NHS service providers; however, NHS dental practices do not currently have access to SCRs.(32) 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 facilitate a reduction in patient safety concerns that arise as a result of incomplete or inaccurate information and 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 United Kingdom and patients' phobias of dentists. The healthcare professional participants reported some knowledge in relation to basic oral health advice, however further education is required of general practice staff 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 from our previous qualitative studies and the literature in relation to community pharmacists and other healthcare professionals.

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 health advice and/or interventions and 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 to patients.

Conclusion

Participants reported the relatively disparate contexts of oral and general healthcare services; 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; however, 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 evolving and 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 health care by this professional group in general practice ought to be explored.

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An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Initial Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will ask you questions
    - It will last between 30 and 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to, just let me know that you want to move on
    - Participation is voluntary and participant can withdraw at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The interview will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Does the participant have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Background of participant
Prompts: age, employment, experience, undergraduate training, postgraduate training

Education on oral health
Prompts: undergraduate and postgraduate training, CPD, discipline only education or interprofessional, what was the focus

Current practices - pharmacists
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why

Links between prescribed medication and oral health problems - pharmacists
Prompts: MRONJ, bisphosphonates, awareness, current practices, role with this patient group, any other issues xerostomia, oral cancer etc.

Links between diabetes and periodontal disease - pharmacists
Prompts: Awareness of links, significance of links, benefits of periodontal treatment

Current practices in diabetic patients - pharmacists
Prompts: Is oral health promotion in this group part of your current practice, if not why not, if yes how do you deliver this

Current practices – GPs/Admin/Nurses
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why, knowledge of systemic diseases and medications affecting oral health

Perceived role of the practice pharmacist in oral health – GPs/Admin/Nurses
Prompts: Is there a role, is this a priority what does this look like, barriers, facilitators

Interprofessional working in oral health
Prompts: Current practices, what works, doesn't work and why, what are the challenges, how could this improve, learning from other areas

Experiences of interprofessional working
Prompts: Good examples, what makes it work well, what doesn't, frequency, in relation to diabetes

Education on the role of other healthcare professionals
Prompts: Particularly between medicine/dentistry/pharmacy, understanding of professional roles

Anything further to discuss?

Next steps
- Thank the participant
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

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Dear Sir/Madam

My name is Andrew Sturrock; I am a Principal Lecturer in Pharmacy Practice at the University of Sunderland. I am writing to you as an invitation to take part in a research project that I am running in conjunction with Scott Wilkes, Professor of General Practice and Primary Care.

Please find enclosed the participant information sheet, outlining the background to the study and what is required of participants.

Participation can be either in person at your practice or via a scheduled telephone appointment. If you would like to take part in the study please contact me via email or telephone at the above address or complete and return the response form in the prepaid envelope included with this letter.

Yours faithfully

Andrew Sturrock
Principal Lecturer– Pharmacy Practice

I would like find out more about the study and I am happy for a member of the research team to contact me

Contact details *(Please enter your contact details below)*

Title: Dr/Mr/Mrs/Ms/Miss (*please delete as appropriate*)

Name: _____

Telephone contact number: _____

A convenient time to call is: Between _____ and _____

Please return this slip in the envelope provided. A member of research team will contact you on the contact number provided above.

Participant Information Sheet

Study title:

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England.

What is the purpose of this study?

This study is looking to explore the current practices and feasibility of primary care pharmacists providing oral health promotion and interventions in a general practice setting.

Who can take part?

This study requires participants from five different groups;

1. General Practice Pharmacists, registered with the General Pharmaceutical Council
2. General Medical Practitioners, registered with the General Medical Council
3. General Practice Administrative Staff – Practice Managers at General Medical Practices
4. General Practice Nurses, registered with the Nursing & Midwifery Council
5. Patients, recruited from the University Patient Carer Public Involvement Group

Do I have to take part and can I change my mind?

Participation is entirely voluntary. If you change your mind about taking part in the study, you can withdraw at any point during the session without giving a reason and without penalty. Once the anonymised transcripts have been produced you will not be able to withdraw from the study. After the interview has been completed audio recording will be transcribed within 7 days.

What will happen to me if I take part?

We would like your help with this study by asking you to talk to one of our team members for up to an hour. We will audio record this conversation so that it is easier for us to make notes later about what was said. The interview can take place in person or via telephone, at your place of work, at the University of Sunderland, or we can come to your home to talk to you. The researcher will ask you a series of questions in relation to the study title and your experiences in practice, from which there are absolutely no right or wrong answers. Your answers may lead to further discussion around any point or topics raised.

What are the possible disadvantages and risks of taking part?

We don't think that there are any risks associated with taking part in this study.

What if something goes wrong?

If you change your mind about participation, please contact me by email to cancel your participation. If you feel unhappy about the conduct of the study, please contact me immediately or the Chairperson of the University of Sunderland Research Ethics Group, whose contact details are given below.

Participant Information Sheet

Will my taking part in this study be kept confidential?

The University of Sunderland is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Sunderland will keep identifiable information about you; a list of participants and signed consent forms will be stored securely by the principle investigator for a period of up to 2 years. Audio recordings and transcripts will be stored securely by the principle investigator for a period of up to 6 years. Access will be restricted to the research team and persons authorised by the University for Quality Assurance purposes.

Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided, the first participant will be given the code P1, the numerical value will change with each subsequent participant e.g. P2, P3 etc.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the Principal Investigator, Andrew Sturrock andrew.sturrock@sunderland.ac.uk or Dr John Fulton, Chair of the University of Sunderland Research Ethics Group john.fulton@sunderland.ac.uk.

What will happen to the results of this study?

If suitable, the results may be presented at academic conferences and/or written up for publication in peer reviewed academic journals. A summary of the results will be made available to participants if you choose to receive a copy.

Who is organising and funding the research?

The research is being done by a research team at the University of Sunderland. The Chief Investigator for the project is Andrew Sturrock. His title is 'Principal Lecturer' and he is based in the School of Pharmacy and Pharmaceutical Sciences.

This project has received no external funding.

Who has reviewed the study?

The University of Sunderland Research Ethics Group has reviewed and approved the study.

Contact for further information:

Doctor John Fulton (Chair of the University of Sunderland Research Ethics Group, University of Sunderland) Email: john.fulton@sunderland.ac.uk Phone: 0191 515 2529

Who can I contact if I have questions about the study?

Participant Information Sheet

If you have any questions, we would like you to get in touch with us. You can do this by telephoning us on 0191 5152448 or you can email us on andrew.sturrock@sunderland.ac.uk

What should I do if I want to take part?

If you don't have any questions and would like to take part, please can you fill in the **Response Form** and send it to us. Please let us know the best way for us to get in touch with you. We don't know how many practitioners will want to help us so we might find we have too many and we may not need to ask for your help. Once we have your form, someone from the research team will get in touch with you and let you know if we do need your help or not. If we do they will arrange the best time and place for you to meet and talk to us.

Thank you for taking the time to read this information.

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #	Details
Domain 1: Research team and reflexivity			
Personal Characteristics			
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	21	Andrew Sturrock (AS)
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1	AS has an MSc in Clinical Pharmacy
3. Occupation	What was their occupation at the time of the study?	1	Principal Lecturer – Master of Pharmacy Programme Leader
4. Gender	Was the researcher male or female?	1	Male
5. Experience and training	What experience or training did the researcher have?	1 + 21	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.
Relationship with participants			
6. Relationship established	Was a relationship established prior to study commencement?	8	Invitation letter and participant information sheets were posted out prior to the study.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Supplementary document 3	A participant information sheet was provided to all participants.
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1+21	AS is a pharmacist. Interest in the research topic was developed due to teaching commitments on the MPharm programme at the University of Sunderland. The multidisciplinary team was assembled to reduce bias in the research process.
Domain 2: study design			
Theoretical framework			
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8	A Grounded Theory approach, with constant comparative analysis.

Participant selection			
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	8	A convenience sampling and snowball sampling method were adopted
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	8	An invitation letter and information sheets were posted (Supplementary Documents 2-3)
12. Sample size	How many participants were in the study?	10	22 participants
13. Non-participation	How many people refused to participate or dropped out? Reasons?	22	No participants who responded to the invitation refused to participate or dropped out of the study.
Setting			
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	10	Data were collected at a time and place convenient to the interviewee; this was at their place of work, telephone and at the University of Sunderland
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	8	Interviews were held on a one-to-one basis or as a Focus Group.
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	10	As displayed in table 1 and 2.
Data collection			
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	8	Interview guide was developed and refined by the research team. Included as (Supplementary Document 1)
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	8	No repeat interviews were performed
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	8	Audio recording
20. Field notes	Were field notes made during and/or after the inter view or focus group?	8	No field notes were taken due to the verbatim transcribing
21. Duration	What was the duration of the interviews or focus group?	10	Up to 1 hour
22. Data saturation	Was data saturation discussed?	10	Data were analysed by AS, with transcripts and emerging themes cross-checked for interpretation and agreed amongst the research team. Constant comparative analysis was utilised as a means of enriching the data through

			iterative data collection and analysis
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	8	No
Domain 3: analysis and findings			
Data analysis			
24. Number of data coders	How many data coders coded the data?	21	AS identified the thematic framework and interpreted the data, which was reviewed and refined by the research team.
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A	A description of the coding tree is not provided.
26. Derivation of themes	Were themes identified in advance or derived from the data?	8	Themes were derived from the data
27. Software	What software, if applicable, was used to manage the data?	N/A	
28. Participant checking	Did participants provide feedback on the findings?	8	No
Reporting			
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	11-17	Quotation are presented with clearly identifiable participant numbers
30. Data and findings consistent	Was there consistency between the data presented and the findings?	11-17	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	11-17	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	11-17	Yes

BMJ Open

"We don't seem to engage with dentists": A qualitative study of primary care healthcare staff and patients in the North East of England

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"We don't seem to engage with dentists": A qualitative study of primary care healthcare staff and patients in the North East of England

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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 Public Involvement group.

Methods: One-to-one semi-structured interviews were performed with primary care healthcare staff. Integration of constant comparative analysis within a Grounded Theory approach facilitated the ongoing enrichment of data. Salient themes were identified using Ritchie and Spencer's 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: (1) 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; (2) limited knowledge; indicating basic understanding of appropriate oral health advice, but limited insight and provision of advice to patients with regards to the links with systemic diseases and medication; (3) geographical/situational isolation of the dental team; indicating the disparate context of multidisciplinary working in oral health and patients' attitudes towards dental care; (4) 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 general practice.

Conclusions:

The lack of integration between oral and general healthcare services potentially impacts negatively on patient care. The role of the pharmacist in general practice is rapidly evolving

and 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 limited number of general practitioners participated and no dentists were interviewed.
- Semi-structured 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.
- Participants were provided with a participant information leaflet in advance of data collection as part of the process of gaining informed consent, therefore exposing participants to the concepts before their scheduled interview.

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 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 wellbeing, 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 United Kingdom, dental treatment is available privately or provided as part of the National Health Service (NHS). However, even under NHS arrangements, the majority of patients pay a contribution towards the cost of care their care, and currently care is charged into 1 of 3 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 3-4 mmol/mol (0.3-0.4%) reduction in HbA1c levels after 3 months;(9) 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 anti-resorptive and anti-angiogenic drugs used in the treatment of osteoporosis and cancer.(18) MRONJ is difficult to treat and significantly impacts on patient's quality of life;(19) 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 1500 clinical pharmacists to the general practice workforce by 2020.(22) The Primary Care Pharmacy Associations, Clinical Pharmacist in General Practice Job Description sets out the duties and areas of responsibility for pharmacists in this setting in the UK;(23) 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 health advice or interventions from clinical pharmacists. This could potentially include the prevention or management of the oral health-related adverse drug effects outlined above and the promotion of good oral hygiene to patients. The role of clinical

pharmacist 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 utilising pharmacists in general practice to improve the interprofessional management of oral health

METHOD

Design:

A Grounded Theory approach was adopted throughout this research; an initial topic guide (Supplementary Document 1) was produced serving as a benchmark for semi-structured one-to-one interviews which were audio recorded and transcribed verbatim.(24) A key element of Grounded Theory is constant comparative analysis, facilitated by the concurrent and iterative process of data collection and analysis.(25) This process provided the opportunity for the further exploration of emergent themes through subsequent data collection. Framework Analysis (Ritchie and Spencer, 2002) provided a systematic approach to the identification and analysis of salient themes.(26) A focus group was held with patients to explore key themes; a topic guide (Supplementary Document 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] GPs; [3] general practice administrative staff; and [4] general practice nurses.

An invitation letter (Supplementary Document 3) and participant information sheet (Supplementary Document 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. Informed consent was obtained (Supplementary Document 5) before participation in the interviews and focus groups ; no participants withdrew or refused to participate.

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),(26) 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.

Ethical review:

Ethical approval was obtained from the University of Sunderland Research Ethics Committee prior to data collection (REF: 002856)

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 6 patients; the focus group facilitated the refinement of emerging concepts and the co-construction of overarching themes.

Results

22 participants were recruited to this study (Table 1 and 2). In-depth semi-structured 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. 6 patients participated in a focus group, lasting 1 hour, held in April 2019 at the University of Sunderland.

Table 1. Healthcare Professional Participant Characteristics

Participant	Identifier	Role	No. years' experience	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	Gender
1	Pt1	Patient	50-59 years	Female
2	Pt2	Patient	60-69 years	Male
3	Pt3	Patient	50-59 years	Female
4	Pt4	Patient	60-69 years	Male
5	Pt5	Patient	40-49 years	Female
6	Pt6	Patient	60-69 years	Female

Four salient inter-related themes emerged from the data and a coding tree was produced (Supplementary Document 6): (1) enhanced clinical roles; (2) limited knowledge; (3) geographical /situational isolation of the dental team; (4) integration of oral health advice.

1. 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 that contribute positively to patient care.

> 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 that 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. 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, its 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 and 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 its 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)

2. 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 complain of xerostomia 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 Healthcare 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 has 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)

3. 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.

> 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 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 the 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)

4. 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 minutes 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 and no shared access to medical records. The evolving role of the clinical pharmacist in general practice is facilitating the provision of additional clinical services and is improving patient care.(21,27) 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.(28) 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 2013.(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.(20,29-32) 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 (2019) 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.(33) 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 Summary Care Record (SCR) that can be accessed from a variety of NHS service providers; however, NHS dental practices do not currently have access

to SCRs.(34) 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,(35) 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 inadvertently prescribing medication that 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 United Kingdom 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.(36) 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. Professional bodies and the commissioners of healthcare services at both a local and national level should consider utilising 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 to patients.

Conclusion

Participants reported the relatively disparate contexts of oral and general healthcare services; 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; however, 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 evolving and 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 health care by this professional group in general practice ought to be explored.

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An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Initial Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will ask you questions
    - It will last between 30 and 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to, just let me know that you want to move on
    - Participation is voluntary and participant can withdraw at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The interview will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Does the participant have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Background of participant
Prompts: age, employment, experience, undergraduate training, postgraduate training

Education on oral health
Prompts: undergraduate and postgraduate training, CPD, discipline only education or interprofessional, what was the focus

Current practices - pharmacists
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why

Links between prescribed medication and oral health problems - pharmacists
Prompts: MRONJ, bisphosphonates, awareness, current practices, role with this patient group, any other issues xerostomia, oral cancer etc.

Links between diabetes and periodontal disease - pharmacists
Prompts: Awareness of links, significance of links, benefits of periodontal treatment

Current practices in diabetic patients - pharmacists
Prompts: Is oral health promotion in this group part of your current practice, if not why not, if yes how do you deliver this

Current practices – GPs/Admin/Nurses
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why, knowledge of systemic diseases and medications affecting oral health

Perceived role of the practice pharmacist in oral health – GPs/Admin/Nurses
Prompts: Is there a role, is this a priority what does this look like, barriers, facilitators

Interprofessional working in oral health
Prompts: Current practices, what works, doesn't work and why, what are the challenges, how could this improve, learning from other areas

Experiences of interprofessional working
Prompts: Good examples, what makes it work well, what doesn't, frequency, in relation to diabetes

Education on the role of other healthcare professionals
Prompts: Particularly between medicine/dentistry/pharmacy, understanding of professional roles

Anything further to discuss?

Next steps
- Thank the participant
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Focus Group Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff and patients regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, and patients regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will some questions
    - These questions can then be discussed amongst the group
    - It will last between approximately 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to
    - Participation is voluntary and participant can withdraw at any time
    - It is important that only one person talks at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The focus group will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Do the participants have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Roles of the GP practice pharmacist

Prompts: What has been your current experience/attitudes towards this role, what sort of work do you think practice pharmacists do, length of appointments, focus of this role, crossover or segregation between GP role and nurse's role.

Patient education on oral health

Prompts: Where has it come from, which healthcare professionals have talked about oral health with you, awareness of any link between oral and systemic health, side-effects of medications, expectations of who should do this

Barriers to dental services

Prompts: Access, costs, phobias, priority of oral health, education

Communication between general practice and the dental team

Prompts: Current thoughts, expectations, ways to improve, good examples of interprofessional work in practice

Opportunities for pharmacists in this role

Prompts: What else could pharmacists do, incorporation of oral health advice into medication reviews and chronic disease management, signposting, acceptability of oral health advice from this professional group

Anything further to discuss?

Next steps

- Thank the participants
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

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Faculty of Health Sciences and Wellbeing
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Dear Sir/Madam

My name is Andrew Sturrock; I am a Principal Lecturer in Pharmacy Practice at the University of Sunderland. I am writing to you as an invitation to take part in a research project that I am running in conjunction with Scott Wilkes, Professor of General Practice and Primary Care.

Please find enclosed the participant information sheet, outlining the background to the study and what is required of participants.

Participation can be either in person at your practice or via a scheduled telephone appointment. If you would like to take part in the study please contact me via email or telephone at the above address or complete and return the response form in the prepaid envelope included with this letter.

Yours faithfully

Andrew Sturrock
Principal Lecturer– Pharmacy Practice

I would like find out more about the study and I am happy for a member of the research team to contact me

Contact details *(Please enter your contact details below)*

Title: Dr/Mr/Mrs/Ms/Miss (*please delete as appropriate*)

Name: _____

Telephone contact number: _____

A convenient time to call is: Between _____ and _____

Please return this slip in the envelope provided. A member of research team will contact you on the contact number provided above.

Participant Information Sheet

Study title:

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England.

What is the purpose of this study?

This study is looking to explore the current practices and feasibility of primary care pharmacists providing oral health promotion and interventions in a general practice setting.

Who can take part?

This study requires participants from five different groups;

1. General Practice Pharmacists, registered with the General Pharmaceutical Council
2. General Medical Practitioners, registered with the General Medical Council
3. General Practice Administrative Staff – Practice Managers at General Medical Practices
4. General Practice Nurses, registered with the Nursing & Midwifery Council
5. Patients, recruited from the University Patient Carer Public Involvement Group

Do I have to take part and can I change my mind?

Participation is entirely voluntary. If you change your mind about taking part in the study, you can withdraw at any point during the session without giving a reason and without penalty. Once the anonymised transcripts have been produced you will not be able to withdraw from the study. After the interview has been completed audio recording will be transcribed within 7 days.

What will happen to me if I take part?

We would like your help with this study by asking you to talk to one of our team members for up to an hour. We will audio record this conversation so that it is easier for us to make notes later about what was said. The interview can take place in person or via telephone, at your place of work, at the University of Sunderland, or we can come to your home to talk to you. The researcher will ask you a series of questions in relation to the study title and your experiences in practice, from which there are absolutely no right or wrong answers. Your answers may lead to further discussion around any point or topics raised.

What are the possible disadvantages and risks of taking part?

We don't think that there are any risks associated with taking part in this study.

What if something goes wrong?

If you change your mind about participation, please contact me by email to cancel your participation. If you feel unhappy about the conduct of the study, please contact me immediately or the Chairperson of the University of Sunderland Research Ethics Group, whose contact details are given below.

University of Sunderland

Participant Information Sheet

Will my taking part in this study be kept confidential?

The University of Sunderland is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Sunderland will keep identifiable information about you; a list of participants and signed consent forms will be stored securely by the principle investigator for a period of up to 2 years. Audio recordings and transcripts will be stored securely by the principle investigator for a period of up to 6 years. Access will be restricted to the research team and persons authorised by the University for Quality Assurance purposes.

Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided, the first participant will be given the code P1, the numerical value will change with each subsequent participant e.g. P2, P3 etc.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the Principal Investigator, Andrew Sturrock andrew.sturrock@sunderland.ac.uk or Dr John Fulton, Chair of the University of Sunderland Research Ethics Group john.fulton@sunderland.ac.uk.

What will happen to the results of this study?

If suitable, the results may be presented at academic conferences and/or written up for publication in peer reviewed academic journals. A summary of the results will be made available to participants if you choose to receive a copy.

Who is organising and funding the research?

The research is being done by a research team at the University of Sunderland. The Chief Investigator for the project is Andrew Sturrock. His title is 'Principal Lecturer' and he is based in the School of Pharmacy and Pharmaceutical Sciences.

This project has received no external funding.

Who has reviewed the study?

The University of Sunderland Research Ethics Group has reviewed and approved the study.

Contact for further information:

Doctor John Fulton (Chair of the University of Sunderland Research Ethics Group, University of Sunderland) Email: john.fulton@sunderland.ac.uk Phone: 0191 515 2529

Who can I contact if I have questions about the study?

If you have any questions, we would like you to get in touch with us. You can do this by telephoning us on 0191 5152448

Participant Information Sheet

or you can email us on andrew.sturrock@sunderland.ac.uk

What should I do if I want to take part?

If you don't have any questions and would like to take part, please can you fill in the **Response Form** and send it to us. Please let us know the best way for us to get in touch with you. We don't know how many practitioners will want to help us so we might find we have too many and we may not need to ask for your help. Once we have your form, someone from the research team will get in touch with you and let you know if we do need your help or not. If we do they will arrange the best time and place for you to meet and talk to us.

Thank you for taking the time to read this information.

University of Sunderland

Consent Form

Study title: An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Anonymity and confidentiality: Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided.

Participant code: _____

Please ✓ or X as appropriate

I have read and understood the attached study information and, by signing below, I consent to participate in this study	
I understand that I have the right to withdraw from the study without giving a reason up to 7 days after the completion of the interview.	
I understand that the interview will be audio recorded and transcribed anonymously.	
I consent to anonymised participant data to be included in any future publications.	
Would you like a summary of the results to be sent to you once the project is complete? If so please provide an email or postal address that the results can be sent too. Address: …… …… ……	

Signed: _____

Print name: _____

(Your name, along with your participant code will not be used in or shared with anyone outside of the research team;)

Date: _____

Researcher Signature: _____

Print name: _____

Date: _____

Coding Tree

Enhanced clinical roles

- Accessibility to other primary care staff
- An evolving and advancing role
- Increased responsibility and accountability
- Chronic disease and medication management
- Management of high-risk medications
- Interface between care settings
- Lifestyle advice
- Access by patients

Limited knowledge

- Basic understanding
- Signposting to dental services
- Duty of care
- Limited links to systemic health
- Role in deprescribing
- Patient safety alerts – actioned but often forgotten
- Patient knowledge gained from dentists or parents
- A willingness for more education

Geographical/situational isolation

- Limited collaboration/communication
- No formal pathways
- Lack of shared records
- Reluctance/barriers for patient engagement with dental services
- Stereotyped professional roles

Integration of oral health advice

- Ability to identify and access patients
- Provision of lifestyle advice
- Less time pressures
- Need for direction/services

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #	Details
Domain 1: Research team and reflexivity			
Personal Characteristics			
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	21	Andrew Sturrock (AS)
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1	AS has an MSc in Clinical Pharmacy
3. Occupation	What was their occupation at the time of the study?	1	Principal Lecturer – Master of Pharmacy Programme Leader
4. Gender	Was the researcher male or female?	1	Male
5. Experience and training	What experience or training did the researcher have?	1 + 21	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.
Relationship with participants			
6. Relationship established	Was a relationship established prior to study commencement?	8	Invitation letter and participant information sheets were posted out prior to the study.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Supplementary document 3	A participant information sheet was provided to all participants.
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1+21	AS is a pharmacist. Interest in the research topic was developed due to teaching commitments on the MPharm programme at the University of Sunderland. The multidisciplinary team was assembled to reduce bias in the research process.
Domain 2: study design			
Theoretical framework			
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8	A Grounded Theory approach, with constant comparative analysis.

Participant selection			
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	8	A convenience sampling and snowball sampling method were adopted
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	8	An invitation letter and information sheets were posted (Supplementary Documents 2-3)
12. Sample size	How many participants were in the study?	10	22 participants
13. Non-participation	How many people refused to participate or dropped out? Reasons?	9	No participants who responded to the invitation refused to participate or dropped out of the study.
Setting			
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	10	Data were collected at a time and place convenient to the interviewee; this was at their place of work, telephone and at the University of Sunderland
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	8	Interviews were held on a one-to-one basis or as a Focus Group.
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	10	As displayed in table 1 and 2.
Data collection			
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	8	Interview guide was developed and refined by the research team. Included as (Supplementary Document 1)
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	8	No repeat interviews were performed
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	8	Audio recording
20. Field notes	Were field notes made during and/or after the inter view or focus group?	8	No field notes were taken due to the verbatim transcribing
21. Duration	What was the duration of the interviews or focus group?	10	Up to 1 hour
22. Data saturation	Was data saturation discussed?	10	Data were analysed by AS, with transcripts and emerging themes cross-checked for interpretation and agreed amongst the research team. Constant comparative analysis was utilised as a means of enriching the data through

			iterative data collection and analysis
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	8	No
Domain 3: analysis and findings			
Data analysis			
24. Number of data coders	How many data coders coded the data?	21	AS identified the thematic framework and interpreted the data, which was reviewed and refined by the research team.
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A	A description of the coding tree is not provided.
26. Derivation of themes	Were themes identified in advance or derived from the data?	8	Themes were derived from the data
27. Software	What software, if applicable, was used to manage the data?	N/A	
28. Participant checking	Did participants provide feedback on the findings?	8	No
Reporting			
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	11-17	Quotation are presented with clearly identifiable participant numbers
30. Data and findings consistent	Was there consistency between the data presented and the findings?	11-17	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	11-17	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	11-17	Yes

BMJ Open

"We don't seem to engage with dentists": A qualitative study of the role of pharmacists in providing oral health advice and collaboration with dentists in a primary care setting in the North East of England; perceptions of general practice staff and patients.

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Keywords:	PRIMARY CARE, QUALITATIVE RESEARCH, Organisation of health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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"We don't seem to engage with dentists": A qualitative study of the role of pharmacists in providing oral health advice and collaboration with dentists in a primary care setting in the North East of England; perceptions of general practice staff and patients.

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Keywords: Pharmacists, Primary Care, Oral Health, Qualitative Research

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 Public Involvement group.

Methods: One-to-one semi-structured interviews were performed with primary care healthcare staff. An iterative approach utilising 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: (1) 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; (2) 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; (3) 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; (4) 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.
- Semi-structured 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 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 wellbeing, 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 United Kingdom, dental treatment is available privately or provided as part of the National Health Service (NHS). However, even under NHS arrangements, the majority of patients pay a contribution towards the cost of care their care, and currently care is charged into 1 of 3 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 3-4 mmol/mol (0.3-0.4%) reduction in HbA1c levels after 3 months;(9) 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 anti-resorptive and anti-angiogenic drugs used in the treatment of osteoporosis and cancer.(18) MRONJ is difficult to treat and significantly impacts on patient's quality of life;(19) 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 1500 clinical pharmacists to the general practice workforce by 2020.(22) The Primary Care Pharmacy Associations, Clinical Pharmacist in General Practice Job Description sets out the duties and areas of responsibility for pharmacists in this setting in the UK;(23) 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 e.g. 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 pharmacist 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 utilising 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 (Supplementary Document 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. Framework Analysis (Ritchie and Spencer, 2002) 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 process: (1) familiarisation with the data – achieved via iterative cycles of listening to and re-reading of transcripts; (2) development of a thematic framework – the initial themes formed the basis of a thematic framework; (3) indexing data – data were indexed against the thematic framework; (4) charting – charts were produced of the data within the framework; (5) 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 (Supplementary Document 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] GPs; [3] general practice administrative staff; and [4] general practice nurses.

An invitation letter (Supplementary Document 3) and participant information sheet (Supplementary Document 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.

Informed consent was obtained (Supplementary Document 5) before participation in the interviews and focus groups ; no participants withdrew or refused to participate.

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.

Ethical review:

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

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 6 patients; the focus group facilitated the refinement of emerging concepts and the co-construction of overarching themes.

Results

22 participants were recruited to this study (Table 1 and 2). In-depth semi-structured 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. 6 patients participated in a focus group, lasting 1 hour, held in April 2019 at the University of Sunderland.

Table 1. Healthcare Professional Participant Characteristics

Participant	Identifier	Role	No. years' experience	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	Gender
1	Pt1	Patient	50-59 years	Female
2	Pt2	Patient	60-69 years	Male
3	Pt3	Patient	50-59 years	Female
4	Pt4	Patient	60-69 years	Male
5	Pt5	Patient	40-49 years	Female
6	Pt6	Patient	60-69 years	Female

Four salient inter-related themes emerged from the data and a coding tree was produced (Supplementary Document 6): (1) enhanced clinical roles; (2) limited knowledge; (3) geographical /situational isolation of the dental team; (4) integration of oral health advice.

1. 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 to more traditional pharmacy roles, with pharmacists increasing 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 that 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, its 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 and 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 its 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)

2. 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 complain 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 Healthcare 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 has 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)

3. 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 health care 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 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 the 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)

4. 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 minutes 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 health care. Further consideration and action is 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 2013.(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 (2019) 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 Summary Care Record (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 inadvertently prescribing medication that 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 United Kingdom 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 utilising 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 to 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, is 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 View;(22) 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 health care by this professional group in general practice ought to be explored.

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An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Initial Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will ask you questions
    - It will last between 30 and 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to, just let me know that you want to move on
    - Participation is voluntary and participant can withdraw at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The interview will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Does the participant have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Background of participant
Prompts: age, employment, experience, undergraduate training, postgraduate training

Education on oral health
Prompts: undergraduate and postgraduate training, CPD, discipline only education or interprofessional, what was the focus

Current practices - pharmacists
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why

Links between prescribed medication and oral health problems - pharmacists
Prompts: MRONJ, bisphosphonates, awareness, current practices, role with this patient group, any other issues xerostomia, oral cancer etc.

Links between diabetes and periodontal disease - pharmacists
Prompts: Awareness of links, significance of links, benefits of periodontal treatment

Current practices in diabetic patients - pharmacists
Prompts: Is oral health promotion in this group part of your current practice, if not why not, if yes how do you deliver this

Current practices – GPs/Admin/Nurses
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why, knowledge of systemic diseases and medications affecting oral health

Perceived role of the practice pharmacist in oral health – GPs/Admin/Nurses
Prompts: Is there a role, is this a priority what does this look like, barriers, facilitators

Interprofessional working in oral health
Prompts: Current practices, what works, doesn't work and why, what are the challenges, how could this improve, learning from other areas

Experiences of interprofessional working
Prompts: Good examples, what makes it work well, what doesn't, frequency, in relation to diabetes

Education on the role of other healthcare professionals
Prompts: Particularly between medicine/dentistry/pharmacy, understanding of professional roles

Anything further to discuss?

Next steps
- Thank the participant
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Focus Group Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff and patients regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, and patients regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will some questions
    - These questions can then be discussed amongst the group
    - It will last between approximately 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to
    - Participation is voluntary and participant can withdraw at any time
    - It is important that only one person talks at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The focus group will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Do the participants have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Roles of the GP practice pharmacist

Prompts: What has been your current experience/attitudes towards this role, what sort of work do you think practice pharmacists do, length of appointments, focus of this role, crossover or segregation between GP role and nurse's role.

Patient education on oral health

Prompts: Where has it come from, which healthcare professionals have talked about oral health with you, awareness of any link between oral and systemic health, side-effects of medications, expectations of who should do this

Barriers to dental services

Prompts: Access, costs, phobias, priority of oral health, education

Communication between general practice and the dental team

Prompts: Current thoughts, expectations, ways to improve, good examples of interprofessional work in practice

Opportunities for pharmacists in this role

Prompts: What else could pharmacists do, incorporation of oral health advice into medication reviews and chronic disease management, signposting, acceptability of oral health advice from this professional group

Anything further to discuss?

Next steps

- Thank the participants
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

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Dear Sir/Madam

My name is Andrew Sturrock; I am a Principal Lecturer in Pharmacy Practice at the University of Sunderland. I am writing to you as an invitation to take part in a research project that I am running in conjunction with Scott Wilkes, Professor of General Practice and Primary Care.

Please find enclosed the participant information sheet, outlining the background to the study and what is required of participants.

Participation can be either in person at your practice or via a scheduled telephone appointment. If you would like to take part in the study please contact me via email or telephone at the above address or complete and return the response form in the prepaid envelope included with this letter.

Yours faithfully

Andrew Sturrock
Principal Lecturer– Pharmacy Practice

I would like find out more about the study and I am happy for a member of the research team to contact me

Contact details *(Please enter your contact details below)*

Title: Dr/Mr/Mrs/Ms/Miss (*please delete as appropriate*)

Name: _____

Telephone contact number: _____

A convenient time to call is: Between _____ and _____

Please return this slip in the envelope provided. A member of research team will contact you on the contact number provided above.

Participant Information Sheet

Study title:

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England.

What is the purpose of this study?

This study is looking to explore the current practices and feasibility of primary care pharmacists providing oral health promotion and interventions in a general practice setting.

Who can take part?

This study requires participants from five different groups;

1. General Practice Pharmacists, registered with the General Pharmaceutical Council
2. General Medical Practitioners, registered with the General Medical Council
3. General Practice Administrative Staff – Practice Managers at General Medical Practices
4. General Practice Nurses, registered with the Nursing & Midwifery Council
5. Patients, recruited from the University Patient Carer Public Involvement Group

Do I have to take part and can I change my mind?

Participation is entirely voluntary. If you change your mind about taking part in the study, you can withdraw at any point during the session without giving a reason and without penalty. Once the anonymised transcripts have been produced you will not be able to withdraw from the study. After the interview has been completed audio recording will be transcribed within 7 days.

What will happen to me if I take part?

We would like your help with this study by asking you to talk to one of our team members for up to an hour. We will audio record this conversation so that it is easier for us to make notes later about what was said. The interview can take place in person or via telephone, at your place of work, at the University of Sunderland, or we can come to your home to talk to you. The researcher will ask you a series of questions in relation to the study title and your experiences in practice, from which there are absolutely no right or wrong answers. Your answers may lead to further discussion around any point or topics raised.

What are the possible disadvantages and risks of taking part?

We don't think that there are any risks associated with taking part in this study.

What if something goes wrong?

If you change your mind about participation, please contact me by email to cancel your participation. If you feel unhappy about the conduct of the study, please contact me immediately or the Chairperson of the University of Sunderland Research Ethics Group, whose contact details are given below.

University of Sunderland

Participant Information Sheet

Will my taking part in this study be kept confidential?

The University of Sunderland is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Sunderland will keep identifiable information about you; a list of participants and signed consent forms will be stored securely by the principle investigator for a period of up to 2 years. Audio recordings and transcripts will be stored securely by the principle investigator for a period of up to 6 years. Access will be restricted to the research team and persons authorised by the University for Quality Assurance purposes.

Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided, the first participant will be given the code P1, the numerical value will change with each subsequent participant e.g. P2, P3 etc.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the Principal Investigator, Andrew Sturrock andrew.sturrock@sunderland.ac.uk or Dr John Fulton, Chair of the University of Sunderland Research Ethics Group john.fulton@sunderland.ac.uk.

What will happen to the results of this study?

If suitable, the results may be presented at academic conferences and/or written up for publication in peer reviewed academic journals. A summary of the results will be made available to participants if you choose to receive a copy.

Who is organising and funding the research?

The research is being done by a research team at the University of Sunderland. The Chief Investigator for the project is Andrew Sturrock. His title is 'Principal Lecturer' and he is based in the School of Pharmacy and Pharmaceutical Sciences.

This project has received no external funding.

Who has reviewed the study?

The University of Sunderland Research Ethics Group has reviewed and approved the study.

Contact for further information:

Doctor John Fulton (Chair of the University of Sunderland Research Ethics Group, University of Sunderland) Email: john.fulton@sunderland.ac.uk Phone: 0191 515 2529

Who can I contact if I have questions about the study?

If you have any questions, we would like you to get in touch with us. You can do this by telephoning us on 0191 5152448

Participant Information Sheet

or you can email us on andrew.sturrock@sunderland.ac.uk

What should I do if I want to take part?

If you don't have any questions and would like to take part, please can you fill in the **Response Form** and send it to us. Please let us know the best way for us to get in touch with you. We don't know how many practitioners will want to help us so we might find we have too many and we may not need to ask for your help. Once we have your form, someone from the research team will get in touch with you and let you know if we do need your help or not. If we do they will arrange the best time and place for you to meet and talk to us.

Thank you for taking the time to read this information.

University of Sunderland

Consent Form

Study title: An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Anonymity and confidentiality: Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided.

Participant code: _____

Please ✓ or X as appropriate

I have read and understood the attached study information and, by signing below, I consent to participate in this study	
I understand that I have the right to withdraw from the study without giving a reason up to 7 days after the completion of the interview.	
I understand that the interview will be audio recorded and transcribed anonymously.	
I consent to anonymised participant data to be included in any future publications.	
Would you like a summary of the results to be sent to you once the project is complete? If so please provide an email or postal address that the results can be sent too. Address: …… …… ……	

Signed: _____

Print name: _____

(Your name, along with your participant code will not be used in or shared with anyone outside of the research team;)

Date: _____

Researcher Signature: _____

Print name: _____

Date: _____

Coding Tree

Enhanced clinical roles

- Accessibility to other primary care staff
- An evolving and advancing role
- Increased responsibility and accountability
- Chronic disease and medication management
- Management of high-risk medications
- Interface between care settings
- Lifestyle advice
- Access by patients

Limited knowledge

- Basic understanding
- Signposting to dental services
- Duty of care
- Limited links to systemic health
- Role in deprescribing
- Patient safety alerts – actioned but often forgotten
- Patient knowledge gained from dentists or parents
- A willingness for more education

Geographical/situational isolation

- Limited collaboration/communication
- No formal pathways
- Lack of shared records
- Reluctance/barriers for patient engagement with dental services
- Stereotyped professional roles

Integration of oral health advice

- Ability to identify and access patients
- Provision of lifestyle advice
- Less time pressures
- Need for direction/services

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #	Details
Domain 1: Research team and reflexivity			
Personal Characteristics			
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	21	Andrew Sturrock (AS)
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1	AS has an MSc in Clinical Pharmacy
3. Occupation	What was their occupation at the time of the study?	1	Principal Lecturer – Master of Pharmacy Programme Leader
4. Gender	Was the researcher male or female?	1	Male
5. Experience and training	What experience or training did the researcher have?	1 + 21	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.
Relationship with participants			
6. Relationship established	Was a relationship established prior to study commencement?	8	Invitation letter and participant information sheets were posted out prior to the study.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Supplementary document 3	A participant information sheet was provided to all participants.
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1+21	AS is a pharmacist. Interest in the research topic was developed due to teaching commitments on the MPharm programme at the University of Sunderland. The multidisciplinary team was assembled to reduce bias in the research process.
Domain 2: study design			
Theoretical framework			
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8	An interpretive approach, with constant comparative analysis.

Participant selection			
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	8	A convenience sampling and snowball sampling method were adopted
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	8	An invitation letter and information sheets were posted (Supplementary Documents 2-3)
12. Sample size	How many participants were in the study?	10	22 participants
13. Non-participation	How many people refused to participate or dropped out? Reasons?	9	No participants who responded to the invitation refused to participate or dropped out of the study.
Setting			
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	10	Data were collected at a time and place convenient to the interviewee; this was at their place of work, telephone and at the University of Sunderland
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	8	Interviews were held on a one-to-one basis or as a Focus Group.
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	10	As displayed in table 1 and 2.
Data collection			
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	8	Interview guide was developed and refined by the research team. Included as (Supplementary Document 1)
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	8	No repeat interviews were performed
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	8	Audio recording
20. Field notes	Were field notes made during and/or after the inter view or focus group?	8	No field notes were taken due to the verbatim transcribing
21. Duration	What was the duration of the interviews or focus group?	10	Up to 1 hour
22. Data saturation	Was data saturation discussed?	10	Data were analysed by AS, with transcripts and emerging themes cross-checked for interpretation and agreed amongst the research team. Constant comparative analysis was utilised as a means of enriching the data through

			iterative data collection and analysis
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	8	No
Domain 3: analysis and findings			
Data analysis			
24. Number of data coders	How many data coders coded the data?	21	AS identified the thematic framework and interpreted the data, which was reviewed and refined by the research team.
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A	A description of the coding tree is not provided.
26. Derivation of themes	Were themes identified in advance or derived from the data?	8	Themes were derived from the data
27. Software	What software, if applicable, was used to manage the data?	N/A	
28. Participant checking	Did participants provide feedback on the findings?	8	No
Reporting			
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	11-17	Quotation are presented with clearly identifiable participant numbers
30. Data and findings consistent	Was there consistency between the data presented and the findings?	11-17	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	11-17	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	11-17	Yes

BMJ Open

"We don't 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 health care.

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Secondary Subject Heading:	Dentistry and oral medicine, Health services research, Pharmacology and therapeutics
Keywords:	PRIMARY CARE, QUALITATIVE RESEARCH, Organisation of health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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"We don't 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 health care

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Keywords: Pharmacists, Primary Care, Oral Health, Qualitative Research

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 Public Involvement group.

Methods: One-to-one semi-structured interviews were performed with primary care healthcare staff. An iterative approach utilising 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: (1) 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; (2) 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; (3) 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; (4) 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.
- Semi-structured 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 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 wellbeing, 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 United Kingdom, dental treatment is available privately or provided as part of the National Health Service (NHS). However, even under NHS arrangements, the majority of patients pay a contribution towards the cost of care their care, and currently care is charged into 1 of 3 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 3-4 mmol/mol (0.3-0.4%) reduction in HbA1c levels after 3 months;(9) 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 anti-resorptive and anti-angiogenic drugs used in the treatment of osteoporosis and cancer.(18) MRONJ is difficult to treat and significantly impacts on patient's quality of life;(19) 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 1500 clinical pharmacists to the general practice workforce by 2020.(22) The Primary Care Pharmacy Associations, Clinical Pharmacist in General Practice Job Description sets out the duties and areas of responsibility for pharmacists in this setting in the UK;(23) 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 e.g. 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 pharmacist 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 utilising 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 (Supplementary Document 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 process: (1) familiarisation with the data – achieved via iterative cycles of listening to and re-reading of transcripts; (2) development of a thematic framework – the initial themes formed the basis of a thematic framework; (3) indexing data – data were indexed against the thematic framework; (4) charting – charts were produced of the data within the framework; (5) 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 (Supplementary Document 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] GPs; [3] general practice administrative staff; and [4] general practice nurses.

An invitation letter (Supplementary Document 3) and participant information sheet (Supplementary Document 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.

Informed consent was obtained before participation in the interviews and focus groups ; no participants withdrew or refused to participate.

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.

Ethical review:

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

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 6 patients; the focus group facilitated the refinement of emerging concepts and the co-construction of overarching themes.

Results

22 participants were recruited to this study (Table 1 and 2). In-depth semi-structured 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. 6 patients participated in a focus group, lasting 1 hour, held in April 2019 at the University of Sunderland.

Table 1. Healthcare Professional Participant Characteristics

Participant	Identifier	Role	No. years' experience	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	Gender
1	Pt1	Patient	50-59 years	Female
2	Pt2	Patient	60-69 years	Male
3	Pt3	Patient	50-59 years	Female
4	Pt4	Patient	60-69 years	Male
5	Pt5	Patient	40-49 years	Female
6	Pt6	Patient	60-69 years	Female

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

1. 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 to more traditional pharmacy roles, with pharmacists increasing 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 that 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, its 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 and 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 its 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)

2. 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 complain 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 Healthcare 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 has 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)

3. 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 health care 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 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 the 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)

4. 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 minutes 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 health care. Further consideration and action is 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 2013.(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 (2019) 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 Summary Care Record (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 United Kingdom 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 utilising 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 to 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, is 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 View;(22) 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 health care by this professional group in general practice ought to be explored.

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An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Initial Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will ask you questions
    - It will last between 30 and 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to, just let me know that you want to move on
    - Participation is voluntary and participant can withdraw at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The interview will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Does the participant have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Background of participant
Prompts: age, employment, experience, undergraduate training, postgraduate training

Education on oral health
Prompts: undergraduate and postgraduate training, CPD, discipline only education or interprofessional, what was the focus

Current practices - pharmacists
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why

Links between prescribed medication and oral health problems - pharmacists
Prompts: MRONJ, bisphosphonates, awareness, current practices, role with this patient group, any other issues xerostomia, oral cancer etc.

Links between diabetes and periodontal disease - pharmacists
Prompts: Awareness of links, significance of links, benefits of periodontal treatment

Current practices in diabetic patients - pharmacists
Prompts: Is oral health promotion in this group part of your current practice, if not why not, if yes how do you deliver this

Current practices – GPs/Admin/Nurses
Prompts: What is your current role in relation to oral health, is this a priority, what do you discuss with patients, when and why, knowledge of systemic diseases and medications affecting oral health

Perceived role of the practice pharmacist in oral health – GPs/Admin/Nurses
Prompts: Is there a role, is this a priority what does this look like, barriers, facilitators

Interprofessional working in oral health
Prompts: Current practices, what works, doesn't work and why, what are the challenges, how could this improve, learning from other areas

Experiences of interprofessional working
Prompts: Good examples, what makes it work well, what doesn't, frequency, in relation to diabetes

Education on the role of other healthcare professionals
Prompts: Particularly between medicine/dentistry/pharmacy, understanding of professional roles

Anything further to discuss?

Next steps
- Thank the participant
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

Focus Group Topic Guide

The following guide outlines the key areas for exploration during the interview.

Aims and objectives

- To explore the knowledge and current practice of primacy care pharmacists, general medical practitioners and administrative staff and patients regarding the role of the pharmacist in oral health
- To explore the attitudes towards and perceptions of primacy care pharmacists, general medical practitioners and administrative staff, and patients regarding the role of the pharmacist in providing oral health promotion and interventions
- To explore any barriers and facilitators for utilising pharmacists in primary care to improving the interprofessional management of oral health

Introduction

Aim: To introduce the research and set the context for the proceeding discussion

- Introduce self: Researchers background, University of Sunderland
- Introduce the study: what it is about
- Talk through key points
    - This will be a conversation where I will some questions
    - These questions can then be discussed amongst the group
    - It will last between approximately 60 minutes
    - There are no right or wrong answers
    - You don't have to answer all of the questions if you don't want to
    - Participation is voluntary and participant can withdraw at any time
    - It is important that only one person talks at any time
- Confidentiality/ anonymity
    - Transcripts will be anonymised
    - In report writing, any quotes won't be identified as being you
- The focus group will be audio recorded
    - The recording will be kept secure, only accessed by the four researchers working on the project
- This piece of paper is just to help me remember what questions I want to ask you, and I may make some brief notes during the interview to remind me to go back to something you said later on if that's ok
- Do the participants have any questions?

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England

All Participants

Roles of the GP practice pharmacist

Prompts: What has been your current experience/attitudes towards this role, what sort of work do you think practice pharmacists do, length of appointments, focus of this role, crossover or segregation between GP role and nurse's role.

Patient education on oral health

Prompts: Where has it come from, which healthcare professionals have talked about oral health with you, awareness of any link between oral and systemic health, side-effects of medications, expectations of who should do this

Barriers to dental services

Prompts: Access, costs, phobias, priority of oral health, education

Communication between general practice and the dental team

Prompts: Current thoughts, expectations, ways to improve, good examples of interprofessional work in practice

Opportunities for pharmacists in this role

Prompts: What else could pharmacists do, incorporation of oral health advice into medication reviews and chronic disease management, signposting, acceptability of oral health advice from this professional group

Anything further to discuss?

Next steps

- Thank the participants
- Do they have any remaining questions about the research
- Reassurance around confidentiality and anonymity

Mr Andrew Sturrock
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Faculty of Health Sciences and Wellbeing
Sciences Complex
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SR1 3SD
Email: andrew.sturrock@sunderland.ac.uk
Tel: 01915152448

Dear Sir/Madam

My name is Andrew Sturrock; I am a Principal Lecturer in Pharmacy Practice at the University of Sunderland. I am writing to you as an invitation to take part in a research project that I am running in conjunction with Scott Wilkes, Professor of General Practice and Primary Care.

Please find enclosed the participant information sheet, outlining the background to the study and what is required of participants.

Participation can be either in person at your practice or via a scheduled telephone appointment. If you would like to take part in the study please contact me via email or telephone at the above address or complete and return the response form in the prepaid envelope included with this letter.

Yours faithfully

Andrew Sturrock
Principal Lecturer– Pharmacy Practice

I would like find out more about the study and I am happy for a member of the research team to contact me

Contact details *(Please enter your contact details below)*

Title: Dr/Mr/Mrs/Ms/Miss (*please delete as appropriate*)

Name: _____

Telephone contact number: _____

A convenient time to call is: Between _____ and _____

Please return this slip in the envelope provided. A member of research team will contact you on the contact number provided above.

Participant Information Sheet

Study title:

An explorative study into the feasibility of oral health promotion and interventions by pharmacists working in general practice. A qualitative study in the North East of England.

What is the purpose of this study?

This study is looking to explore the current practices and feasibility of primary care pharmacists providing oral health promotion and interventions in a general practice setting.

Who can take part?

This study requires participants from five different groups;

1. General Practice Pharmacists, registered with the General Pharmaceutical Council
2. General Medical Practitioners, registered with the General Medical Council
3. General Practice Administrative Staff – Practice Managers at General Medical Practices
4. General Practice Nurses, registered with the Nursing & Midwifery Council
5. Patients, recruited from the University Patient Carer Public Involvement Group

Do I have to take part and can I change my mind?

Participation is entirely voluntary. If you change your mind about taking part in the study, you can withdraw at any point during the session without giving a reason and without penalty. Once the anonymised transcripts have been produced you will not be able to withdraw from the study. After the interview has been completed audio recording will be transcribed within 7 days.

What will happen to me if I take part?

We would like your help with this study by asking you to talk to one of our team members for up to an hour. We will audio record this conversation so that it is easier for us to make notes later about what was said. The interview can take place in person or via telephone, at your place of work, at the University of Sunderland, or we can come to your home to talk to you. The researcher will ask you a series of questions in relation to the study title and your experiences in practice, from which there are absolutely no right or wrong answers. Your answers may lead to further discussion around any point or topics raised.

What are the possible disadvantages and risks of taking part?

We don't think that there are any risks associated with taking part in this study.

What if something goes wrong?

If you change your mind about participation, please contact me by email to cancel your participation. If you feel unhappy about the conduct of the study, please contact me immediately or the Chairperson of the University of Sunderland Research Ethics Group, whose contact details are given below.

University of Sunderland

Participant Information Sheet

Will my taking part in this study be kept confidential?

The University of Sunderland is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of Sunderland will keep identifiable information about you; a list of participants and signed consent forms will be stored securely by the principle investigator for a period of up to 2 years. Audio recordings and transcripts will be stored securely by the principle investigator for a period of up to 6 years. Access will be restricted to the research team and persons authorised by the University for Quality Assurance purposes.

Participation in this study will be kept confidential. No personally identifiable information will be included in any write up or publication; a non-identifiable participant code will be used against any quotes provided, the first participant will be given the code P1, the numerical value will change with each subsequent participant e.g. P2, P3 etc.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the Principal Investigator, Andrew Sturrock andrew.sturrock@sunderland.ac.uk or Dr John Fulton, Chair of the University of Sunderland Research Ethics Group john.fulton@sunderland.ac.uk.

What will happen to the results of this study?

If suitable, the results may be presented at academic conferences and/or written up for publication in peer reviewed academic journals. A summary of the results will be made available to participants if you choose to receive a copy.

Who is organising and funding the research?

The research is being done by a research team at the University of Sunderland. The Chief Investigator for the project is Andrew Sturrock. His title is 'Principal Lecturer' and he is based in the School of Pharmacy and Pharmaceutical Sciences.

This project has received no external funding.

Who has reviewed the study?

The University of Sunderland Research Ethics Group has reviewed and approved the study.

Contact for further information:

Doctor John Fulton (Chair of the University of Sunderland Research Ethics Group, University of Sunderland) Email: john.fulton@sunderland.ac.uk Phone: 0191 515 2529

Who can I contact if I have questions about the study?

If you have any questions, we would like you to get in touch with us. You can do this by telephoning us on 0191 5152448

Participant Information Sheet

or you can email us on andrew.sturrock@sunderland.ac.uk

What should I do if I want to take part?

If you don't have any questions and would like to take part, please can you fill in the **Response Form** and send it to us. Please let us know the best way for us to get in touch with you. We don't know how many practitioners will want to help us so we might find we have too many and we may not need to ask for your help. Once we have your form, someone from the research team will get in touch with you and let you know if we do need your help or not. If we do they will arrange the best time and place for you to meet and talk to us.

Thank you for taking the time to read this information.

Coding Tree

Enhanced clinical roles

- Accessibility to other primary care staff
- An evolving and advancing role
- Increased responsibility and accountability
- Chronic disease and medication management
- Management of high-risk medications
- Interface between care settings
- Lifestyle advice
- Access by patients

Limited knowledge

- Basic understanding
- Signposting to dental services
- Duty of care
- Limited links to systemic health
- Role in deprescribing
- Patient safety alerts – actioned but often forgotten
- Patient knowledge gained from dentists or parents
- A willingness for more education

Geographical/situational isolation

- Limited collaboration/communication
- No formal pathways
- Lack of shared records
- Reluctance/barriers for patient engagement with dental services
- Stereotyped professional roles

Integration of oral health advice

- Ability to identify and access patients
- Provision of lifestyle advice
- Less time pressures
- Need for direction/services

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #	Details
Domain 1: Research team and reflexivity			
Personal Characteristics			
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	21	Andrew Sturrock (AS)
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	1	AS has an MSc in Clinical Pharmacy
3. Occupation	What was their occupation at the time of the study?	1	Principal Lecturer – Master of Pharmacy Programme Leader
4. Gender	Was the researcher male or female?	1	Male
5. Experience and training	What experience or training did the researcher have?	1 + 21	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.
Relationship with participants			
6. Relationship established	Was a relationship established prior to study commencement?	8	Invitation letter and participant information sheets were posted out prior to the study.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Supplementary document 3	A participant information sheet was provided to all participants.
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	1+21	AS is a pharmacist. Interest in the research topic was developed due to teaching commitments on the MPharm programme at the University of Sunderland. The multidisciplinary team was assembled to reduce bias in the research process.
Domain 2: study design			
Theoretical framework			
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8	An interpretive approach, with constant comparative analysis.

Participant selection			
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	8	A convenience sampling and snowball sampling method were adopted
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	8	An invitation letter and information sheets were posted (Supplementary Documents 2-3)
12. Sample size	How many participants were in the study?	10	22 participants
13. Non-participation	How many people refused to participate or dropped out? Reasons?	9	No participants who responded to the invitation refused to participate or dropped out of the study.
Setting			
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	10	Data were collected at a time and place convenient to the interviewee; this was at their place of work, telephone and at the University of Sunderland
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	8	Interviews were held on a one-to-one basis or as a Focus Group.
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	10	As displayed in table 1 and 2.
Data collection			
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	8	Interview guide was developed and refined by the research team. Included as (Supplementary Document 1)
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	8	No repeat interviews were performed
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	8	Audio recording
20. Field notes	Were field notes made during and/or after the inter view or focus group?	8	No field notes were taken due to the verbatim transcribing
21. Duration	What was the duration of the interviews or focus group?	10	Up to 1 hour
22. Data saturation	Was data saturation discussed?	10	Data were analysed by AS, with transcripts and emerging themes cross-checked for interpretation and agreed amongst the research team. Constant comparative analysis was utilised as a means of enriching the data through

			iterative data collection and analysis
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	8	No
Domain 3: analysis and findings			
Data analysis			
24. Number of data coders	How many data coders coded the data?	21	AS identified the thematic framework and interpreted the data, which was reviewed and refined by the research team.
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A	A description of the coding tree is not provided.
26. Derivation of themes	Were themes identified in advance or derived from the data?	8	Themes were derived from the data
27. Software	What software, if applicable, was used to manage the data?	N/A	
28. Participant checking	Did participants provide feedback on the findings?	8	No
Reporting			
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	11-17	Quotation are presented with clearly identifiable participant numbers
30. Data and findings consistent	Was there consistency between the data presented and the findings?	11-17	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	11-17	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	11-17	Yes