Research Square

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The potential role of community pharmacy staff in reducing patient delay in consulting with symptoms of rheumatoid arthritis: a qualitative study

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Abstract

Background

Rheumatoid arthritis (RA) is a chronic inflammatory arthritis which can cause joint damage and reduced quality of life. Early treatment of RA within 3 months of symptom onset is associated with improved clinical outcomes. However, this window of opportunity is often missed. One important factor that contributes to treatment delay is that patients with symptoms of RA often delay consulting their general practitioner (GP). Previous research indicates that patients with inflammatory arthritis are likely to visit pharmacies for advice before consulting their GP. Therefore, pharmacists are well positioned to identify patients with symptoms of early inflammatory arthritis and sign post them appropriately. This research examines community pharmacy staff's knowledge, perceptions and approaches to management of patients presenting with symptoms of RA in order to identify training needs and other opportunities for intervention to enhance the role of pharmacy staff in the pathway to care.

Methods

Semi-structured interviews were conducted with 19 community pharmacy staff with varying roles in the West Midlands, UK, during a 12 month period (2017–2018). The interviews were audio-recorded, transcribed and analyzed using thematic analysis facilitated by NVivo 12.

Results

Community pharmacy staff (including pharmacists, pharmacy managers, technicians, dispensers and pre-registration pharmacists) had a range of knowledge and differing perceptions of RA and what action should be taken when patients present with symptoms of RA. These can be grouped into four themes: (1) Variations in perceptions and knowledge about RA. (2) The role of the pharmacy in increasing public awareness about RA. (3) The role of the pharmacy staff in facilitating access to the GP. (4) Practical considerations for pharmacy based interventions.

Conclusion

Amongst community pharmacy staff, there is wide variation in the understanding of RA and the importance of early treatment. This study identifies opportunities for enhanced training of community pharmacists and other pharmacy staff in relation to inflammatory arthritis as well as other pharmacy-based interventions, such as public awareness campaigns about RA and other musculoskeletal conditions. This could result in enhanced signposting to rapid GP consultation for inflammatory symptoms and reduced treatment delay.

Background

Rheumatoid arthritis (RA) is a common chronic inflammatory disease with a prevalence of approximately 0.5-1% (1). RA is characterized by synovial inflammation which can lead to long-term joint damage. RA can have a considerable negative impact on the quality of life of patients, is associated with reduced life expectancy (2) and presents a significant socioeconomic burden due to increased healthcare use and productivity loss (3).

Early treatment with disease modifying anti-rheumatic drugs (DMARDs) improves outcomes for people with RA, facilitating the achievement of clinical remission, reducing the rate of joint damage and improving the patient's quality of life (2, 4, 5). The 'therapeutic window of opportunity' has been estimated to last between three and four months after the onset of symptoms (2, 5–8).

However, only a minority of RA patients are diagnosed and receive appropriate treatment within the recommended period (4). Although there is variation across countries, one pan European study showed that the median time between symptom onset and assessment by a rheumatologist was 24 weeks (9). A detailed analysis of treatment delay in early rheumatoid arthritis patients in Belgium (10) showed similar delays (median time was 23 weeks, only 22% of patients were assessed by a rheumatologist within 12 weeks).

It has been demonstrated that an important factor contributing to delayed DMARD initiation is the delay between symptom onset and help-seeking by patients (11–14). Multiple factors underlie this patient delay. Whilst accurate recognition that symptoms are suggestive of a serious underlying condition is an important driver for early help seeking (15), many patients do not perceive their initial inflammatory joint symptoms to be serious or worthy of urgent medical attention (16). Pain is a commonly reported symptom of early RA and patients often seek to self-manage this pain with over the counter (OTC) medications (17).

In a survey of the general public, 40% of respondents reported that they would visit a pharmacy for advice before or instead of visiting a GP following the onset of RA symptoms (18), suggesting that pharmacy staff may be well positioned to signpost patients with suspected RA symptoms towards GP consultation Pharamacists are widely viewed as a reliable source of information for health concerns as well as providing legitimisation for GP consultation (19). In the UK, people are further actively encouraged and signposted to go to their pharmacy for 'aches and pains'(20). Systematic reviews of the impact of pharmacy-delivered public health interventions highlight positive effects on health outcomes (21, 22) and suggest that integration of pharmacists into primary care teams reduces GP appointments and leads to savings in overall health system and medication costs (23, 24).

There is evidence for the effectiveness of pharmacy led interventions for musculoskeletal problems. For example, a cluster randomized controlled trial in community pharmacies showed that pharmacists were able to initiate a multidisciplinary intervention to identify people with knee osteoarthritis, improve the utilisation of treatments, and improve patients' function, pain, and quality of life (25, 26). There is also evidence of the benefits of pharmacist-led intervention on cardiovascular risk in patients with chronic inflammatory disease (27).

In order for pharmacy staff to have a positive impact on the management of RA, it is vital that they have appropriate knowledge so that they can identify inflammatory symptoms, distinguish them from self-limiting musculoskeletal (MSK) conditions for which self-management would be appropriate, and signpost patients with the former towards rapid GP consultation.

This qualitative interview study explores knowledge and perceptions of RA amongst community pharmacy staff, and their views about their role in the identification and management of patients presenting with symptoms of RA and other MSK conditions. The main objective was to identify training needs and other opportunities for pharmacy staff to have an enhanced role in reducing treatment delay.

Methods

Study design

This was a qualitative interview study which used an inductive approach (28). The multidisciplinary research team share an interest in strategies to facilitate early treatment of inflammatory arthritis. The research team also involved patient research partners (with and without a diagnosis of RA) from the start of the project to ensure the project was relevant to patients with RA and to develop the study objectives.

The Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (29) have been used in the reporting of the method and results of this study. Ethical approval was obtained from the University of Birmingham ethics committee (ethics code: ERN_16–0041).

Participants and study setting

Community pharmacies in the West Midlands were identified for participation in the study using the National Health Service (NHS) Choices 'services near you' website and approached by an initial visit or phone call from a researcher (GS) who introduced the study and provided the written invitation to take part and information about the study. In addition, pharmacies from the 'research ready' Jhoots pharmacy chain were approached through their links with the University of Birmingham and sent the study information via email. Opportunity sampling technique was used to select participants. Pharmacy staff interested in taking part were asked to contact the researcher conducting the interviews to arrange a suitable time and place for the interview. Participants did not receive an incentive for participation.

The inclusion criteria for participation were: at least 18 years of age, working in a community pharmacy with regular interactions with members of the public, and ability to consent to and participate in an interview in the English language. Eligible participants thus

included community pharmacists, technicians, dispensers, pre-registration pharmacists and counter assistants.

Data collection

The interviews were conducted by GS, a female psychologist with training and expertise in qualitative methodology. Data were collected through qualitative semi-structured interviews either face-to-face in the community pharmacy or over the phone. Interviews were audio recorded. No field notes were made by the interviewer.

The interviewer used an interview schedule which was informed by previous research (16, 30), expert clinical input and discussions with patient research partners (both patients with RA and members of the general public). Interview schedule questions were used as initial prompts for discussion, allowing interviewees to talk about their own experiences.The guide covered three main topics for discussion and included a short vignette allowing interviewees to describe what actions they would take in the context of a patient presenting with RA symptoms (Table 1). Interviews were conducted over a 12-month period (2017–2018). Data collection continued until data saturation was achieved(31).

Table 1
Interview guideline.

General symptoms	**♣ How often do you think you are approached in the pharmacy by someone with joint problems/ someone asking for rubs or pain relief to deal with joint problems?** **♣ What kind of advice to you generally give them?** **♣ Do you ask questions about the symptoms, and if so, what do they involve?** **♣ If someone came in with pain in their hands over the knuckle joints and in the small joints of the fingers what would you think might be going on?** **♣ What would you advise?** **♣ Are there any questions you would ask?**
Arthritis and Rheumatoid Arthritis	♣ Tell me what you know about arthritis in general? ♣ Tell me what you know about Rheumatoid Arthritis (RA)? ♣ What symptoms would you associate with RA? ♣ What symptoms would you associate with osteoarthritis (OA)? ♣ What would be the main difference between RA and other joint problems? ♣ Is RA a serious condition? ♣ With whom do you associate arthritis/RA (who is the typical patient)? ♣ What would be the consequences of having RA for the day-to-day living of a patient? ♣ Do you think there are treatments available that would effetely treat RA? What kind of treatments do you know? Is early treatment important and if so with what and why?
Advice	♣ What, according to you, is the role of the pharmacist in prevention/ early intervention of illnesses such as RA? ♣ Do you feel you know enough about RA to inform the public what to do if they experience possible symptoms? ♣ Would you like to receive more training (and if so, in what format)?

Data analysis

The interviews were audio recorded, pseudo-anonymised and transcribed verbatim by a professional transcription company. The company transcribed all but one audio file. Due to the poor audio quality, that single recording was transcribed by the interviewer and two research assistants. The accuracy of the transcripts was checked by the interviewer (GS) through comparison with the original audio. Transcripts were not returned to the participants.

The transcripts were read in depth by two independent coders (who received training in the coding and analysis of interview transcripts) in order to familiarize themselves with the content and subsequently each coder initially coded the same two transcripts.

Any disagreements were discussed with a third researcher (GS) and the coding adjusted after which each researcher coded half of the remaining transcripts. Coding was facilitated by NVivo 12 software(32).

The codes were developed into initial themes with independent input from a further researcher (NI) and then discussed amongst the core research team (NI, GS, KR, and MF). Some of the initial findings were also discussed with patient research partners involved with the study. The themes were revised after discussion and the team agreed on the final themes. Findings were presented using quotations to illustrate each theme identified. Participant numbers and pharmacy role were used to identify each quote.

Results

Participant characteristics

Nineteen participants were recruited from 18 different pharmacies (17 community pharmacies and 1 pharmacy service within a GP practice). Participants were aged between 22 and 56 years (mean 32 years) with an almost equal male: female split (10:9). The participating staff included pharmacists, pharmacy managers (qualified pharmacists), technicians, dispensers and pre-registration pharmacists in placement year. Further participant characteristics are provided in Table 2. Three interviews were conducted in person and 16 by telephone. Pharmacy staff declining interview tended to be the more senior staff members and often cited time constraints or indicated that their manager would not give permission for them to take part in the interview.

Table 2
Participants' characteristics

Participant number	Age Range (years)	Gender	Role within the pharmacy
1	unknown*	Male	Pharmacy manager
2	50–60	Female	Pharmacy technician
3	40–50	Female	Pharmacist
4	30–40	Female	Pharmacist
5	50–60	Female	Pharmacy manager
6	20–30	Female	Pre-registration in placement year
7	40–50	Female	Pharmacist
8	40–50	Male	Pharmacy manager
9	30–40	Male	Pharmacy manager
10	20–30	Male	Pharmacy manager
11	20–30	Female	Pharmacy dispenser
12	30–40	Male	Pharmacy dispenser
13	20–30	Female	Pharmacist
14	20–30	Male	Pre-registration in placement year
15	20–30	Male	Pre-registration in placement year
16	20–30	Female	Pre-registration in placement year
17	30–40	Male	Pre-registration in placement year
18	20–30	Male	Pre-registration in placement year
19	20–30	Male	Pre-registration in placement year

*****_no age provided during interview_

Themes

Four main themes were identified: (1) Variations in perceptions and knowledge about RA: (2) The role of the pharmacy in increasing public awareness about RA. (3) The role of the pharmacy staff in facilitating access to the GP. (4) Practical considerations for pharmacy based interventions.

1.Variations in perceptions and knowledge about RA: This theme covers pharmacy staff's perceptions and knowledge of RA, its symptoms and possible treatments. Several interviewees gave an accurate description of RA as a progressive inflammatory disease (Table3, Quote 1, further referred to as T3Q1), mentioned the fact that RA is an autoimmune disease and accurately identified some of the main symptoms associated with it including joint pain and swelling (T3Q2-Q3). Some interviewees were further able to accurately describe the wide age range of patients affected with inflammatory arthritis (T3Q4). However, others indicated not knowing much about RA (T3Q5) or held misconceptions about RA, for example stating that uric acid accumulation caused RA pain (T3Q6). Moreover, some interviewees could distinguish between RA and other MSK conditions such as osteoarthritis (OA)(T3Q7), others could not (T3Q8). Further, not all interviewees were aware of the increased incidence rate of RA in women compared to men (T3Q9).

Table 3
Quotes related to theme 1: Variations in perceptions and knowledge about RA.

Quote No.	Quotes
1	*"It's a progressive, degenerative disorder that we know will become worse if you don't look at halting the disease progression; hence, the need for disease modifying anti-rheumatic drugs."* P03*, Pharmacist.
2	*"So rheumatoid arthritis, it's an auto-immune disease so the main symptoms we're looking at are joint pain, swelling, redness, warmth, maybe some fatigue, and fever."* P16, Pre-registration in placement year.
3	*"Obviously, if their joints are swollen or quite obviously red and inflamed; even symmetrical swellings maybe that indicate rheumatoid arthritis of the joints, if there are any deformities. Any other symptoms that flag along with it, like feeling unwell, fever, etcetera."* P04, Pharmacist.
4	*"I think the typical patient is probably over 50 but it can happen to a child. A child can have it and the parents are not aware. It doesn't get diagnosed for a long time, I don't think, in children because it's not something you associate with children..."* P02, Pharmacy technician
5	*"I don't really have that much knowledge about it."* P13, Pharmacist
6	*"I think it's to do with the uric acid and stuff like that, when it's higher you get these joint pains and stuff."* P12, Pharmacy dispenser
7	*"The rheumatoid, is that autoimmune, is that right? So you want, more so get pain and swelling of the joints […] more so than osteoarthritis where that's more wear and tear over years."* P09, Pharmacy manager.
8	*Hold on, osteoarthritis, that's just the general term and rheumatoid arthritis is the more specific term that talks about the joints, mainly the fingers and everything. It's an interchangeable term as far as I know".* P19, Pre-registration in placement year.
9	*"I don't think it's specifically between men or women either, from my knowledge."* P04, Pharmacist.
10	*"100% yes of course, I think arthritis is definitely a serious condition, it's affecting your day-to-day life, you're in pain, you have to constantly rely on painkillers to go about your day."* P14, Pre-registration in placement year.
11	*"Generally, in all honesty, if they come to me for RA, they've probably suffered for months, so another week or two is neither here nor there really, is it? I'm aware of the pressure on GP practice appointments."* P01, Pharmacy manager.
12	*"Yeah, I'd say the earlier you've started treating it the, it's good 'cause you can slow down like the progression."* P10, Pharmacy manager.
13	*"With rheumatoid arthritis, if the inflammation gets to a peak then the medication won't have as much of an effect. Also, because it is physically debilitating, we always aim for prevention. So, in that way, I would say early treatment is preferred."* P19, Pre-registration in placement year.
14	*"I don't know whether other people are probably in the same boat as me but they probably weren't as knowledgeable on rheumatoid arthritis and how important it is to intervene early."* P04, Pharmacist.
15	*"You've got things like Methotrexate, which seems to be the main thing. They also use NSAIDs and things like Sulfasalazine. Methotrexate would be the main one that springs to mind for rheumatoid arthritis. But they have to have blood level checks and toxicity checks for that."* P05, Pharmacy manager.
16	*"In terms of medication for that in particular, so we offer NSAIDs. Maybe a corticosteroid if it's an acute – maybe if we're injecting into the joint or DMARDs, so anything like methotrexate, Leflunomide, things like that. Or any biologic treatment after that, so Etanercept, Abatacept, that kind of stuff."* P16, Pre-registration in placement year.
*P03 refers to participant 1 as described in Table 2. Idem for the other participant numbers	

While some interviewees perceived RA as a serious condition associated with a reduced quality of life and an impact on physical functioning (T3Q10), others did not perceive RA to be serious or in need of urgent attention, stating that waiting a few more weeks before seeking medical attention for these symptoms would not be problematic (T3Q11). Whereas some interviewees readily recognised the need for early DMARD treatment (T3Q12-Q13), others did not (T3Q14). Several interviewees were able to describe the treatment of RA once it was diagnosed including DMARDs and non-steroidal anti-inflammatory drugs (NSAIDs) (T3Q15-Q16).

2. **The role of the pharmacy in increasing public awareness about RA.** Various interviewees shared their thoughts on the causes of patient delay in help-seeking and described a lack of public awareness of RA. Interviewees recognised that the public's lack of knowledge about the seriousness of RA and misperceptions around it being a disease of the elderly might be why symptomatic patients delayed seeking help (Table 4; T4Q1-Q2). Some indicated that patients might believe their condition was not serious enough

to see a GP (T4Q3-Q4) and would only seek help if symptoms were so severe that they interfered with daily activities, thus delaying seeking help from their GP with early symptoms. Others thought patients may be embarrassed about seeking help for '*a little bit of pain*' (T4Q5-Q6) or that they may find it difficult to get a GP appointment (T4Q7).

Table 4
Quotes related to theme 2: The role of the pharmacy in increasing public awareness about RA

Quote No.	Quotes
1	*"I suspect for the public perception there isn't a whole lot. And when you say arthritis, they're immediately thinking that they're not old. I don't think that the general public know much about rheumatoid arthritis."* P05, Pharmacy manager.
2	*"I think that's something we've definitely seen. I mean we've [yeah] actually had one patient that just said, 'Yeah, we, it's, yeah, I thought it was actually part of getting old'."* P10, Pharmacy manager.
3	*"When it is early enough, it's not severe enough for them to take action. And that is a problem that we have. That … even if there is a serious condition, what really would motivate someone to take some action, so clearly it really should start affecting their life. They don't do anything."* P08, Pharmacy manager.
4	*"They don't want to bother their GP. They don't think the symptoms, particularly in the early stages, are specific enough to make them go the GPs."* P05, Pharmacy manager.
5	*"Yeah, they can't be bothered to make another appointment at the doctors, and they feel like they might be embarrassing themselves just going for a little bit of pain you know in the joints."* P07, Pharmacist.
6	*"A lot don't want to bother the GPs if they're only having paracetamol."* P05, Pharmacy manager.
7	*"I know it's hard for people to get a doctor's appointment, which is what they keep saying."* P02, Pharmacy technician.
8	"*So it's just a case of making sure that the conversations are happening so you don't want to miss things so often it's the case that the patient is seeking advice for the first time and if it is something like rheumatoid or something it is spotted and you are referring the right patients so I think we now have a bigger role in terms of awareness of arthritis and things, I'm not too sure how aware people are so…* " P06, Pre-registration in placement year.
9	"*I think we've still got some of our leaflets. Yeah, national osteoporosis society. Am I at risk at osteoporosis and fractures? I mean any sort of learning materials like that, we go through them first in-house before we, you know, put them on the shelves for the patients 'cause obviously we needed to get sourced up with everything*." P09, Pharmacy manager.
10	"*And also these posters and leaflets you can post to the different pharmacies and also we can give some leaflets and posters to, we can stick the posters inside the pharmacy and the people they can read and they can say and also they can have leaflets where they read information."* P11, Pharmacy dispenser.

Several interviewees indicated ways in which they could be instrumental in increasing public awareness and informing their clients about RA (T4Q8). For example, they referred to leaflets and posters they have received for other diseases and suggested that equivalent materials would be useful for both increasing their own and their clients' awareness of RA. (T4Q9-10).

3 The role of pharmacy staff in facilitating access to the GP: This theme focused on the potential roles of community pharmacy staff in making positive interventions to signpost new onset RA patients towards GP consultations. Some interviewees explained they would identify a potential new onset RA patient by assessing symptoms and asking about family history, referring patients towards their GPs if RA was suspected (Table 5; T5Q1-Q3). Some discussed how the role of pharmacists has changed with the focus being increasingly placed on clinical interactions with patients and not *"just dispensing the medication"* (T5Q4), but others indicated that there was a lack of public awareness about pharmacists' clinical knowledge (T5Q5) and that they are underutilized.

Table 5
Quotes related to theme 3: The role of the pharmacy in facilitating access to the GP

Quote No.	Quotes
1	*"If I did suspect rheumatoid arthritis in a patient, although I would offer to treat symptoms there, I would recommend that they saw a doctor"* P01, pharmacy manager.
2	*"Yes, I'd ask if they'd been diagnosed with - do they have any other medical conditions, things like that. So maybe if they have a history of it in the family."* P16, Pre-registration in placement year.
3	*"Initially it's just ruling out if the stiffness is worse in the mornings, those sorts of things."* P06, Pre-registration in placement year.
4	*"I think it's changed a lot recently because it's kind of moved from us staying in the back just dispensing the medication, checking, to actually being out the front and making sure that we're picking up things so it's just a case of making sure that the conversations are happening so you don't want to miss things so often it's the case that the patient is seeking advice for the first time and if it is something like rheumatoid or something it is spotted and you are referring the right patients so I think we now have a bigger role in terms of awareness of arthritis."* P06, Pre-registration in placement year.
5	*"I think it's about public perception as well because obviously I think they forget that we're also clinical pharmacists and we're trying to obviously change that and we - I think the public don't realise how much obviously we learn and we know so we are an important port of call for things like that."* P16, Pre-registration in placement year.
6	*"I would say personally you don't get referred that often because the actual counter assistants have the training now and so they're like a filter. If somebody does come in to the pharmacy they'll speak to those people first and if they can't answer the questions they'll actually refer it to the pharmacist."* P07, Pharmacist.
7	1. *"I mean we usually like access the symptoms first and then obviously we refer it to the pharmacist and then like if he thinks that there's anything more serious then he would always refer it to their GP."* P13, Pharmacist.
8	*"In terms of stiffness in their hands or joint pain anywhere else in the body, at that point obviously I would […] just to keep an eye on generally what the patient is buying over the counter and spotting signs and clues as to there may be an underlying condition here."* P15, Pre-registration in placement year.
9	*"So regarding joint pain the conversation I might have is more when I'm handing out pain medication and I strike up a conversation with the patient as to whether they've had the medication before and then it might go further into a conversation regarding their pain management."* P07, Pharmacist.
10	*"This is what you have to do' but as long as people can get some pain relief until they see their own doctor."* P02, Pharmacy technician.
11	*"Yes in terms of giving medication OTC, that's just a temporary base, so what we can do, we can talk to the patient and get all the information and if we think this patient needs more than what we can do we can refer to the GP."* P12, Pharmacy dispenser.
12	*"Sometimes people come and they ask for more medication even though the doctors prescribe something and then they ask for more tablets or more for example they just come for Co-codamol so many times even though they take medication at home they want some more tablets."* P11, Pharmacy dispenser.

Furthermore, interviewees identified the role pharmacy technicians and counter assistants have as they are often the first to speak to patients. When technicians and counter staff are unsure about the cause of the symptoms a patient is presenting with, they refer to a pharmacist who can further assess the patient (T5Q6-T5Q7) and potentially suggest a GP visit.

Joint pain is the most common symptom of early RA and patients may seek advice about pain management from pharmacy staff. Indeed interviewees indicated that this is when they are most likely to see a patient with inflammatory arthritis (T5Q8). Some interviewees described the considerations they would make when offering medications for the management of joint symptoms (T5Q9). Some interviewees explained that OTC medications should only be used temporarily to relieve symptoms while patients await their GP consultation (T5Q10-Q11). Others highlighted how they could flag patients asking repeatedly for OTC medication for symptoms of RA and refer them onto the GP (T5Q12).

4. Practical considerations for pharmacy based interventions: This theme focused on the potential need for training of pharmacy staff and any other considerations needed in order to enhance opportunities for pharmacy staff to identify and signpost new onset RA patients. Whereas, some interviewees had undertaken training on (rheumatoid) arthritis fairly recently as part of their continuing professional development (CPD), and felt they had a good level of knowledge about RA (Table 6; T6Q1), others indicated that although they had recently graduated and their current knowledge about RA was good, they were aware they would need more

training in the future (T6Q2). Some interviewees highlighted that there is currently no specific training requirement in relation to RA or other MSK conditions (T6Q3). Others stated that it was hard to find the time to do extra training (T6Q4).

Table 6
Quotes related to theme 4: Practical considerations for pharmacy based interventions

Quote No.	Quotes
1	*"We have to do CPD, professionals do we have to do CPD don't we and also I did a community pharmacy diploma about three or four years ago and they have a section in that that you cover on arthritis and on pain management."* P07, Pharmacist.
2	"*Yes, absolutely. I think really for us the reason that I probably feel more confident and know a bit more is just because I've come out of university and we studied it. But I couldn't say confidently that five years down the line I'd know as much as I did now.*" P16, Pre-registration in placement year.
3	*"Yes but only nine CPD's a year. So, it might not even be musculoskeletal, it might be something different. So, it's not something that says we have to learn musculoskeletal, it's down to the pharmacist, so they might neglect it."* P17, Pre-registration in placement year.
4	*"Yeah, obviously, I love training but I think it's tricky … I've got three kids and I work 43 hours a week. It's tricky to fit it in."* P01, pharmacy manager.
5	*"I mean the dispensers or the healthcare counter staff are not really trained or aware of things that they should be picking up so they do refer to us"*, P06, Pre-registration in placement year.
6	*"If healthcare counter staff are just sending them away with pain relief and then they leave it there's always that downfall that they're not getting treated"*, P06, Pre-registration in placement year.
7	*"It's very varied because pharmacists have very little training in actual clinical examination"* P01, pharmacy manager.
8	*"I think it's really good because it's like with the inhaler technique with us, once that came out about 10% of patients actually knowing how to use their inhaler and then pharmacists didn't really know so then where is the knowledge coming from when they're prescribed it? So that was a big thing, I think things like this need to happen"* P06, Pre-registration in placement year.
9	*"A lot of other people would have the same situation where they can't always attend. An e-learning course, promoted by CPPE, would be my preference, or something like that, because they promote emails and everybody uses those on a daily basis. That would be something to highlight this e-learning package. It's got to be simple and it's not very long."* P04, Pharmacist.
10	*"I would think a more face-to-face kind of approach. It's a lot more useful. I mean you would need to do some preliminary work first and in the face-to-face interaction you might not cover all the ground at that stage but I think face-to-face is needed to consolidate it."* P19, Pre-registration in placement year.
11	*"CCGs have a good, important role as well and so they could roll that out across the area; whether it's in GP practices or community pharmacies. I'm sure they could. I don't know whether they can promote that."* P04, Pharmacist.
12	*"Yes, we see people on a regular basis. We can see deterioration in some people and that goes for lots of other medical issues going on as well."* P05, Pharmacy manager.
13	*"We're a village pharmacy, I've been there 25 years and so have half my staff, so we know the individual people that walk in, so we might initiate a conversation with somebody… You've initiated the conversation and given them the opportunity to speak to somebody about something that is occurring with them."* P05, Pharmacy manager.
14	*"If you're a locum and you're only in there for a day it's very difficult to even get an idea of how often this patient comes in so it can be missed"* P15, Pre-registration in placement year.
15	*"It's usually a verbal recommendation that I give and I go back to notes and if the patient is one of our patients then I would go to their notes and write down that I've had interaction with the patient, I told them to go and see the doctor, they were feeling this, this, this, I'll make a note of it so that it's in my record as well and kind of like for all purposes as well. But more importantly to know that I have referred them and I know what's happening now."* P14, Pre-registration in placement year.
16	*"I tend to do formal referrals when I think it's urgent and so it helps to ease people through the system because sometimes, a letter from a pharmacist actually does carry a little bit of clout that would get you past Reception. When I've felt that someone needs to be seen quite urgently, I have given people referral letters to take to the Walk-In Centre."* P01, Pharmacist
17	*"Sometimes if it's like a medication review, so like an MUR … that we've done, we can do a referral letter … or normally it's just, 'Oh, you just need to make an appointment […] with your GP so they can', you know, we leave that with the patient to do themselves […] arrange themselves. Or if we find it an emergency or often not an emergency, if it's something that we can do for them that they feel involved, 'Actually I know your surgery quite well or I know the girls at XXX and that's our local doctor's surgery, we can just pass them a message or we can just give them a call', especially the times if it's elderly patients or housebound patients maybe that have popped in on the off chance. I will give them a call, say, 'You know, a doctor probably wants to […] his patient', we've done that in the past as well."* P09, Pharmacy manager

Interviewees further stated that interventions made by pharmacy staff may vary depending on their clinical skills, and that technicians or counter staff did not have the clinical training to identify potential RA patients. They highlighted the importance of training for pharmacy technicians, dispensers and counter assistants in addition to that for pharmacists, to ensure they are able to identify potential new onset RA patients requiring further referral (T6Q5-6). The lack of training of pharmacists themselves in clinical examination was also highlighted (T6Q7).

Some interviewees gave examples of training they had received in other disease areas, such as the inhaler technique service, which had led to improved patient outcomes (T6Q8). They also explained that their preferred training format would be interactive online learning platforms although some preferred face-to-face teaching (T6Q9-Q10). Interviewees further suggested how training could be advertised to pharmacy staff to ensure training was delivered effectively to all community pharmacies (T6Q11).

Interviewies identified that the setting of a pharmacy may influence the likelihood that patients with new onset RA would be identified. Smaller local pharmacies see people on a regular basis and therefore pharmacy staff can initiate conversations to recognise new symptoms (T6Q12-Q14).

There was some discussion about the practicalities of how pharmacy staff might refer an individual they suspected of having RA to see their GP. Many would advise their client to consult their GP (T6Q15). However, some pharmacists described using a referral form when they believed the patient's symptoms to be serious enough to require an urgent medial opinion (T6Q16) or instead approaching the GP surgery directly if, for example, dealing with a vulnerable patient they believe needs to be seen urgently (T6Q17).

Discussion

This study of the perceptions and knowledge of pharmacy staff regarding RA, and their role in signposting patients with suspected RA to their GPs identifies four important themes:

(1) Variations in perceptions and knowledge about RA: (2) The role of the pharmacy in increasing public awareness about RA. (3) The role of the pharmacy staff in facilitating access to the GP. (4) Practical considerations for pharmacy based interventions.

These themes highlight potential opportunities and a desire for positive intervention to improve access to care for patients presenting to community pharmacists with RA symptoms and to increase public and pharmacy team awareness of RA and musculoskeletal symptoms.

This study demonstrates the potential roles community pharmacy staff can have in raising public awareness of RA, the early identification of RA, early symptom management and signposting towards prompt and definitive treatment initiation. This aligns with current policy in many countries, including the UK, to expand pharmacy services (33–36) and to facilitate integration within primary care (37, 38). With the correct knowledge and training, pharmacy staff are well positioned to use their clinical skills to identify and refer patients to their GPs where appropriate. The establishment of primary care networks and integrated care systems provide an important opportunity for collaboration between pharmacists and GPs, and improved care pathways for a range of conditions(39). The evidence presented in this paper underlines the need to address RA within such systems.

Implications for service development

Community pharmacies are likely to see people with, or at risk of, chronic conditions and see them longitudinally once diagnosed. Staff in local community pharmacies often build relationships with individual patients and their families and are well placed to identify new symptoms and discuss. There have been successful pharmacy based interventions in a number of chronic diseases such as diabetes, and cardiovascular diseases including heart failure, with pharmacy staff identifying patients and managing existing the disease (27) Pharmacy staff thus appear well placed to identify and signpost patients with suspected RA to their GP. Our interview study has identified a number of ways that pharmacy staff can play an important role in reducing delays in initial GP consultation in the context of new onset RA facilitating diagnosis within the 3 month window of opportunity. These include enhanced signposting and increasing public awareness. There is evidence of public misperceptions around RA, the symptoms and the seriousness of the condition (16). These findings could inform materials to be used in pharmacies to increase public awareness.

There is strong evidence that high quality pharmacy services can enhance the management of long term conditions and thus facilitate better health outcomes (40). Therefore, it is important that pharmacy staff have up-to-date knowledge of chronic conditions

such as RA.

The interview data show that pharmacy staff have variable knowledge of RA, the symptoms of RA and the need for early treatment. Addressing these knowledge gaps through training presents an opportunity to enable effective signposting which may lead to reduced treatment delay. For example, not all pharmacy staff were aware of the window of opportunity; therefore training should highlight the need for prompt treatment for new onset RA patients.

Among the interviewed pharmacy staff, there was there was evidence of some confusion around differences between common MSK conditions such as RA and OA. Training should address this knowledge gap and highlight where GP referral is necessary and where (initial) self-management may be appropriate. MSK complaints currently account for around a third of GP consultations in the UK (41). An estimated 18.8 million people are affected by MSK conditions in the UK. By 2030, 40% of the working age population are likely to have long-term conditions, with the prevalence of MSK conditions in the workforce predicted to increase (42). Appropriate signposting and support of self-management by pharmacy staff will be increasingly important for an effective primary care service.

In order for signposting to be delivered effectively in the context of RA, training is required for all pharmacy staff (not only pharmacists), highlighting when to refer on to either the pharmacist or the GP rather than advising symptomatic management with OTC medications. There were a few instances where pre-registration pharmacists fresh out of university and in their placement year, appeared to have the more accurate/ up to date knowledge about RA and the management of RA. This might be due to a stronger emphasis on RA and other MSK conditions during their formal education. Training should therefore perhaps be focussed on continued education for pharmacists and training of other pharmacy staff. For example, additional training of other pharmacy staff such as pharmacy technicians could be provided so they are better able to identify symptoms of RA or indeed to increase their role (e.g.(43)) and take on additional task such as the checking of prescriptions to free up more time for pharmacists to engage in clinical roles.

Interviewees further suggested that awareness of the clinical knowledge of pharmacists and the role pharmacy staff can play in signposting and managing patients should be highlighted to both the general public and the wider primary care community. A review found that the public awareness of pharmacy services other than medicines supply is low (44), and such awareness raising should be addressed in interventions to enhance the community pharmacist role in the pathway to care for RA.

Finally, despite some pharmacies having guidelines and proformas for referral to GPs or other health services, others rel on verbal advice to their clients. Clear referral guidelines within a structured and nationwide referral system would benefit the evolving community care workforce, to ensure patients self-presenting at pharmacies can formally referred to NHS services. A pilot study ran by London Cancer Network allowed community pharmacists direct chest X-ray referral for patients with suspected lung cancer. The 12-week pilot found 55/60 of the direct referrals made by pharmacists were appropriate (45). These findings and those of the current study show the potential for pharmacy staff to make appropriate referrals to other NHS services.

Limitations

A limitation to this study is that only one geographical region of the UK was studied and the perceptions and knowledge of pharmacists in other parts of the country might be different. Furthermore, opportunity sampling may lead to selection bias, as it may not provide a representative sample of all pharmacy staff. For, example, we were able to attract a relatively large sample of pre-registration pharmacy staff, but were not able to interview individuals who purely worked as counter staff.

Conclusion

Pharmacy staff believed they could play a greater role in the identification and management of new onset RA, and in raising public awareness of musculoskeletal conditions. There was wide variation amongst pharmacy staff in their understanding of RA and of the importance of early treatment. This study highlights clear opportunities for intervention to provide training and resources for community pharmacy teams to facilitate enhanced counselling and signposting/referral of patients with inflammatory joint symptoms. Such an intervention could contribute to a reduction in treatment delay and improved clinical outcomes.

Abbreviations

COREQ: Consolidated Criteria for Reporting Qualitative Research

DMARDs: Disease modifying anti-rheumatic drugs

GP: general practitioner

MSK: Musculoskeletal

NHS: National health service

NICE: National institute for health and care excellence

NSAIDs: Non-steroidal anti-inflammatory drugs

OA: Osteoarthritis

OTC: Over the counter

PIS: Participant information sheet

RA: Rheumatoid arthritis

Declarations

Ethics approval and consent to participate

Ethical approval for the study was obtained from the University of Birmingham ethics committee (ethics code: ERN_16-0041) and all participants provided written informed consent.

Consent for publication

All participants gave informed consent for anonymous use of their quotations

Data availability and materials

Anonymised transcripts available from authors upon request.

Competing interests

KR reports personal fees from AbbVie. CM is funded by the National Institute for Health Research (NIHR) Applied Research Collaboration West Midlands and the National Institute for Health Research (NIHR) School for Primary Care Research. Keele School of Medicine have received funding from BMS to support a non-pharmacological AF screening trial. The views expressed are those of the author(s) and not necessarily those of the (partner organisation), the NHS, the NIHR or the Department of Health and Social Care. All other authors declare no competing interests.

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Authors' contributions

Research idea and study design: GS, KR, MF and RS developed the study concept and GS and KR designed the study. Acquisition of data: GS conducted interviews. Data coding and analysis: GS, NI, NW, GM. Interpretation and discussion of themes: NI, GS, KR, CDM and MF. KS conducted a literature review informing sections of the manuscript. Manuscript drafting and critical review: All authors. Final approval of manuscript: All authors.

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