Introduction

WhatsApp is an instant messaging application that has grown in popularity over the last decade. Typically used for social purposes, the application has become integrated into working practices within healthcare organisations. For example, surgical teams use WhatsApp to ask clinical questions to members of the team off duty or at a distance.[1]Other studies demonstrate the use of mobile instant messaging applications, that are similar to WhatsApp, by nurses to exchange information with colleagues, including sharing patient information and receiving instructions about caring for patients but also coordinating shift-work and workload.[2, 3] In-depth interviews with twenty nurses in nine different hospitals suggested that there were three main types of message identified; information exchange: socialization; and catharsis suggesting that WhatsApp can support healthcare professionals' communication and team building to support service delivery and patient care.

Applications such as WhatsApp also offer an opportunity for compliance with good practice. Grant and colleagues studied the use of WhatsApp as an educational tool in training junior doctors to develop their prescribing practices when giving fluids peri-operatively.[4] Patient information was analysed regarding prescription of fluids and documentation of the product's indication. WhatsApp was then used to inform junior doctors if they had recorded an indication correctly (or not) and subsequently, following this intervention, the number of recorded indications increased. Similarly Kerbaj and colleagues used text messaging to facilitate hand hygiene compliance amongst healthcare workers.[5] The study used a radio-frequency identification system to identify hand hygiene opportunities over twelve months. After this, two types of message were sent (congratulation or encouragement) with the effect on hand hygiene observed. The study found that hand hygiene adherence significantly improved during the period of intervention, when compared to the pre-intervention period. Collectively, these studies demonstrate specific examples where instant

messaging applications has been integrated into healthcare settings to improve professional practice.

There are several studies that investigate the effect of communication methods on professional relationships. Johnston and colleagues conducted a mixed-method study of content, nature and feelings towards the use of WhatsApp by a surgical team.[1] Semi-structured interviews designed to elicit participants' experiences identified that junior team members preferred the application to telephone calls, and that senior team members felt an increased level of supervision. In addition, participants felt that WhatsApp removed communication barriers between junior and senior colleagues. Similar findings suggest that the elimination of hierarchical barriers to communication may lead to faster response times, as all team members are able to contribute to the discussion at once, as opposed to a 'vertical reporting system' where individuals report only to their immediate supervisor.[6] Overall, the literature demonstrates that smartphone applications can be used effectively in a healthcare setting and that professional attitudes towards the adoption of different communication technologies is largely positive.

Despite improvements in communication and professional practice, Wu proposes that hospitals adopt a 'standard secure messaging platform' to minimise risks to patient information.[7] This editorial also advocated for more research exploring the implications of a move away from face-to-face communication and towards digital communication. Security concerns when using WhatsApp are not unwarranted, with historical privacy issues well documented.[8] Furthermore, the National Health Service (NHS) in England has highlighted concerns regarding the clinical use of instant messaging services and advised that they not be used in clinical environments, due to a lack of relevant data security certification.[8] Despite improvements in end-to-end encryption, additional evidence is needed to explore privacy and security concerns in relation to using WhatsApp in clinical spaces.

The literature described above has focused on the use of WhatsApp in medical, surgical and nursing disciplines, with little work exploring pharmacists' experiences

of using WhatsApp to provide services. Many clinical pharmacy services are high cost, time critical, and rely on effective and precise communication of sometimes highly specialist knowledge - such as during emergencies, major health incidents, or delivering out-of-hours services. Whilst delivering such services, pharmacists are often working independently, dealing with complex patient cases and have a varied workload, similar to medical, surgical and nursing colleagues.[9] Despite this similarity, the use of WhatsApp to support this provision is poorly reported in the literature and evidence of good practice has not been shared between organisations, nationally or internationally. The aim of this research was therefore to explore pharmacists' experiences of using WhatsApp to support the delivery of out-of-hours pharmacy services.

Methods

This paper uses COREQ to report the findings of qualitative research.[10]

Research team and reflexivity

The research team was made up of an undergraduate MPharm student (AL), an undergraduate master's student (PP), a pre-registration pharmacist trainee (RN), a foundation pharmacist (AR), a post-doctoral fellow and senior clinical pharmacist (APR), a lead research pharmacist (WB), a director of pharmacy services (DC) and a senior academic pharmacist (AH). The team had a wealth of experience delivering pharmacy services and developing, designing and carrying out research. Three members of the research team had doctorates and experience of qualitative research methodology (APR, WB, and AH). Other members were employed by the organisation that utilises WhatsApp to support out-of-hours pharmacy services (RN, AR, WB, and DC) and three members of the team were independent (PP, AL and AH). One member of the team had previous worked at the organisation before moving to academia (APR). The close proximity of the research team to the subject matter facilitated data collection and analysis as well as informing the research design.

Study design

This study was conducted using a descriptive qualitative design to enable the collection of rich, high-quality data. The theoretical framework of phenomenology underpinned the study. Phenomenology is a branch of philosophy that posits reality as a construction of subjective experiences. It rejects the natural sciences' approach to knowledge, providing a framework for researchers to reflect on their own presumptions about the world around them to identify new ways to understand phenomena.[11] Transcendental phenomenology focuses on identifying the objective and subjective essence of phenomenon. This approach allows researchers to reflect and identify their own previously held beliefs, biases and prejudices about the phenomenon under investigation, and critically evaluate them in relation to their findings, in a process known as epoché.[11, 12] This study used a transcendental phenomenological approach to identify the noema (objective component) and noesis (subjective constructs) of the phenomenon.[11]

Setting

The study took place in North East England between August 2017 and March 2018 in a secondary-care organisation that provides pharmacy services across multiple sites. The organisation established a WhatsApp group used for out-of-hours and emergency service provision in 2014, however had not evaluated or explored the group previously. Out-of-hours and emergency pharmacy services are available outside normal working hours (08:00 - 17:00 Monday to Friday) and typically includes providing medication supplies and answering pharmaceutical queries. The group was developed as a means of rapid 'whole team' communication. Data was collected from the WhatsApp group and across three hospital sites within a single healthcare provider organisation.

Participants

A purposive sampling technique was used by members of the research team working at the organisation (RN, AR, WB, and DC) to invite individuals within the pharmacy department at the organisation, either using or being exposed to the WhatsApp

group, to voluntarily take part in the study. Participants were also sent information sheets via email and using the established WhatsApp group. The WhatsApp group had 72 participants and included pharmacists at the organisation at every level of seniority, from newly qualified pharmacists (a.k.a. foundation pharmacists) up to the most senior pharmacist at the organisation. The study also included two pharmacy technicians that supported out of hours services. Participation in the study was designed to be convenient for participants however only those pharmacists with experience of exposure to the WhatsApp group were purposefully invited. We acknowledge that the experiences of pharmacists delivering out of hours services that were not exposed to the WhatsApp group may not be included in this study. All participants gave written informed consent prior to taking part in the study.

Data collection

Data was collected from the content of the WhatsApp group transcript and by conducting focus groups until theoretical data saturation was reached.

Focus groups were held onsite at three different hospitals within the organisation to facilitate participation and took place over lunchtime, catering was provided for participants. Rooms constituted a table in the centre with chairs around it to promote discussion. Focus groups were led by one researcher (PP) and supported by others (RN, AR, and APR). Familiarity between some members of the research team that supported focus groups with participants optimised data collection through established trust and rapport. Focus groups lasted approximately 60-70 minutes and used a schedule based on the main themes present in the extant literature described above. The schedule was developed iteratively after each focus group, so that participants were asked largely the same questions, with later sessions including additional questions raised by earlier discussions. This strengthens the external validity of the study findings as the thoughts shared within one discussion can be tested against the thoughts shared in another.[13] No non-participants were present during the focus groups. Focus groups were audio recorded and transcribed verbatim, with identifiable information removed by the same author that led the focus groups

(PP). Another author quality checked the accuracy of the transcription (APR). Field notes were not made and transcripts were not returned to participants.

Two researchers (WB and DC) identified an extract from the WhatsApp group transcript where consent had been given by all participants for it to be shared with the rest of the research team. The extract of the transcript included all messages sent and received between 15th November 2016 to the 28th May 2017.

Institutional ethical approval was given and permission was obtained for the study to be carried out by the local organisational research and development lead.

Analysis and findings

Focus group data and the WhatsApp transcript extract were thematically analysed using NVivo Version 12 by five authors (PP, AL, AR, RN and APR). Thematic analysis was carried out using a conventional method whereby codes were generated individually and then clustered via repeated face-to-face discussion until the final themes derived from the data were agreed by consensus.[14]

This analysis was supported by content analysis of the WhatsApp Transcript conducted by four researchers (RN, AL, AR, and APR) independently.

Analyses were synthesises through discussion at three analysis meetings, which identified and refined key qualitative and quantitative findings until consensus was reached. This approach enabled contextualisation of findings, by providing the *noema* (objective component) as well as the noesis (subjective constructs) of the participants' experiences.

Participants provided feedback on the study at a research dissemination event and described the findings as reflective of their experience.

Results

Over three hundred communication events (1,580 messages) were analysed in the WhatsApp transcript (see Table 2). Message type was classified as follows: handover (26%, n = 410), procedural queries (26%, n = 410), laptop location (18%, n = 284), whole staff communication (24%, n = 379), clinical queries (5%, n = 79), and administrative communications (1%, n = 16). Most messages were sent by advanced pharmacists (39%, n = 616), foundation pharmacists (26%, n = 411) and specialist pharmacists (22%, n = 347). Senior advanced pharmacists sent fewer messages (9%, n = 142) and pharmacy technicians, who only joined the group half-way through the transcript period, sent the least messages (2%, n = 63). A total of five focus groups were conducted between October and November 2017 with 4-6 participants in each group. Theoretical data saturation occurred after four focus groups. Twenty-six participants were recruited, including twenty-four pharmacists and two pharmacy technicians.

Five main themes were identified during data analyses. These themes were 1) professional development, 2) patient privacy and legality, 3) professional relationships, 4) work-life balance, and 5) efficiency of communication. Quotes are provided within the text and extracts from the transcript are provided in Table 1.

Theme 1) Professional Development

This theme describes participants' experiences of learning from the information shared on WhatsApp. For example, junior members of staff used the group to learn about drug choices (Extract 1). New members of staff within the department stated that although they had not yet used the group, they expected the WhatsApp group would allow increased familiarity with the department, especially regarding colleague's specialties and technical knowledge.

"As a new member of staff I think that would be quite useful to ask for technical stuff. You'd usually be by yourself so having a group that can support you, I think, is really good." Participant 4, Focus group 2

"'Cause I'm new, I don't know who everybody is yet and I haven't worked out what specialty they all are so the WhatsApp group, I imagine, will be quite useful for that." Participant 2, Focus group 1

Some senior members of staff expressed concern that the use of WhatsApp, given its ability to receive responses from more experienced colleagues quickly, may lead to junior staff relying on that support and thus not developing their own robust problem-solving skills.

"…it kind of develops that confidence in making decisions and you almost take that away." Participant 3, Focus group 5

"…having that support and the instant answer and confirmation you lose that drive to find the answer out yourself… that could actually have a negative influence on how you manage problems." Participant 1, Focus group 5

Although participants in the focus groups described experiences of immediate responses, analysis of the transcript indicated that some queries were left unanswered or there was a time lag before the answer was shared via the WhatsApp group. Focus group data suggests that on occasions where the transcript indicated a time lag, pharmacists used other means to respond to queries such as telephone calls.

One participant expressed particular concern that WhatsApp was not an adequate replacement for planned clinical training sessions.

"…we used to run sessions where we would talk about our on-calls, talk about the dodgy things that we've decided to do and see whether other people are doing the same… …It is, like, logistically difficult to do that kind of training but I don't think it replaces that level of training." Participant 1, Focus group 5

In contrast, however, another participant suggested that the presence of inexperienced members of staff within the WhatsApp group made senior members more likely to participate – as a method of quality control that they felt ethically obliged to ensure information passed through the group was correct.

> *"You just need to be mindful of there's lots of young, inexperienced staff members seeing it so if there is something that's actually wrong you feel you need to put it right, just because otherwise you might just assume that's correct if it's been put out there so actually if it's not correct, you need to say something." Participant 2, Focus group 5*

Theme 2) Patient Privacy and Legality

This theme includes participants' discussions of the legal ramifications of the use of WhatsApp by the department and the effect that their perceptions of the law have on professional practice and participation in the group. The principal considerations were those of patient privacy, tacit consent and information governance. Some participants agreed that the WhatsApp group, despite not having any formal guidelines or training, handled the issue of patient privacy well, with the potential for only minimal transgressions of legal boundaries regarding the sharing of patient data.

> *"But occasionally people have slipped up a bit and then they get a bit of a comeback, saying, 'just to remind you.'" Participant 3, Focus group 2*

Participants reported feeling that the application was secure enough that minor disclosures of patient information were not considered a significant cause for concern.

> *"In terms of confidentiality, you need to be a bit careful but it's not a major concern 'cause we're all professionals and it's encrypted end-to-end anyway now." Participant 6, Focus group 4*

In slight contrast to this, some participants expressed a lack of formal training, when being introduced to the WhatsApp group regarding appropriate or standardised ways to discuss patients.

> *"I think just a little reminder when you do your on-call training, just to say, like, 'This is the group, if you're going to mention a patient, just to remember just do initials,' and I think that might be useful, 'cause people aren't like [that] constantly…" Participant 1, Focus group 2*

Participants reported that group members would take action if sensitive information was shared.

> *"Yeah, I think someone was mentioned, someone was told, because they put the patient's name which… you know… you shouldn't do, but it's easily done I think. If there was a standardised way it wouldn't happen." Participant 5, Focus group 1*

Analysis of the transcript indicates that norms were established organically to share patient information, such as the hospital name and ward identifiers, the patients' initials, medications names and doses, and patient characteristics rather than confidential patient identifiers such as full name, date of birth and address (Extract 2).

In addition to privacy, the issue of culpability was described in the data. Senior pharmacists felt uncertain of legal aspects regarding their responsibility should junior pharmacists share incorrect information within the group. A sense of tacit consent may be inferred by senior pharmacists in the group that may not be actively monitoring messages.

> *"…someone answered and that was the wrong answer, but no-one corrected you, and if something had gone wrong with the hospital and the case, who would take the responsibility for that because officially you weren't on-call on that day, you were just helping and this is the way you would have done it." Participant 4, Focus group 4*

However, other participants felt that WhatsApp had no effect on the legal obligations of those engaging with the group and that the responsibilities were purely ethical.

> "Yeah, I would say there's no responsibility, I would say on anyone in that group other than an ethical [responsibility]…" Participant 1, Focus group 3

Participants also highlighted concern that different approaches to practice may be questioned by their colleagues.

> *"You've got that spectrum [of practice], so, somebody might put something in saying, 'No, you can't do that,' and you might think to yourself, 'Well, could you?' if it's the only thing you can do." Participant 3, Focus group 5*

Although this participant believed that their practices were usually justifiable out-of-hours, they worried that colleagues may not be able to appreciate the broader context of the situation via WhatsApp and may prematurely criticise their practice. This led some participants to report that they would not feel comfortable sharing all elements of their practice via the WhatsApp group in front of their colleagues.

> *"…there's also things that you would do yourself, and you know that you can stand up and you can justify to whoever challenges you on it that you can justify that but it's one thing for you to take that course of action but for you to go and broadcast to the whole group, 'I think this is what you should do,' is different." Participant 2, Focus group 5*

Theme 3) Professional Relationships

Participants reported mixed experiences on their working relationships with their colleagues due to the WhatsApp group. One participant suggested that messaging the group and receiving a helpful response made them feel appreciative of the colleague that helped. In contrast, other participants did not feel that the use of WhatsApp affected their professional relationships in any way, positive or negative. However, within the WhatsApp transcript, professional relationships appeared to be reinforced in instances when good practice that was shared and consequently appreciated by the wider team (Extract 3).

A minority of participants reported feeling frustration and disbelief towards colleagues who reported accidental use of the WhatsApp group to share content about social activities.

> *"I've been out [socially], and I know how you can go on the on-call group and… I don't know, I just don't see how that can happen, like, personally. Because, it happens multiple times with the same people." Participant 3, Focus group 1*

Participants reported experiences of feeling embarrassment when posting within the WhatsApp group and how this affected their willingness to participate. Some participants felt that their own perception of the query they wished to communicate, as 'simple' or 'stupid', had influenced their decision on whether or not to share the query.

> *"… we used to call it the group of shame… it was kind of mentioned when you put something on there everybody looks down on you but, and they don't, but it was just that feeling initially." Participant 6, Focus group 4*

One participant explained that they had received personal messages outside of the WhatsApp group because the individual messaging them did not feel comfortable posting their query within the wider group.

"I do get a lot of people just private messaging saying, I don't want to put this on the group because it's going to look so stupid…" Participant 6, Focus group 2

Other participants' opinions suggested that over time this feeling dissipated, allowing them to feel more comfortable with colleagues and share queries within the group without worrying about being judged. For some participants, experiences of embarrassment had led them to explore other avenues to resolve queries, such as using another WhatsApp group for only junior pharmacists or contacting colleagues privately via WhatsApp.

"I would be inclined to write something in that [other WhatsApp group] first just because I feel more comfortable doing that. …I don't really care if my friends think I'm stupid." Participant 3, Focus group 1

Theme 4) Work-life Balance

Multiple participants across all focus groups reported difficulty maintaining a work-life balance whilst using WhatsApp to support on-call pharmacy services. Participants described experiences of feeling some level of frustration with the number of messages received in the group.

"I think sometimes you can get a bit inundated by messages if you're not on-call and there's an issue that's been going on and you just get a lot of messages about something that you probably don't really need to know about…" Participant 7, Focus group 2

These participants felt that the constant work-related messaging had influenced their daily personal lives and in some cases caused them to disengage from the group, almost entirely, to protect their personal time.

"If it was pinging through the night 'cause people are putting on [messages]… that would have annoyed me …That's why I switched the notifications off." Participant 1, Focus group 3

The transcript indicated that participants happened to be still at work by chance or lived in close proximity to their workplace, would become involved in additional tasks, such as being asked for log on information, despite being off duty (Extract 4). One participant agreed with this assessment, adding that one individual had removed themselves from the group whilst on holiday to avoid any possible interruption caused by the messages.

"I think someone left the group while they were on holiday so that they wouldn't get any messages." Participant 3, Focus group 3

However, some participants reported no difficulty protecting their personal life being infringed by professional communications via the WhatsApp group, describing involvement in the group as a free choice.

"…I think it's there at the moment that feeling that it's not obligatory you know, this is a new tool and you're not obliged to be reading [the messages] and inwardly digest everything…" Participant 3, Focus group 2

Participants that used the WhatsApp application in their personal lives were considered more likely to engage with its use professionally.

"I think it depends on how much you normally use WhatsApp, if you use it [socially] you're more likely to actually get involved in the discussions…" Participant 3, Focus group 3

Some participants experienced guilt that members that participated in the WhatsApp group despite no financial compensation for out-of-hours services, *e.g.* technicians, may unfairly have their personal time infringed by responding to queries. However, technicians present during the sessions suggested that it was their own decision to

be a part of the group and that they were happy to respond to queries in their own time despite non-compensation.

> *"I don't need to be on [the WhatsApp group] at all, I don't do on-call but I was asked, 'What do you think?' and to be perfectly honest I would hate to think that I knew something and was sitting there ignoring it because I wouldn't want to see anybody stuck…" Participant 6, Focus group 2*

Infringement on personal time was supported by content analysis of the transcript which revealed that most messages were shared between 17:00 and 20:00, with another peak in activity at 08:00 prior to the start of the working day (see Figure 1). This suggests that many pharmacists in the group are contributing to 'work' outside of normal working hours.

Theme 5) Efficiency of Communication

Participants reported varied effects of WhatsApp on the efficiency of their communication, suggesting the use of WhatsApp made them more streamlined in practice, allowing advice from a wide range of colleagues to be received in a timely manner.

> *"…to be able to put it on WhatsApp, 'Is anybody still at the bases to dispense anything or check anything?' like, it's just a bit quicker and it gives the answer quicker." Participant 5, Focus group 4*

> *"…we could post updates on there and we knew it was going to everyone that was part of the on-call group in one go…" Participant 1, Focus group 3*

One participant shared their experiences of an occasion in which WhatsApp could have saved the individual involved hours of time however some participants expressed the view that, at least sometimes, WhatsApp could cause an unnecessary delay whilst waiting for responses from the group. On these occasions however participants reported experiences of using other means of communication.

"There are occasions when I think a phone call would just be quicker…" Participant 2, Focus group 3

One participant expressed that they had experienced an improvement in their out-of-hours practice due to the availability of WhatsApp to obtain support. Practice was described as improved as participants no longer had to make temporary decisions when they were unsure of a solution or where identifying and contacting the most appropriate colleague to help would be difficult.

"It was a bit more difficult, for being the person on-call, trying to track down the most appropriate person to help you was quite tricky at times. You would have to make a different decision sometimes and do something a bit temporary 'cause you actually didn't know." Participant 3, Focus group 2

On average, communications discussing one topic lasted one hour seventeen minutes and twenty-three seconds. However there was variation in response rates depending on message 'type' (see Table 2). For example, communication relating to clinical queries lasted on average 58 minutes and 48 seconds compared to procedural information queries that lasted 43 minutes and 20 seconds. There was no difference in the number of messages or number of staff involved in sending messages between procedural and clinical queries. However another participant explained situations where WhatsApp limited communication between colleagues, as insufficient information was included in queries for appropriate and safe advice to be given.

*"…**t**he problem with WhatsApp on those is that it encourages a simplified answer to what is sometimes quite a complex clinical question…" Participant 1, Focus group 5*

During the period of the transcript a global cyber crisis occurred that resulted in a gross shutdown of official electronic online communication (*e.g.* emails, telephones, faxes). Throughout the crisis the activity on the WhatsApp group trebled, from an average of 167 messages per month to 577 messages (Extract 5 and Figure 1). This suggests that when conventional means of interaction are unavailable, unofficial

WhatsApp groups can be used to maintain efficient communication between colleagues.

Discussion

The results demonstrate overall positive experiences a range of using WhatsApp to support out-of-hours pharmacy services, through efficient communication, improved professional development and relationships. Despite only 5% of messages relating to clinical queries, participants were concerned with legality, governance and training to use WhatsApp for work-related messaging. These findings indicate that social norms are transferred to the online group from the offline environment, whereby social phenomenon, such as embarrassment and fear of being judged, are present in the online group, as much as they are in reality. The results also suggest that existing governance frameworks for formal information transfer (*e.g.* confidentiality) can be organically replicated and governed within informal methods of communication, whereby groups establish their own rules of engagement regarding what information can be shared and how.

Comparison to existing literature

Our findings support the work of others who argue that using WhatsApp supports practitioner development.[15, 16] The negative impact of using WhatsApp highlighted concerns regarding users' ability to develop robust problem-solving skills, as they had access to support from senior colleagues routinely and this is echoed in other literature. [17, 18] Our work also demonstrates that users may not respond to requests for additional support as readily as existing literature describes, which may further delay the resolution of out-of-hours queries.[19, 20] The delay may be contextualised in that the vast majority of communications via the group related to operational aspects of out-of-hours services, which do not require urgent or rapid responses, unlike clinical queries which made up only 5% of communication events. Though not discussed in the focus groups of this study, the low number of clinical queries posted on the group may be due to current policy that directing practitioners away from using instant messaging or social media for patient queries.[21]

Improved team relationships and communication suggested by our findings are supported by existing literature.[22, 23] Additionally, whilst participants reported a reduction in communication barriers between senior and junior members of staff that is mirrored by experiences in other disciplines, the supervision provided by senior pharmacists in the group facilitates the use of WhatsApp as a learning platform.[1] The literature suggests caution is needed however, as fewer face-to-face social interactions between members of staff may lead to the increased sharing of personal, as well as professional, information that may impede professional working relationships.[22, 24, 25 26] This was also observed in our study, whereby some participants were frustrated with the sharing of non-work related messages.

There was a limited amount of literature discussing the generation of online etiquette, ground rules or norms within instant messaging technologies used by professionals, although this process has been described in education.[27] However in this work, participants related a desire for more to be done to establish rules for use and governance. This indicates that greater guidance is needed to define expectations of staff as well as the acceptability of this technology to share patient information, by both patients and society as a whole. It may be that a process of virtual socialisation takes place online that enables health professionals within an instant messaging group to establish boundaries for sharing patient information. This finding may raise concerns, as the difference between the thresholds of how much patient information can be shared may vary between different groups. Further work is needed to explore this phenomenon to inform best practice policies.

Limitations of the study

The proximity of the researchers to this phenomenon may be contentious. Whilst some may appreciate the process of epoché provides a mechanism for researchers to identify and deal with their own *a priori* knowledge, others argue that this process can never be complete for researchers 'inside' the phenomenon.[28] Reflecting on both our previously held beliefs and how completing the study has changed our own

perceptions, we would argue that familiarity with the phenomenon has enriched the research process and findings, as authors interrogated findings more readily due to the explicit mechanism of epoché. For example, authors were surprised that clinical queries only contributed to a minority of communications via WhatsApp and that members of the WhatsApp group felt reluctant to share their out-of-hours practices for fear of being critised by colleagues in the group. Data collection was enhanced, as existing rapport between participants and researchers ensured shared understandings of colloquial, organisational and professional phrases could be captured. However, we do acknowledge that this may have also limited the data collected, as participants may have assumed that researchers were already aware of their experiences or had existing relationships that limited disclosures. Conducting the same study with researchers completely outwith the phenomenon may have identified different findings however we feel that our findings are transferable to other organisations that use WhatsApp groups for communication between healthcare professionals.[29]

Implications for practice, research and policy

WhatsApp is easy to use and has been adopted in many settings. In relation to privacy, our study draws pharmacy into the debate of sharing information on social messaging platforms. Drake *et al*. warn of the dangers of sending data to servers outside the user's home country, suggesting that deleting messages is an inadequate method to prevent sensitive data transgressions given retention on distant servers, for example cloud storage.[30,31] Such data discretions may occur unknowingly, if users do not manually disengage automatic download or 'cloud' functionality.[18] This is relevant to pharmacists as other healthcare professionals have had their registration suspended due to inappropriate transmission of information via WhatsApp.[32] Within our study, participants did not share patient identifiable information, such as names, dates of birth or addresses, however they did share detailed information about patients' physical health and current prescribed medication. A broader discussion is needed regarding the sharing of such information through social messaging applications.

Current policy, across health disciplines, tends to be framed to govern the use of social media in a personal capacity on platforms such as Facebook and Twitter, where communication tends to be broad groups of professionals, patients, carers, and the public.[21, 33] This often directs policies to be restrictive, preventing the transfer of information relating to patients or their care.[21] Like Facebook and Twitter, WhatsApp facilitates social messaging through online social networks and our study indicates that it can support the delivery of pharmacy services. In light of these findings, regulators and policy makers must consider developing robust guidelines for the use of social media messaging, such as WhatsApp. This is especially important given the rapid growth of such platforms as constituent parts of professional and personal communication that supports the delivery of patient-centred healthcare.

Conclusion

This work indicates that social messaging platforms can support the delivery of out-of-hours pharmacy services through professional development and improved communication. This paper demonstrates that service managers must consider multiple ethico-legal and social frameworks when developing or allowing organic development of such communication methods within healthcare provider organisations. Further work is needed to explore the ethico-legal aspects and impact on work-life balance. Critically this work identifies the value of unofficial methods of communication during cyber crises and future research should focus on how this might inform service continuity planning.

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