**The influence of personal communities on the self- management of medication taking: a wider exploration of medicine-work**

Introduction

The literature surrounding lay medicine-taking has focussed on the problem of ‘non-compliance’ (or the extent to which patients follow medical instructions (WHO 2003)) with prescribed medications (Bissell *et al.* 2004; Fineman 1991; Gray *et al.* 2002). Non-compliance, now more commonly referred to as non-adherence, is often cast as a ‘substantial problem’ with ‘devastating consequences’ for society (Baer 1986; Marston 1970), due to the various associated negative economic consequences e.g. from medicine wastage (Trueman *et al.* 2010). Various factors have been identified as affecting non-adherence including: regimen complexity, dosing frequency greater than twice a day, remembering doses and refills, co-morbidities such as depression, adverse effects or fear of them and a lack of belief that the medication will help them (Kocurek 2009). However, others have viewed ‘strategic’ non-adherence as an ordinary and positive means of self-management (Pound *et al.* 2005; Rogers *et al.* 1998). Whilst the reasons for why peopledon’t take medications and the mobilisation of agents as part of resistance to drugs has been explored broadly as part of the sociological writings on the concept of ‘pharmaceuticalisation’ (Williams *et al.* 2011), there is a lack of focus on the role of an individual’s *network* of significant others and their related influences specifically on medicine-taking. In terms of the complexities involved in the everyday processes of medicine-taking over time the latter can be conceptualised as part of everyday chronic illness work, which Corbin et al. (1985) term regimen work.

Recent work by McCoy (2009) concerning HIV patients, used the concept of ‘*adherence work’* to refer to the specific efforts or work that such patients and ‘others’ go to in order to adhere to their medication schedule[[1]](#footnote-1). Adherence work came into view as a strict form of ‘time work’ including the notion of ‘dose time’, strategies employed by patients in recognising this form of time in keeping track of their doses and completion of the daily regimen. McCoy (2009) highlighted the role that ‘others’ can play in accomplishing adherence, but noted that the contribution of these others was rare, concluding that adherence work was largely an individual activity. These assumptions, applicable to the condition of HIV, might not, however, be transferable to the inclusion of others in medication-taking for long-term conditions (LTCs) more generally. For example, Stone *et al.* (1998) point to the fear of stigma that many HIV patients experience, which, may in part, account for the reluctance to disclose their illness or involve others in medication taking and others note a process of individualisation as a result of a reluctance to disclose HIV (Roberts *et al.* 2000). In addition, a synthesis of qualitative studies on medicine-taking (Pound *et al.* 2005), highlighted HIV as an ‘extreme’ case of medicine-taking (ibid p149), suggesting that future work in this area would benefit from studying medicine-taking in a more common or prevalent LTCs context. There may also be a tendency for individuals to be unaware of, or attribute, a greater role for themselves in day-to-day routine medication-taking, which is consistent with the expectation that they should be responsible for this activity rather than others and/or that any such work done by others may be ‘invisible’ (Star *et al.* 1999). There is therefore a lack of evidence concerning an understanding of the division of labour and the *type* of work undertaken by others who may be involved in an individual’s medication-taking.

One way of approaching this social element of LTC care, and medication-taking in particular is to use a social network approach. Social network analysis (SNA) is a theory, a method and an analytical technique (Borgatti 2013). When applied to human behaviour and states, SNA can be used to describe and analyse social interactions which contribute to changes in health practices or behaviour (Valente 2009, Smith 2008).  This analysis can take the form of mapping and analysing large datasets to trace diffusion of behaviour and information (Murthy 2011). Alternatively, a social network *approach* can be taken to describe smaller networks of people (Egonets centred on single individuals or ‘egos’) in the form of personal communities (Spencer *et al.* 2006) who may be of relevance (e.g. to the ego’s perceived management of health and illness). Qualitative descriptions can be used to inform researchers about the meaning and content of local relationships between the ego and those social network members (people identified by the ego to be of relevance in some way to the phenomenon of interest) within the network termed ‘ties’.

The role of personal communities and the notion of chronic illness work has recently been extended in the work of Vassilev et al. (2013) which is concerned with an articulation of how social network members are substantially involved in illness management and addresses the broad set of contribution and resources available for individuals to manage their chronic conditions (Brooks *et al.* 2013; Vassilev *et al.* 2013). The focus here is on extending this perspective through drawing out the nature of the relational work of *medicine-taking* embedded in these ties and in particular elaborating upon the constitution of medication work undertaken within personal communities of networks. Social network approaches offer a way of understanding illness management, extending the view beyond a focus on individual behaviour (Perry *et al.* 2012; Pescosolido 1992; Vassilev 2012; Vassilev *et al.* 2013). However, to date, there has been no application of this approach to medicine-taking.

In adopting this approach, we seek to move beyond the focus on the widely explored roles and labels of formal and informal carers (Francis *et al.* 2002; Thorpe *et al.* 2012). Important as these relationships are, one of the consequences of this focus on dyadic caring relationships is that the wider contributions that may be being made by a broader set of actors, remains under-acknowledged (Rogers *et al.* 2014). A network approach provides an opportunity to understand the range of people involved, the potential hidden complexities of those who contribute to medicine-work and those who would not easily fall within or recognise the demarcation of ‘caring’ roles (Molyneaux *et al.* 2013).

In this in-depth qualitative study, we adopt a social network approach to a group of people living life with multiple LTCs for whom medicinetaking and polypharmacy (Nobili *et al.* 2011) is a part of their everyday lives. The aim of this study was to explicate: the nature of the *work* that people with multiple LTCs, and their network members do, in attempting to take their medications on a daily basis, the division of labour amongst these members and when and why network members become involved in that work.

**Methods**

Participants with a minimum of three prevalent long-term conditions; Diabetes, Arthritis and Coronary Heart Disease (CHD) were identified from a database of participants who took part in a larger study within which this study was nested (Vassilev *et al.* 2013). Recruitment was via telephone. Participant characteristics are available in table 1. The sample had an average age of 67.4yrs, took an average of 11 medicines (range 3 -21) with the majority of doses being taken in the morning and had identified an average ‘health network’ (people nominated by the participants (egos) who were seen as being important to managing their health conditions) size of 8, as part of the larger study referred to above (see Vassilev *et al*. 2013 for a detailed description of the network approach adopted figure 1 provides an example of the name generator approach to Egonet construction).

20 semi-structured interviews were conducted, face-to-face, by SCS and MJ in participants’ homes. Network diagrams (as in figure 1) were used as a research tool within the interviews in an attempt to draw attention to the *variety* of people they identified as being important to their health and therefore potentially involved in their medication work. Participants were presented with their network diagrams (constructed as part of the larger study) and initially asked to comment on whether their health network (those people deemed important to their health) had changed since their last interview. Any changes were recorded on their diagrams. Participants were then asked to talk about a variety of medication related topics including their daily medication routine, their prescription and accessing medications generally and where and why they kept their medications in specific places. Finally, we re-presented the network diagrams and asked who, if anyone, was involved in any of these topics, when they were involved and if not, why not. Interviews lasted on average 52 minutes (range 29 to 84 minutes). All interviews were digitally recorded and transcribed verbatim before undergoing anonymisation.

Data analysis and collection occurred concurrently. SCS , MJ, FS and AR read the transcripts independently as they became available. SCS led the analysis adopting the method of constant comparison and started by openly coding the data in the software package Atlas.ti. SCS held regular coding meetings with MJ where data attached to preliminary codes were discussed and codes refined. Throughout the analysis, meetings were also regularly held with the wider team to further allow for the identification and clarification of key concepts and themes.

Participants gave informed written consent to take part in the study. Ethical approval was obtained as part of the study referred to above from the Greater Manchester Research Ethics Committee in February 2010 (ref: 10/H1008/1). All participants received the equivalent of £10 in gift vouchers as a compensation for their time and effort.

**Findings**

Participant accounts highlighted the underlying complexities and extent of work involved in everyday medication taking. Participants presented themselves as striving to meet, and for the most part, successfully managing the requirements of their regimens themselves. Medication-taking appears to be a personalised, contingent and contextually situated type of work with participants developing highly individualised routines and strategies. However, it was also evident that daily routine medication-work *can* and *does* go beyond the self, with network members being involved or called upon selectively to provide ad-hoc and/or regular support in the performance of a particular type(s) of work. We begin by outlining how people organised their medication day, the nature of medication-taking work involved and then who, when and why network members were involved and in which aspects of medicine work.

*Medication Infrastructures and Emplacement*

Participants effectively described creating ‘Medication infrastructures’ which can be seen as 'pervasive enabling systems' (Bowker *et al.* 2010 p98) for their regimens within their homes. The successful establishment of such infrastructures was exemplified by participants accounts of life’s ‘normal flow’ being seemingly uninterrupted by the execution of medication regimens. Medication schedules appeared to be embedded into daily life, with dose-taking being woven in and around participant’s pre-existing routines. Regimens were seen as flexible, but routines and order of the medication day were established by various means. In contrast to McCoy (2009), the vast majority of participants paid little attention to ‘clock time’ as a basis for constructing these infrastructures, preferring instead regular prompts within everyday routines, such as meal times, to initiate and regulate medication-taking. As such medication-taking was often described as an extension of an existing, rather than separate routine:

I’m set on auto pilot...As soon as I come down in the morning, if something breaks my habit, I can actually go out and forget to take my tablets, so I come downstairs, first thing I do is to go into the back and get the toaster ready, put the toast in, my tablets come out of the cupboard, take those, do all the breakfast...but, if, as I say, something’s taken my mind off it and I’ve had to do something, I can actually…I’ve broken the sequence and I’ve forgotten, because I do it automatic (GP54)

The use of meal-times as a dose-time reminder was in some cases attributed to medical instructions, with some medications being specifically instructed (as stated on their labels) to be taken either prior to or post meals. However, even where this was not the case, participants’ spoke of using mealtimes as their prompts. Nonetheless, the use of prompts and the creation of ‘medicine-taking rituals’ (Haslbeck *et al.* 2009) were not infallible. The breaking of these rituals, as the quote from GP54 above highlights could result in missed doses or unintentional non-adherence(Lehane *et al.* 2007).

The emplacement of medications, or the act of putting medicines into certain, specific locations, was also central to the creation of medication infrastructures within the home, some of which were shared e.g. family medicine cabinet. Medicines were carefully stored and re-placed after use in specific locations around the home. The co-location of medications with specific ‘times’ and places that medicine-taking actually occurred (e.g. the bedroom for ‘night’ tablets) could therefore result in different home zoned areas, with morning and evening medications being located in different places. The alignment of ‘times’ and medications this way seemingly facilitated the completion of the daily medication schedule and constituted a type of ‘anticipatory work’ (McCoy 2009). The importance of a reliable medication infrastructure was highlighted by cases such as GP341, where this was not in place:

do you keep them [medications] somewhere particular, you know, so you always know where they are, or..?

R: No, I have lost them one or two times because I thought I’d…if I’m sat in there, you see, sometimes I go in there and then I take them in there to take later and then I forget where they are! If I remember, they go with everybody else’s there, in that corner.

I: Right. On that coffee table there?

R: Yeah. So, you know, I’ve had the house upside down, once or twice, and I’ve found them in the front room the only tablets I have upstairs, I have a pack of Tramadol and Paracetamol. I have a [bedside] drawer, because I keep some of Rachel’s [niece’s] medicines that she takes at night, upstairs as well, so we have a drawer full of them. (GP341)

*Medicine-taking work or the work of taking medicine*

Four types of medicine-taking work emerged from the analysis (see table 2): Medication articulation, surveillance, emotional and informational; each is presented in turn.

*Medication articulation work*

Medication-articulation work formed the most frequent type of work undertaken by the participants themselves and personal social network members (SNMs) in relation to medication-taking. In addition to the obvious act of actually taking or administering the doses ‘Medication articulation work’ directly concerns the planning and coordination work (Corbin *et al.* 1985) around medication-taking. This includes the preparatory work leading up to the act of medication-taking itself, such as, the ordering and collection of medications (to ensure that a constant supply is available), the organisation of those medications in and around the home including the loading of devices (e.g. Dosette boxes) designed to facilitate doses being taken at instructed periods of the day:

I get the medicines from the, er, erm, chemist and, I think, they’re delivered by Eddie Stobart’s lorry, they’re in a huge parcel... And then I put them all into bottles I’m pretty methodical in that respect as I say, I’ve got these, erm, little drawers, Monday, Tuesday, Wednesday, Thursday, which I put, erm, I put in regularly, they’re in there and then I put them at the times that I take them, they’re divided, Monday is divided into four sections, Tuesdays, and so on. And I do that and then I have another set upstairs that I take first thing in the morning. So I do those for the whole month every…er, once every month, you know... I put them all into bottles and settle them out and I do the same with Joan’s so that I know where I’m up to, (GP377)

In some instances, as above, aspects of medication articulation work (e.g. delivery of medicines) were performed by professional ties in the form of Health Care Professionals (HCPs). More frequently, participants themselves or personal ties, (non-HCP members) usually spouses and/or adult children would perform this work either on a regular or ad-hoc basis:

I: And how do you get your tablets? Do you take your prescriptions? Do they get delivered?

P: No, I go down.

I: You go yourself.

P: That form you just tick them off there, drop them in the, erm, office and a couple of days later go and pick them up... Well, my daughter sometimes does, if she’s going down there with one of the grandchildren. (GP54)

*Surveillance work*

Surveillance work was primarily performed by participants themselves. Participants described a necessitated form of medication ‘surveillance work’ in three areas. Firstly, to keep track of their medication supplies and secondly, to keep track of their progress *within* the daily regimen. Work in these areas appeared to be aided by the use of ’formal’ or commercial devices such as Dosette boxes, whereas other participants described devising their own personalised strategies for keeping track of doses, some of which were bureaucratic, involving record keeping:

So, I always have this paper and a pen here, and I always write down when I’ve taken everything... I write down me injections, and the co-codamol…...(GP271)

A third area of surveillance work concerned the monitoring of medications for the occurrence potential errors in dispensed medications. Errors could manifest themselves, and patients subsequently alerted to them by careful attention paid to prescriptions or labels and/or by utilising visual cues, using changes in the appearance of pills. Accounts indicated a high level of vigilance, with this form of work being undertaken upon receipt of each new batch of prescriptions:

we don’t go to the pharmacist next door to our doctor because they made so many mistakes......and we’ve been given, I’d been taken this tablet for a week, and I suddenly realised it wasn’t the same tablet I should be taking.. ...it wasn’t in the boxes, it wasn’t the same tablets that the box said. (GP103)

And then, what really annoys me about my medication is, that for years you’re, I mean, I’ve been on these, and you get a tablet. And then, all of a sudden, out of the blue, they’ll change the colour or the shape. And you don’t know where you’re up to. It really knocks you for six.... and especially this time, they mixed it. So I’ve got Aspirin, some Aspirin are like a diamond shape and the others are a round shape. And I’m thinking what, because you’re not used to seeing them. (GP85)

*Emotional work*

Emotional work emerged as a third form of medicine-taking work and was performed primarily by personal ties (e.g. family, friends, neighbours etc). Participants described how such SNMs provided reassurance in terms of supporting *reasons* for medicine-taking and could act to militate against intentional non-adherence or tendency to act as the ‘rebelling self’(McCoy 2009) as GP282 describes when she is feeling ‘fed up’ and burdened by her medicine-taking:

there are times when I'm sat there, and I'm thinking I've got to have that [her medicines], and some days, I think, oh, I can't be bothered, you know. And my husband will say, have you?, and I say, no, I can't be bothered...they bring everything to me to make sure [I take them] (GP282)

Personal ties, usually those cohabiting, could also aid their medicine-taking by prompting dose time. This latter aspect was expressed via network members pre-emptively reminding participants of dose-times by the use of verbal cues or checking (verbally or visually) whether they had completed their daily regimen and was interpreted by participants as an expressions of concern, care and support:

if I forget, somebody does remind me and little Rachel [niece] always says, have you had your cancer tablet? When she comes home from college her first words will be, after she said how her day went, you’ve had your tablet, haven’t you? Because she worries..." (GP341)

Emotional work was also an area where reciprocation occurred, between the participant and other personal ties and is also a form of work that could be readily conducted by those outside the home:

I: so, your friend asks you, are you taking your tablets, and would you do the same in return, or…

P: I do, actually, like. She’s there, and like…her medication and things like that. Have you took your tablets? Have you took your morning tablets? And then, I tell her I forgot....we tend to phone each other every day… And it’s like…oh, I don’t feel well, oh, I don’t feel well today, I can’t go outside or nothing like this, oh, have you taken your tablets, and like that, just really (GP271)

*Informational work*

Informational work formed the fourth and final form of medicine-work and was performed primarily by professional network members (e.g. General Practitioners, Practice nurses and Pharmacists). This type of work occurred primarily around the time of the prescribing of new medications and/or dose changes. HCPs were invoked to clarify and check information received from elsewhere in the network. Pharmacists in particular were utilised in this way:

I: when you went so speak to, was it [name], you said, your pharmacist? What kind of things do you ask him about then?

P: Well, if there’s any change in the medicines...(GP377)

Participants also called upon their HCPs, when experiencing medication concerns e.g. with keeping track of their doses, most commonly to check the implications of any missed- or over-doses:

I got scared, thinking I’d had a double dose… So, I phoned the diabetic nurse up, at the diabetic clinic, and she said, well, just keep calm, it won’t harm you, but I’m glad you phoned and told me. Have you ever done that before? I said, no, never, that’s why I’m phoning you, I was worried, like, I might’ve got a double dose. She said, it won’t do you any harm this once, um, I forgot what she told…I think she said, don’t have it at teatime or something, just for that one day… And then, next…I caught the thing, think I’ve got somebody I can ask. (GP217)

Information was also received and sought from personal ties, and could influence medicine-taking through the provision of advice or the transfer of strategies (Reid *et al.* 2006) such as the use of Dosette boxes:

I seen that [dosette box] in the shop and thought that sounds a good idea so I bought that.

I: So who prompted you to, to...?

R1: Just both of us...just seen and bought it.

I: So you hadn’t heard of anyone else using it?

R1: No, no.

R2: Hilary, one of our friends she uses one and she said they were very good and that’s when you spotted one. (GP72)

In summary, four types of medicine-taking work emerged and all were amenable to, or resulted directly from SNMs involvement. In the next section we discuss the reasons as to if, how and why some participants did or did not involve network members in particular types of work as accounts of work by others were accompanied by explanatory accounts.

**Network involvement: availability and identity**

*Stability, availability and dynamics of networks*

Network size and composition (see table 1) provided insights into if, how and why SNMs could become involved in medicine-work. In some cases, networks were restricted to professional ties alone and others identified few personal ties outside of contact with professionals. Professional contact limited the options for the involvement of SNMs and subsequently the types of medicine-work possible. For example professional only networks (networks comprised solely of health professionals e.g. GP114) precluded the performance of day-to-day medication emotional work within the home.

Even where SNMs *were* named and included as they were perceived to be important to the participant’s health it became apparent that the possibility of involvement in medicine-work was reduced or precluded due to: disruptions from shifts/changes in the network (e.g. loss of a spouse who previously performed one or more aspects of medication-work), the sudden or eventual unavailability of members due to morbidity from their own illnesses or the participant acting as an informal carer (n=2 participants) for others in their own network and/or not wishing to burden others:

No, no, I don’t try on her, ‘cos Abbie’s [wife] got enough on her plate with the conditions she’s got. So I don’t want her worrying about what she’s got and I’ve got also, you know. Like I say, I’ve got…I look at it as I’ve got broad shoulders, I can look after meself up to now. Up to now anyway (GP363)

they don’t want to hear about your problems do they and illnesses, no I don’t...I don’t burden anybody with what’s the matter with me, it’s, er. And I have one particular friend that I’ve got friendly with at church and she’s a really lovely person and she’s ill, she’s very ill herself. But, er, she doesn’t discuss her treatment. I know when she’s going in to[name of hospital] and things like that and I always say, phone me when you get home and, er, it’s the same when I’ve been to the doctors and she’ll phone, how did you go on and you’ll say, well same thing and, you know (GP188)

The lack of discussion around medicines by personal ties appeared to set norms around the ‘performance’ of medicine-talk and accounts indicated that medicine-talk was less prevalent than illness talk in general as the quote above from GP188 illustrates. However, participants did engage and involve certain SNMs in certain forms of medicine-work who were seen as ‘credentialed’ in some way. For HCPs this was linked to their possession of relevant expert knowledge. For personal ties however other criteria were seemingly employed. For example, those identified as being involved in medicine-work possessed particular characteristics (e.g. experienced in the same illness), attributes (e.g. displaying an interest/willingness) or held certain types of roles that again made them seemingly appropriate to conduct some or all aspects of medication-work:

Denise, she's my oldest. And the thing is with Denise, she's lovely, she'll do…she'll drop anything for you... Denise's a social worker and she's always worked with the elderly! (GP356)

I put Elaine there was because my sister in law has been a diabetic...Ooh, must be 40 odd years. But she’s, erm, an insulin diabetic. And I remember I put her there, because if I had any queries, she knows diabetes far better than some of the doctors down at the diabetic clinic...." (GP377)

It became apparent during several interviews that SNMs emerged who were involved in some aspect of medication work but were initially not recorded as part of their networks. Such occurrences were indicative of the routine and taken for granted work around medicine-taking and/or that their contributions were ‘invisible’ (Star *et al.* 1999) but became visible during the process of the interview.

*Medicine taking facilitating illness Identity, formation and presentation*

A second area of complexity concerned how SNMs did, or did not, become involved in medicine work. Specifically, accounts revealed how involvement constituted a function of participants’ conceptualisation and presentations of self, as well as how individuals believed they were seen by others in their networks i.e. their identities or roles within their networks. The related representations of *independence* and *control* appear to translate into little room for network members to perform all or some types of medicine-work:

P: they know I do it [take her medicines]. *I’m* the organised person in the house. I’m the one that asks them, have they done it. And checks up on them! (GP85)

I: Does he [husband] check on you whether you’ve taken your medicines?

P: No, he wouldn’t *dream* of it.(GP103)

Narratives concerning the involvement of others were also often accompanied by accounts of moral identity work in that certain roles were filled with particular moral obligations and expectations in relation to that involvement, particularly in the case of those with spouses/partners:

basically, my husband looks after all my medical…my prescription needs. He just automatically does…makes sure the prescription goes in. I've got enough medication to be going on with. If we go on holiday he makes sure I've got enough medication to see me through while I'm there, and, you know, without that pressure...I'd probably be really… If I had to do it all by myself I'd, probably, feel bogged down with it, you know. Yeah. Yeah. I'd, probably, be really, really stressed. I, probably, wouldn't go anywhere, you know....

I: So, did he just take that upon himself then to do it?

R: Well, he's my husband....We decided to spend our life together.(GP282)

**Discussion**

**Summary of Main Findings**

Medication-work emerges as a highly personalised, complex, contingent and contextual form of self-management work. In many cases, this translated in to little space being left for the involvement of SNMs. Regimens were structured around and interwoven within existing routines. Four types of medication-work emerged: medication articulation, surveillance, emotional and informational. Involvement of SNMs in medication-work was selective, performed primarily by family members, within the home. Overall, a narrowing spectrum of involvement emerged with most participants having one or more SNMs performing an aspect(s) of medication articulation work on an intermittent or ad-hoc basis (e.g. prescription collection) to a small number (e.g. spouses, proximate adult children) with regular, routine and wide-ranging involvement with such members also effectively becoming part of and/or creating the medication infrastructures.

The conceptualisation of medication-work as personalised work creates difficulties in terms of what is left to be meaningfully delegated. Individuals for the most part do not delegate large quantities of medication-work to others. Thus, unlike other areas of chronic illness work where others are involved more intensely (e.g. emotional work Brooks *et al*. 2013) medication-work may be seen as an area of illness management over which individuals can take more complete ownership, with medicines being seen as a tool to regain control and a way of maintaining prior selves (Stevenson *et al*. 2008) in what otherwise may be a chaotic illness experience. However, it was clear that network members can and do involve others in their medicine-work (see figure 2 for an overview). SNMs were selectively called upon, in some cases at specific times, to perform limited aspects of work and/or were regularly performing a type of medicine-work, with personal ties performing most commonly medication articulation work and professional ties informational work. Furthermore, the findings illustrate the complexities of SNM involvement in medicine taking-work as an artefact of the actual or perceived availability of SNMs and how this involvement aligns or conflicts with self-perceptions, reinforced by their accompanying accounts of moral identity work (Townsend *et al.* 2003).

**Strengths and Limitations of this Study**

To the authors’ knowledge, this study represents the first attempt to adopt a social network approach in order to examine daily medicine-taking and by doing so, the work of medicine-taking and the people involved in that work, have been made visible. Participants had a wide range of conditions, medication regimens and as emerged, network compositions. It is possible that SNM involvement was constructed and related to the way in which participants understood their medicine-taking and the task of network construction hence the occasions whereby instances and narratives of involvement emerged late into accounts but were not given at the start. Furthermore, the negative impact of SNMs on medicine-taking was not the focus of this study but it is possible that SNMs may hinder medication-taking due to the shared social spaces, i.e. homes, in which medicine-taking was studied. It is also possible that the types of LTCs and medications included in the study sample could have affected the findings and therefore the types of work may or may not be transferable across all conditions. Finally, the study is neither an attempt to perform a formal SNA, nor to provide a definitive typology of medicine-taking work and/or a model for SNM involvement in all medicine-taking.

**Comparisons with existing literature**

This study adds to recent literature which focuses on the home as the primary medication taking space and the impact of this shared space and those contained within it on medicine-taking (Dew *et al.* 2014; Hewson *et al.* 2013; Langstrup 2013). Emplacement is highlighted as playing an important role in facilitating medicine-taking (Hewson *et al.* 2013), however by utilising the concept of ‘infrastructures’ as ‘enabling structures’ in relation to medicine–taking, we move beyond the simple focus on emplacement, and incorporate the agency of the ego and SNMs, within and out with the home, in creating and maintaining those infrastructures. Langstrup’s (2013) use of infrastructures in relation to the wider concept of ‘chronic care,’ also illustrated the extended reach and influence of external forces such as formal services in the creation and control of those infrastructures in relation to conditions (e.g. haemophilia) requiring careful control and monitoring of medications. Medicine-taking emerges as a complex area of illness work with the performance of that work arising from an interplay of factors including network composition and identity. This emerging body of literature serves to highlight and reinforce the contextual and contingent nature of medicine-taking work, with the current study focusing and highlighting the specific nature of that work and the division of labour within it.

In common with other studies regarding the provision of types of support and illness work (Vassilev *et al.* 2013; Wellman *et al.* 1992), most delegated medicine-work, was performed by strong, personal ties in the form of cohabiting partners/spouses and proximate adult children. Medicine-takers receive more and varied support from personal rather than professional ties (Reid et al. 2006), reflecting the fact that illness work, of which medicine-taking comprises a part, occurs beyond formal health care services and in the home (Corbin et al. 1985).

Finally our findings support the conceptualisation of routine medicine-taking as a type of work and also as a form of time work (McCoy 2009). However, in contrast to McCoy (2009), the findings suggest that ‘clock time’ is not salient in the day-to-day medicine-taking of those with multiple LTCs., Our findings suggest a more fluid conceptualisation of time is employed by those with LTCs requiring less stringent regimens, with the medication day being divided into two or three parts and medicine-taking being woven into and around pre-existing routines. We therefore extend the conceptualisation of medicine-taking as work by moving it beyond the individual, condition specific view and by unpacking the notion of medicine-work into four types, and illustrating how and why SNMs may or may not be involved in all or some aspects of that work. Ultimately, the findings help extend the understanding of medication-taking as a social phenomenon (Cohen et al. 2001).

**Implications for future research and clinical practice.**

The study highlights the complexities involved in everyday medicine-taking. The importance of establishing medication infrastructures, and in particular how SNMs can play a role in the creation and maintenance of these, is an area that health professionals should explore with patients in order to make medicine-taking minimally disruptive (May et al. 2009). Reid et al. (2006) have suggested that patients with multiple medications felt that they were often left to devise their own systems. Some patients may therefore prefer HCPs to offer support (e.g. arranging for delivery of medications) and information (e.g. use of dosette boxes) in establishing successful infrastructures. Furthermore, HCPs may target interventions of this type at those who may have particularly challenging situations and/or where networks and the performance of medication work by others may be limited.

Utilising a simple network approach in the context of medicine-taking has shown some initial utility. Future work, in the form of larger scale formal quantitative social network analyses, could expand upon the current work by looking at the implications of network disruptions, network types, structures and compositions on medicine-taking and medicine-taking work. Such studies could for example offer insights as to whether certain network types offer protective effects, in terms of increased adherence and vice-versa whether deleterious effects occur in others. In addition, future studies should examine the types of medicine-taking work identified here to see if they are transferable to medicine-taking more generally, as well as to explore how specific contexts evoke and shape the way that this work is experienced and accomplished. Finally, it is possible that a typology of networks could be identified which could differentially predict adherence to medicine-taking.

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1. It is for this reason that the authors have chosen to use the term adherence in preference to the related term of concordance in which the focus is around shared decision making. [↑](#footnote-ref-1)