‘Everyone should know what they’re on’: A qualitative study of attitudes towards and use of patient held lists of medicines among patients, carers and healthcare professionals

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‘Everyone should know what they’re on’: A qualitative study of attitudes towards and use of patient held lists of medicines among patients, carers and healthcare professionals

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Abstract

Objectives

Managing multiple medicines can be challenging for patients with multimorbidity, who are at high risk of adverse outcomes e.g. hospitalisation. Patient-held medication lists (PHML) contribute to patient safety and potentially reduce medication errors. The aims of this study are to investigate attitudes towards and use of patient held medication lists among healthcare professionals (HCPs), patients and carers.

Design

Qualitative study based on 39 semi-structured telephone interviews.

Setting

Primary and secondary care settings in Ireland.

Participants

Twenty one HCPs and 18 non-HCPs (people taking medicines and caregivers).

Methods

Telephone interviews conducted with HCPs, people taking multiple medicines (5+ medicines) and carers of people taking medicines purposively sampled via social media, patient groups and research collaborators. Interviews were transcribed and thematic analysed based on the Framework approach, with the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF).

Results

Five dominant CFIR and four dominant TDF domains emerged with three core themes: (1) attitudes to PHML (2) function and preferred features of PHML (3) barriers and facilitators to future use of PHML. All participating (patients/carers and HCP) groups considered patient held lists beneficial for patients and HCPs (e.g. empowering for patients, improved adherence). While PHML were used in a variety of situations (e.g. emergencies), concerns about their accuracy were shared across all groups. HCPs and patients differed on the level of detail that should be included in lists. HCPs’ time constraints, patients’ multiple medicines and cognitive impairments were reported barriers. Key facilitators included access to digital/compact lists and promotion of lists by appropriate HCPs.

Conclusions

Our findings provide insight into the factors that influence use of PHML. Lists were used in a variety of settings but there were concerns about their accuracy. A range of list formats and encouragement from key HCPs could increase the use of PHML.

Strengths and limitations of this study

- This study included a range of viewpoints from a diverse sample of HCPs and non-HCPs.
- Variations in the opinions of patients, carers and HCPs regarding PHML have been identified; this information may focus interventions and lead to the development of supports tailored for particular groups.
- The CFIR and TDF were appropriate tools to comprehensively assess attitudes towards and use of PHML and identify influential factors at both patient and system levels.
- The study design and methods could have resulted in recruitment of individuals with distinct opinions about PHML and an under-representation of more neutral opinions.

BACKGROUND

Medication-related harm has been identified internationally as a key area for improvement in all healthcare settings. In 2017, the World Health Organisation (WHO) identified Medication Safety as the theme of its third Global Patient Safety Challenge and aims to reduce the level of severe avoidable harm related to medication by 50% globally in the next 5 years. Polypharmacy (5 or more medicines) and multimorbidity are associated with increased risk of medication-related harm and often result in poorer health outcomes for patients.[1,2,3] Patients with polypharmacy and multimorbidity can experience many transitions of care; multiple interactions with different healthcare professionals (HCPs) and numerous transfers of information about their medicines across healthcare systems e.g. primary care to secondary care.[4] Systematic reviews have reported discrepancies between medication lists in primary and secondary healthcare sectors, with deficits in transferring information across healthcare settings resulting in medication errors.[5,6] These discrepancies can potentially cause harm and may persist as long term medication errors.[7,8]

A potential solution to deficits in communication across healthcare systems is individual patient or carer involvement in managing their medicines.[9,10] Supporting patient participation in managing medicines has numerous benefits – improving information transfer, reducing errors, empowering patients and leading to improved health outcomes.[9,11] There is evidence that patients can have a crucial role in identifying and managing medication errors during care transitions.[12] Many patients benefit from keeping a list of their medicines[13-21] – as a memory aid or assisting communication with HCPs across care settings.[13,18] However significant barriers to using patient held medication lists (PHML) have been identified including lack of awareness among patients and carers of the purpose and value of keeping medication lists.[13,15] While some research has been conducted on how PHML are perceived across medical and non-medical populations[13-21] the optimal method for supporting patients and implementing the widespread use of PHML in clinical care and during health care transitions remains a challenge. The [anonymised for review] team are in the process of introducing a national medication safety campaign – the [anonymised for review].[22] The key component of this campaign is the use of a medicines list - encouraging everyone who takes medicines regularly to keep an up to date list.[22] To inform implementation of the campaign people's views on the role of PHML in routine medication management are required.

The aim of the study is to examine attitudes to PHML among patients, carers and healthcare professionals (HCPs) and investigate how PHML are routinely used. A secondary objective is to identify barriers and facilitators to widespread integration of PHML in healthcare.

METHODS

Study design and participants

Semi-structured interviews were conducted with patients taking multiple medicines, carers and medical, nursing and pharmacy staff (community and hospital-based). Social media, patient and carers groups and contacts within the research group were used to obtain a purposive sample of patients prescribed multiple medicines (5+ medicines) with at least one chronic long-term illness and a separate sample of carers, unrelated to recruited patients, who care for people who are prescribed 5+ medicines. Sampling strata were age, gender and region. Patients with cognitive/severe functional impairment, non-English speakers were ineligible. Recruitment continued until saturation - when no new information emerged - was reached.[23]

A purposive sample of HCPs i.e. anyone/group involved with prescribing of medicines in [anonymised for review], medicine administration and/or information provision (GPs, hospital doctors, pharmacists and nurses) - was generated through social media, emails/newsletters from the [anonymised for review] and contacts within the research group. Sampling strata were age, gender, staff grade and region. Interested participants received an information leaflet and consent form and interviews were arranged. PHML were defined as any editable tool carried by patients; paper or electronic or based on documents from healthcare providers; created solely by patients or coproduced by patients and HCPs e.g. printed repeat medication lists, medication diaries, mobile applications.

Implementation frameworks

The Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF) are established frameworks which identify the theoretical and evidence-informed constructs, at organisational and individual levels, which influence behaviour.[24, 25] They have been used to develop and evaluate interventions in a variety of healthcare settings.[26-28] They were selected as appropriate tools to be used in combination to comprehensively assess patient level and system level factors that influence use of PHMLs. The CFIR has 39 constructs associated with successful implementations across 5 domains – Intervention characteristics, Outer setting, Inner setting, Characteristics of individual and Process.[24] The TDF is a synthesis of 33 theories of behaviour change clustered into 12 domains and provides a theoretical lens to view the cognitive, affective, social and environmental influences on HCP and patient's behaviour.[25]

Interviews

Semi-structured topic guides were developed from literature review and informed by the CFIR and TDF (See Supplementary file). Interviews were conducted by phone with a postdoctoral researcher [anonymised for review], between February and August 2021 and lasted between 18-68 minutes (mean 35 minutes). Recordings were transcribed verbatim and anonymised and made available for participants' feedback/correction. Ethical approval was obtained from the [anonymised for review] in July 2020 ([anonymised for review],) and all participants provided informed consent.

Data analysis

Thematic analysis was conducted based on the Framework approach, with CIFR and the TDF informing the analysis framework.[29] The 12 domain TDF was used for the purpose of this study. An overview of the data set was initially obtained and after familiarisation, investigators [anonymised for review], independently coded 10% of interviews. Results were then compared and discussed to develop a coding index based on CIFR and TDF applied to the remainder of the interviews. The index was then applied deductively to the data and used to construct a set of thematic charts categorised according to key CFIR and TDF domains. The software package NVivo 10 was used to facilitate analysis. Key/dominant domains were identified based upon previous research criteria: (i) strong views - discussed at great length/intensity; (ii) frequently expressed views and (iii) conflicting views within the domain.[30] Each domain was plotted on a separate thematic chart and grouped into key overarching themes (see Figure 1). The Standards for reporting qualitative research (SRQR) guidelines were adhered to throughout this study.[31]

Patient and public involvement

Key stakeholders were involved in the conceptualisation of the study. We invited the PPI consultative group to provide feedback on recruitment methods and study materials including topic guides, recruitment documents, information sheets, consent forms etc.

RESULTS

Characteristics of study participants

A total of 39 interviews with 21 HCPs and 18 non HCPs (patients and carers). The majority of interviewees were female (n = 29, 74%) with a median age of 60 years (IQR=52-68) for patients, 55 years (IQR=48.5-57) for carers and 45 years for HCPs (IQR=37-48). See *Table 1: Characteristics of participants*.

Table 1: Characteristics of participants (n=39)

Demographics	*Frequency*	*Demographics*	*Frequency*
Age (years.)		***Gender***	
Below 40	*10*	*Female*	*29*
41-50	*12*	*Male*	*10*
51-60	*10*		
61-70	*5*		
71-80	*2*		
Group		***HCP role***	
HCP	*21*	*Doctor*	*8*
*Patient**	*9*	*Pharmacist*	*9*
Carer	*9*	*Nurse*	*4*
Region		***Area***	
East	*13*	*Rural*	*22*
West	*11*	*Urban*	*17*
South	*15*		

** All patients used PHML*

Summary of overarching themes, CFIR and TDF domains

Three overarching themes were identified: (1) attitudes to PHML; (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML. Within these themes, five dominant CFIR domains were identified with associated constructs: (1) Intervention characteristics - *design quality & packaging, adaptability*; (2) Characteristics of Individuals - *knowledge & beliefs about intervention*; (3) Process – *engaging*; (4) Inner setting – *implementation climate* and (5) Outer setting – *patient needs & resources*. Twelve TDF domains were identified with four dominant domains: *Environmental context & resources*; *Beliefs about consequences*; *Behavioural regulation (barriers/facilitators)* and *Professional/social role & identity*.

Summary of subthemes within overarching themes

Three overarching themes were identified: (1) attitudes to PHML; (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML. Within these themes, five dominant CFIR domains were identified with associated constructs: (1) Intervention characteristics - *design quality & packaging*; (2) Characteristics of Individuals - *knowledge & beliefs about intervention*; (3) Process – *engaging*; (4) Inner setting – *implementation climate* and (5) Outer setting – *patient needs & resources*. Twelve TDF domains were identified with four dominant domains: *Environmental context & resources*; *Beliefs about consequences*; *Behavioural regulation (barriers/facilitators)* and *Professional/social role & identity*.

Each of the overarching themes and related subthemes are described below and where appropriate, illustrative anonymised quotes are included. See Supplementary Table 1.

Attitudes to PHML

Participants expressed both positive and negative attitudes to lists which mapped onto three CFIR domains and four TDF domains - see supplementary table 1.

All interviewees positively assessed lists, believing them to have multiple benefits for patients, carers and HCPs. The three groups believed that lists were empowering for patients, in particular knowing, what medicines they were taking, understanding why they were taking them as well as the importance of having a record of their medicines on their person. It was also felt that keeping a list increased awareness of the purpose of their medicines could improve adherence. Lists helped them to manage multiple/changing medicines across different healthcare settings and were identified as beneficial in emergencies, out of hours services, at initial diagnoses and in transitions across healthcare settings.

All groups believed that lists could assist patient/HCP interactions – reduce confusion/stress of emergency admissions or improve communication during consultations:

> "every time you go to your cardiologist they ask what medications you're on…I always find that I can just give them that [list]"
>
> (DS300064, patient)

.

HCPs also identified additional clinical advantages such as reductions in medicine errors and unused/wasted medicines. They highlighted the issue of excess medicines for many patients as a result of poor or sporadic adherence.

Negative attitudes were also expressed - all groups had concerns about the accuracy of lists and were aware that many older patients could struggle to keep lists up-to-date. Most HCPs had encountered inaccurate lists and often used visual cues to assess the accuracy of lists; lists with worn/creased appearance, numerous errors or crossed out texts created doubts about accuracy and increased their scrutiny. However, HCPs described the steps they took to check/confirm lists as part of their professional practice:

> "I wouldn't have an issue with that [accuracy]. Like I'm not going to prescribe off a list that a patient comes in with. I'm going to check..I mean it's good practice"
>
> (DS300045, hospital nurse)

HCPs also had concerns about the impact of stigma on use of lists:

> "there's still a lot of stigma around mental health conditions…so that could potentially be a problem, people might leave that off the list"
>
> (DS300053, pharmacist)

HCPs supported PHML and considered them to be useful tools however they also considered that lists were not extensively used by their patients. Some HCPs reported that only a minority of patients produced lists when prompted/questioned about their medicines during consultations.

Function and preferred features of PHML

This theme included the following factors: variation in use of lists; evolving list function (multiple, adapted/customised lists), varied information needs and HCP support for lists in their practice. These factors mapped onto four CFIR domains and six TDF domains – see supplementary table 1. All patients that were interviewed used lists and identified some features which facilitated that use – customised lists, simple lists with minimal information. Most of the patients reported they wanted to know what medicines they were taking and the majority kept a list as part of their routine medication management. They used lists in variety of ways and found practical benefits, for example, when medicines were changing, while travelling or in hospital:

> "I've used it [list] quite a number of times now, I was in hospital there recently, quite a number of times I used it, it's a very, very valuable thing to do"
>
> (DS300054, patient)

Among those using lists, the function of lists evolved over time. Some patients reported initially using lists as a short-term memory aid until they progressed to a more stable medication regime. Many patients and carers reported that they used multiple lists, creating numerous versions – both paper based and digital. This replication ensured they would have access to their list when needed. Patients were confident in their ability to maintain their lists and provided detailed descriptions of how they had customised their lists to suit them:

> "I have the little stick-on labels that the pharmacist puts on the pack, I have all those on a piece of paper, folded up and it's in my wallet"
>
> (DS300061, patient)

Many carers also used lists which they had adapted from prescriptions or from blister packs.

There were some differences between patients and HCPs on the level of information - in terms of content and detail - that should be included in PML. Some patients wished to keep their lists simple and easy to use with minimum information:

> "So I suppose you can make it as easy or as complicated as you like but I just list them and list the dosage, the strength and that's it"
>
> (DS300046, patient)

In contrast a lack of detailed information in a number of lists was an issue for most HCPs. They were concerned that lists may not reflect over-the-counter (OTC) or herbal medications:

> "people don't look at stuff that they get in a health food shop or that they buy online as a medicine because its herbal..they're the ones that they don't tell you about"
>
> (DS300065, GP)

There was agreement across groups that the desire for general information on medicines can vary - some patients want to know everything while others basic information about their medicines. All HCPs, patients and carers believed that effective patient/HCP communication was needed to ensure appropriate information was provided:

> "I suppose people are looking for different things..So I suppose it's to get the right balance"
>
> (DS300046, patient)

Many patients described positive engagement with HCPs about medicines, who they felt were open to being asked about medicines and saw lists as useful tools for managing medicines. Some HCPs reported inclusion of lists in their routine consultations particularly with their elderly patients.

Barriers and facilitators to future use of PHML

Across the groups a number of barriers to using medicine lists were commonly reported - time constraints, difficulty in maintaining lists for particular patients and confusion about generic medicines. All groups identified similar facilitators - encouragement from key HCPs and access to multiple types of lists formats. Some facilitatory factors reported by patients and carers included patients' confidence in their self-efficacy to maintain accurate lists, the role of internal and external strategies and social support from family in managing medicines. Barriers and facilitators mapped onto five CFIR domains and five TDF domains – see supplementary table 1.

Barriers and facilitators to using medicine lists recognised across all groups (HCPs, patients, carers)

There were similarities across groups in reported barriers to patient held lists. The most frequently reported practical barrier across the groups was HCPs' lack of time:

> "I think it's all part of the whole how busy we are and there would be an awful lot to squash into the consultation…but a lot of the time you are time constrained"
>
> (DS300067, GP)

All the groups (HCPs, patients and carers) reported that particular groups such as older patients, those with cognitive impairment, literacy issues or those on multiple/changing medication would have difficulties with keeping medicine lists. All groups believed that many older patients accepted the authority of HCPs and would not question them about their medicines. In addition, they all expressed their concerns about the confusion generic medicines can cause for patients and carers:

> “they just don’t know what they’re taking to be honest with you, you know the elderly people get very confused with the generics”
>
> (DS300087, public health nurse)

There was agreement across all the groups that key HCPs – particularly pharmacists - had an important role in facilitating use of lists. GPs and public health nurses were also mentioned as trusted HCPs that could engage with patients and carers to use lists.

HCPs, patients and carers believed that practical tools such as compact (wallet-sized) versions of patient lists or digital options (phone app) could increase their use. However, all groups were aware that digital resources could exclude many older patients who might not use a phone app/have smart phones.

Barriers and facilitators to using medicine lists relevant to patients and carers

Generally, patients reported they were confident in their ability to maintain their lists and this self-efficacy in managing medicines was often linked to internal and external strategies. Internal strategies could involve cognitive activities such as linking task with routine behaviours e.g. updating lists after each GP visit, taking tablets at meal times. Patients and carers also established external strategies to support adherence – medication lists; pill box organisers; blister packs, verbal reminders from family or memory aids with audio/visual cues.

Patients and carers described the important role that family support had in medical management, which included accessing information on medicines or creating lists:

> "I have a list of my drugs that I take, the tablets I take and [spouse] put it on my phone just in case I haven't got it on me. She put it into my phone."
>
> (DS300063, patient)

Patients identified a key facilitator of HCP communication about medicine and the value of lists – using simple non-medical language that the patient can understand:

> "..tell people why and speak to them in their own language."
>
> (DS300061, patient)

Carers supported lists as practical aids but highlighted a general lack of engagement with them by HCPs on the benefits of lists for caregivers. They also identified specific concerns about privacy and right to control of lists:

> "The information should be in the person's house and not taken away by the carer. That's my only concern"
>
> (DS300080, carer)

Barriers and facilitators to using medicine lists relevant to HCPs

The majority of carers used blister packs and considered them a valuable resource. However, some HCPs identified them as potential barriers and reported their reservations that blister packs could reduce patient knowledge and potentially led to errors:

> "I would see blister packs as a big source of medication errors. The patient no longer knows what the medicines are for at all. And doesn't have an idea of their names anymore at all either"
>
> (DS300059, GP)

Generally, HCPs believed they had the necessary skills to engage with patients on medicine lists. They focused on the value of regular medication reviews to reduce confusion about medicines and identify unused medicines/errors. They also highlighted the key role of medication counselling – both structured and opportunistic:

> "if there's a document there that's been filled in by a doctor and if it's given to the person, they will have that..So it will be..quite opportunistic"
> (DS300043, hospital doctor)

DISCUSSION

This study explored attitudes and use of PHML among HCPs, patients and carers of those taking medicines. We identified three key themes: (1) attitudes to PHML (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML which linked to five dominant CIFR domains and four TDF domains. Patient and system level influences that can inhibit and promote use of lists were identified using the CFIR and TDF. The frameworks provide a platform for the refinement of evidence-based interventions, such as the [anonymised for review], to facilitate behaviour change. Links can be made from dominant CFIR and TDF domains to tools for designing behavioural change interventions such as the Behavioural Change Wheel (BCW) and Behavioural Change Taxonomy (BCTT).[32,33] The BCW has nine intervention functions that can be used to enable behaviour change e.g. education while the BCTT lists the techniques that can be used to deliver these functions e.g. feedback, social support. [32,33] Pertinent intervention functions and supporting policies to promote use of PHML in the future can thus be identified.

Overall all groups reported a range of perceived benefits – both practical and psychological – from using PHML. These included empowering patients to manage their medicine safely, aiding memory, improving adherence and improving communication during patient/HCP interactions. This is similar to other studies illustrating benefits as well as beliefs among patients, carers and HCPs that accurate lists were a valuable tool in improving medication reconciliation and patient safety.[15,17,20].

An interesting finding related to the day-to-day use of PHML across settings. It has been previously established that many patients have some type of medicine list when admitted to hospital.[15-22] We found that patients and carers had used PHML to bridge information gaps in a variety of healthcare settings and during care transitions. However, our research also identified further use of medicine lists by patients and carers in a range of settings - routine medical appointments; emergencies; hospital discharge; outpatient clinics, when medicines were changing; while travelling, during respite care and when the main carer was absent.

A key finding of this study was related to the preferred features of PHML which suggests a divergence between patients and HCPs on the amount of information that should be included. Some patients believed a simple list with minimum information was easy to use. This contrasted with concerns among HCPs that lists with insufficient information may not reflect patients' adherence or list all medicines that are being taken. Non-adherence to prescribed medicines is a significant issue in polypharmacy, particularly among older patients[34] and patients with multimorbidity frequently manage complex medication regimes. Our findings suggest that a variety of list formats - e.g. compact version, paper/digital version with additional fields for more detailed information - could encourage patients to include all the medicines they are taking. Access to a range of formats could help address the divergence of opinion between patients and HCPs in relation to list content.

All groups had concerns about the accuracy of lists and identified specific barriers to their use among older patients. Older patients taking multiple medicines are likely to experience benefits from using medicine lists.[21] They can be poorly informed about their medicines and often not understand their increased risk of adverse drug reactions.[35] However all groups in this study believed that older patients could struggle to keep their lists accurate and up to date. These concerns are supported by studies among older patients at hospital admission that found medicine lists can display poor accuracy when compared to pharmacy records –with many older patients taking additional medicines or not listing dispensed medicines.[22,34,36] Support from HCPs; who prioritise older patients with multiple medicines for regular reviews and support from families and caregivers in maintaining accurate lists could benefit older patients and improve health-related quality of life.[22,36,37]

Consistent with previous research[15,38] our findings suggest agreement across all groups that HCPs, specifically pharmacists, had a key role in encouraging use of PHML. As in previous studies[39] patients identified the use of simple non-medical language by HCPs to explain medicines to their patients as an important facilitator. These findings suggest that trusted HCPs such as pharmacists could have an essential role in promoting PHML. However, it should be noted that hospital pharmacy staff who had not received training about patient held medicine information tools (e.g. 'My Medication Passport') lacked confidence to promote them.[18] Therefore, appropriate training and guidance about PHML, with a focus on providing clear, simple information; is essential for pharmacists.

Social support was a significant factor for patients and carers in creating medicine lists. Our study indicated that family members/carers often encouraged patients to use lists or some family members/carers had responsibility for keeping accurate lists of patients' medicines. This is consistent with previous research which found that family support can increase medicine adherence and medicine management generally transfers to family carers when cognitive function decreases.[40-42] Similar to other studies[43-45] our findings indicate that effective medication counselling - structured (e.g. medication review) or opportunistic (e.g. routine dispensing) - can increase patients' use of lists. In this context peer support from colleagues could encourage less experienced HCPs to identify opportunities during everyday practice to engage with patients about PHML.

Strengths and limitations

A major strength of this study are the perspectives which have been gathered from a wide range of relevant participants – patients, carers and HCPs. However, it should be noted that those who were interviewed were motivated to participate and may have distinctive opinions about PHML. Efforts were made to address selection bias with a diverse group of participants with a variety of clinical experience and health conditions. However, there were some challenges related to the Covid-19 pandemic -recruiting patients and carers proved difficult and resulted in lower numbers in the non-HCP group compared to the HCPs. Initial plans to conduct focus groups also had to be amended and all interviews were conducted by telephone which may have compromised rapport with the loss of non-verbal cues.

Implications for practice and policy

Our findings have implications for medication safety campaigns such as [anonymised for review], which empower patients and carers to engage with their medicines. They suggest that future implementation and adoption of such campaigns into clinical practice, may be improved by addressing shared concerns about accuracy and supporting key HCPs in encouraging patients to keep lists. Effective promotion of PHML by HCPs as a beneficial patient tool will require appropriate training. Practical strategies to increase the accuracy of lists could include prioritising older patients with multiple medicines for medicine reviews, opportunistic medication counselling or encouraging family members to support patients in keeping up-to-date lists.

CONCLUSION

This study comprehensively assessed the factors that can influence attitudes towards and use of PHML. It offered new insights into the use of lists across a range of settings and identified shared concerns among HCPs and non-HCPs about list accuracy. Another novel finding was the divergence in opinions between patients and HCPs on the level of information that should be included in lists. Future refinement of evidence-based interventions which addresses these factors could increase the use of PHML.

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Author contributions

[Anonymised for review] conceived and designed the study; [anonymised for review] collected the data, [anonymised for review] contributed to analysis and interpretation of data. All authors critically reviewed the manuscript and approved the final version.

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Competing interests

None declared.

Consent for publication

Not required.

Ethical approval

Ethical approval was obtained from the Royal College of Surgeons Ireland research ethics committee (REC: 202005008).

Data availability statement

Data not publicly available due to privacy or ethical restrictions.

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FIGURE LEGEND

Fig 1: Flow diagram of coding process – framework analysis. Thematic analysis was conducted based on the Framework approach, with the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF). Key/dominant domains were identified and each domain grouped into overarching themes. Five dominant CFIR and four dominant TDF domains were identified, leading to three overarching themes: (1) attitudes to patient held medication lists (PHML); (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML.

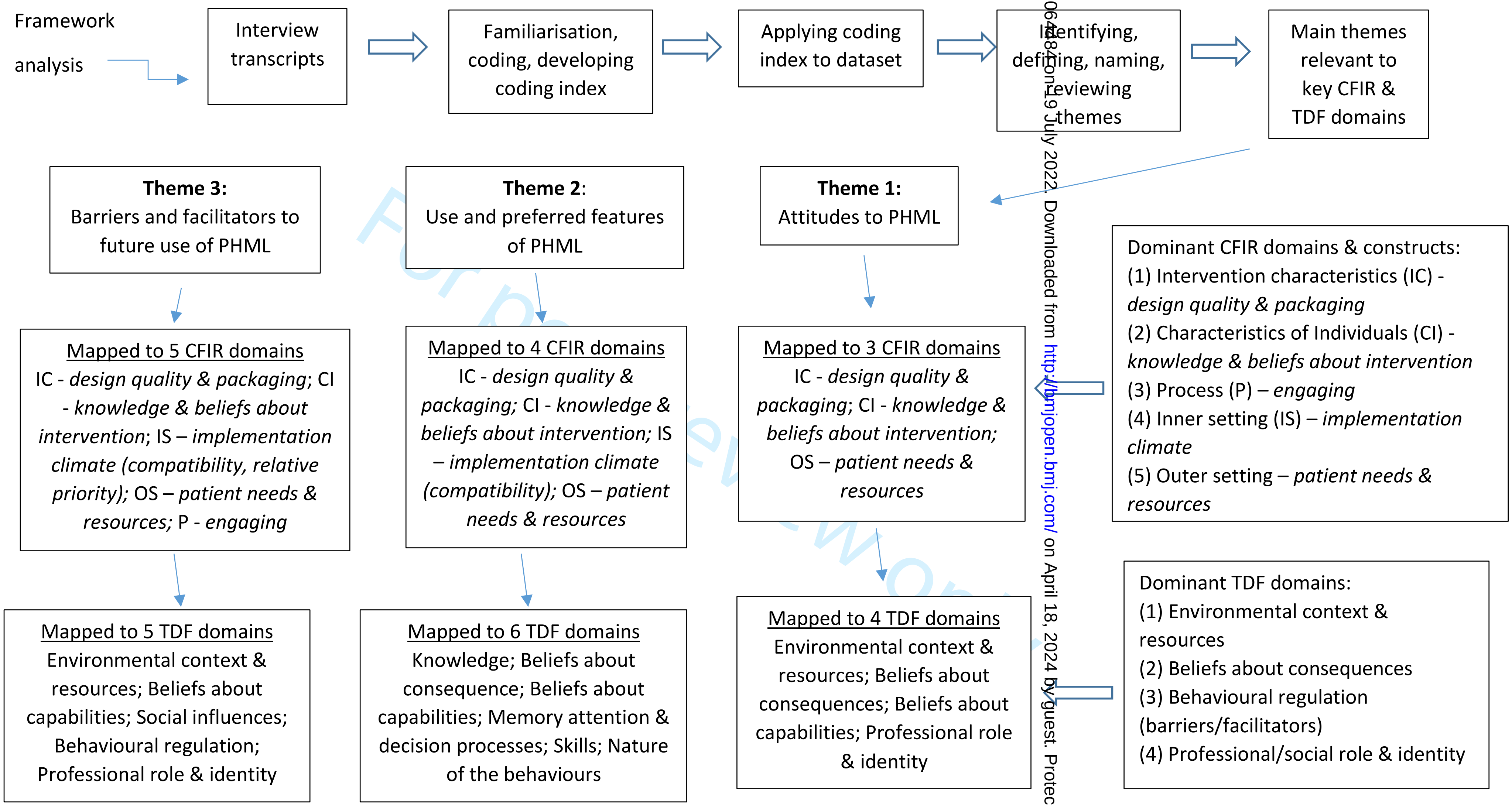

Figure 1: Flow diagram of coding process – framework analysis (CFIR=Consolidated Framework for Implementation Research; TDF=Theoretical Domain Framework)

Supplementary Table 1: CFIR & TDF analysis: sub-themes, themes & illustrative quotes

Themes & related subthemes	CFIR domains & constructs	TDF domains	Illustrative quotes
<u>Attitudes to patient held lists:</u> **Positive** - **empowering** - **increase adherence/awareness** - **reduce errors/unused meds** - **aid to patient/HCP communication across healthcare setting, transitions of care, while travelling** - **reduce** **Negative** - **concerns about accuracy** - **concerns about stigma** - **visual cues used by HCPs to assess lists** - **HCPs report limited use of lists among patients**	Intervention characteristics - *design quality & packaging*; Characteristics of individuals - *knowledge & beliefs about intervention;* Outer setting – *patient needs & resources*	Environmental context & resources; Beliefs about consequences; Beliefs about capabilities; Professional role & identity.	<u>Positive attitudes</u> *“it’s kind of empowering the person to actually have some self-determination on their, you know, on the drugs they’re on and to understand why they’re on the drugs, and to understand like, you know, as well that it’s important for them to have a record of it on their person” (DS30076, hospital nurse)* *“You know they’re not going to take it [medicine] if they don’t understand what its going to do for them…they need to know, everybody needs to know why they’re doing something.” (DS30046, patient)* *“they [patients on multiple medicines] are where the potential for making medication errors is highest..it’s probably the most important that they have a list, they’ll be the sickest, they’ll be the ones going to hospitals and appointments the most frequently.” (DS300056, GP)* *“lots of times you’ll do the repeat prescription and they’ll say I don’t need that I’ve loads of that and you’re ok so you’re not taking that, why?” (DS300065, GP)* *“certainly for out of hours..it makes a big difference..very often sometimes like that in out of hours setting, they’re out of their comfort zone..So I think definitely for out of hours and for if somebody had to go to hospital” (DS300065, GP)* *“I was traveling extensively, I mean on my holidays..So I always kept, I was always aware that I needed to have something that I could produce to somebody.” (DS300054, patient)* <u>Negative attitudes</u> *“sometimes the ones they pull out of their wallet is 2 years old. And in the meantime we have changed things..they can be helpful but they can be very inaccurate.” (DS300059, GP)*

			“certainly if there’s like misspellings and that you’d have to have some doubts as to whether, you know, there are other errors…Like we’re all influenced by presentation so if something is presented nicely and well done and thought and effort has gone into it and it’s been kept well then, you know, that creates a better impression” (DS300044, pharmacist)
Function and preferred features of patient held lists: - **variation in use** - **evolving lists - multiple versions, customised lists** - **varied information needs related to content and detail** - **HCP support for lists (part of routine practice)**	Intervention characteristics - *design quality & packaging* Characteristics of Individuals - *knowledge & beliefs about intervention* Inner setting – *implementation climate (compatibility)* Outer setting – *patient needs & resources*	Knowledge; Beliefs about consequence; Beliefs about capabilities; Memory attention & decision processes; Skills; Nature of the behaviours	Variation in use *“Well I was with a consultant there about a week ago and I gave him the list and he was delighted” (DS300054, patient)* Multiple lists *“So I have to carry a list everywhere, I have one in my bag and one in the car. If I was ever stuck they’re there” (DS300064, patient)* Customised lists *“I have it in the phone, I also have, you know the little stick on labels that the pharmacist puts on the pack, I have all those on a piece of paper, folded up and its in my wallet as well. And I also keep the copy of the prescription in my folder here at home” (DS300061, patient)* *“normally 99% of the times it’s a print out from my GP with a list of my meds, all of my meds on it and I photograph it, so its in my photographs. I’ve also printed off the photograph and cut it down to size and its actually stuck on to my phone as well.” (DS300062, patient)* HCP support *“every time patients come in, especially elderly, kind of complicated patients we generally would go through their medications with them all the time anyway” (DS300065, GP)* *“…an automatic thing if you’re doing a prescription for a patient..particularly a repeat prescription…I take that as the cue” (DS300056, GP)*

Barriers & facilitators to future use of lists: **Barriers** - **lack of time** - **difficult for older patients, those with cognitive impairments, literacy issues, multiple/changing medicines** - **perceived reticence among older patients** - **generic medicines cause of confusion** - **lack of engagement about PHML from HCPs*** - **concerns about privacy*** - **blister packs**[#] **Facilitators** - **role for trusted HCPs (pharmacists, GPs, public health nurses)** - **practical tools e.g. compact (wallet-sized version) or digital options (phone app)** - **self efficacy**[##] - **internal & external strategies** e.g. routine behaviour, medicine lists, blister packs*, memory aids (phone apps)** - **family support**	Intervention characteristics - *design quality & packaging* Characteristics of Individuals - *knowledge & beliefs about intervention* Inner setting – *implementation climate (compatibility, relative priority)* Outer setting – *patient needs & resources* Process - *engaging*	Environmental context & resources; Beliefs about capabilities; Social influences; Behavioural regulation; Professional role & identity	**Barriers** HCPs' lack of time *"you could ask to talk to the pharmacist and they're so busy that they can't talk to you" (DS300064, patient)* Difficulties for older patients *"some older patients..a lot of them would be on polypharmacy, not all of them but most of them, some of them aren't tech savvy" (DS300065, GP)* Reticence in questioning HCPs *older people just think well the doctor knows..they just see the doctor as god" (DS300079, carer)* Confusion associated with generics *"sometimes, they'll [his tablets] change in name and that can be very confusing actually, these generic medications where the names are changing, that's a big thing now I just find that's really difficult" (DS300051, carer)* Lack of enagement with carers from HCPs *"I think that there's no information about this [lists] coming from you know the GPs or the public health nurses or even from the hospitals…none of this information is passed on from any of those people." (DS300084, carer)* **Facilitators** Role for key HCPs *"It has to come from the GP or the pharmacist because they're the ones that are prescribing the medicine and giving you the medicine." (DS300051, carer)* *"I think pharmacists have a really big part to play in it" (DS300046, patient)* *"That's our role. We are supposed to counsel and we are supposed to manage medication" (DS300044, pharmacist)*

- **use of simple language by HCPs##** - **regular medication reviews for specific patients# (older/multiple medicines)** - **medication counselling#**			Digital tools *"I'd love something like that [phone app] because, well most people now live by their phone don't they really, it's all apps, everything is on an app. I'd love it." (DS300051, carer)* Routine behaviour *"So you know when we are sitting down having a cup of tea or something at the table that's when, like I never forget taking my tablets. Just got used to it now simple as that" (DS300063, patient)* Memory aids *"I've an app on the phone that reminds me to take it" (DS300078, patient)* Blister packs* *"I think they're fantastic because there can be no mistakes made with medication when its blister packed…You couldn't make a mistake if you tried" (DS300085, carer)* Family support** *"I've always had a list in the house for him…we're always coming in and out so..if they ever need it I'd have a list there in the house stuck up on the wall" (DS300051, carer)* Regular medication reviews## *"one time they had a pain in their big toe and they were prescribed a painkiller and that suddenly stayed in their regular prescription. So they have bottles and bottles and bottles of paracetamol which they probably take once every six months…so they're definitely is room there for, definitely for review for medications." (DS300073, GP Nurse)*

*reported by carers; **reported by patients & carers; #reported by HCPs patients; ##reported by patients

Interview topic guide: Healthcare professionals’ views and experiences of the ‘Know Check Ask’ campaign

Script 1: HCPs (16 questions)

Introduction

“Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the ‘Know Check Ask’ campaign and message. Is it still a good time for you?”

Verbal consent

“Just to remind you that I’m going to record our conversation…is that ok?”

Start recording

“I’ll start the tape now.”

Assure of confidentiality

“Please be assured that everything you say will be kept confidential.”

“Before we start would you like to know more about the study?”

Summarise the purpose of the study

The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the ‘Know Check Ask’ medication safety campaign, for people who use medicines and carers of those using medicines. The key aim is to encourage people to keep a list of their medications and bring it to any appointments or admission. The Know Check Ask campaign is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of HCPs across Ireland to find out what you think of this campaign, how you think it can be expanded or improved."

Section 1: Awareness of 'Know Check Ask' (KCA) campaign

Q1. "So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?"

Prompts: "When did you first hear about it? What were your initial thoughts about it?"

Q2. "Why do you think the Know Check Ask campaign was introduced?"

Prompts: "The HSE by introducing this campaign hoped to improve medication safety at transitions of care/patient safety with medicines/improve quality of medication history at OPD appointments/admission. What do you think about this? The HSE also hoped to resolve problems with getting good medication history/adherence/empower people taking medicines. What do you think about this objective?"

Q3. "There are support/resources available to assist you in encouraging people using your service to keep a list of medicines and/or promote the KCA message - are you familiar with how these resources and support can be accessed?"

Prompts: "What types of support e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists? Have you used the posters, medicine lists, videos, information on the website? If you haven't used them why not?"

Section 2: Resources and support

"So now we'll move on to some questions about improving the resources that are available to help you apply the KCA message."

Q4. "We asked you to look at the safer meds website - what do you think about the quality of the resources/materials (posters, medicine lists, videos)? Is there anything that can be used or could be more effective that you'd like to have available?"

If unaware of resources "What tools and resources could help HCPs promote KCA, encourage the person keeping a list and the HCP using it? How can these resources best be provided so it's easy for HCPs to use them?"

Q5. "In order to gain support for this campaign within your profession what resources do you think are needed? What support is required e.g. digital tools/an app?"

Prompts: "Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could HCPs feel it's worthwhile and easy to promote it?""

Section 3: Views/perceptions of KCA campaign

"So now I'd like to ask you about your views of the campaign and also get some information about what your colleagues think of it."

Q6. "What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?"

Prompts: "What do you think about patients keeping a list of their medications? How do you think it could be used? e.g. hospital admission, transitions of care etc. What impact do you think it would have on your relationship with your patients? What reservations do you have (e.g. lack of trust in patient held lists)?"

Q7. "Have you applied any aspects of the Know Check Ask campaign or its message in your workplace? Are you using something similar to the Know Check Ask Campaign in your practice, could you tell me about that?"

Prompts: "For example do you encourage people attending your healthcare setting to keep a list of medications? If so, how do you use this list? Do you encourage people to know what their medicines are for, check the dose and frequency and ask you/HCPs about the medicines if they have any questions? Do you use the KCA campaign materials/message? Is there anything that you find particularly helpful/useful about the KCA campaign e.g. helped you discover any medication problems/issues?"

If aware of campaign but not applying it in practice: "Is there any reason why you think it is not a good idea to encourage people to keep a list of their medications? Prompts: Clinical reasons/practical reasons e.g. too busy?"

Q8. "So you have used the KCA approach/resources - what effects have you seen?"

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you give

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: “If you were to use the KCA approach/resources what benefits do you think you would see? What impact do you think it would have on your day to day care/practice?”

Q9. “What do you think are the challenges/difficulties about this campaign? What might prevent people using a medication list, asking, checking about medicines?”

Prompts: Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person’s list? Openness of HCP asking about any issues with medicines/if person has a list?”

Consider from individual’s perspective -awareness of KCA message/benefits of keeping a list/confidence to share it with their HCP/access to the tools e.g. list? Can you think of any reasons people might not want to use it? Is it difficult for particular people to use/engage with?”

Q10. “In general how do you think your profession perceives this campaign? What do they think of it? Do you know of colleagues who have heard of the KCA or who apply any aspects of the KCA with people attending their service e.g. keeping a list of medicines?”

Prompts*:* “Do opinions about KCA and people keeping a medication list differ among your colleagues? Was the KCA campaign welcomed by your colleagues?

If colleagues not aware or doesn't know colleagues' opinions on KCA: "What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get HCPs on board?"

Section 4: Applying the KCA campaign

"Now I'd like to ask you some practical questions about the KCA campaign."

Q11. "In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use where you work? Who is best suited to doing that (what role) and what could they do?"

Prompts: (HCP factors) "e.g. clinical experience, medication knowledge, time, role. Do you think other HCPs might be better placed to promote the KCA? Could a pharmacy technician/practice nurse/OPD secretaries promote it?"

Q12. "Do you have any difficulties remembering to promote the KCA with people (e.g. giving them a blank medication list, encouraging people to ask and check about medicines) in your practice?"

Prompts: "Do you use any techniques/cues to help you to remember to apply it with people attending your healthcare settings?"

If not using KCA, "If you were to use the KCA campaign, how would you integrate it into your daily practice? What are the techniques and cues you would use to remember to actively promote and engage with the KCA message?"

Q13. "Do you ever intentionally decide not to use a person's medication list, or not give them a blank list, or not to encourage them to check and ask about their medicines [pause] and why is that?"

Prompt: (HCP perceptions of patient-held lists) “Do you trust a list prepared by the person vs GP/pharmacy?”

Section 5: Future improvements

“So now I’d like to ask you how you think the KCA message could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: “Where or by whom could the message be promoted to greatest effect? Are there other, better ways of getting improving safe use of medicines?”

Q15. “If you were in charge of the health service, what would you do to encourage and enable people to understand and check their medicines and communicate about them with HCPs more effectively, particularly at transitions?”

Prompts: “What kind of changes do you think need to be made to healthcare organisation to support people to understand and check their medicines and to use a medicines list? What should the HSE do overall? What local actions are needed to support people to use a medicines list?”

Closing question

Q16. “So to finish up is there anything else you would like to discuss?”

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.9;HCP]

Interview topic guide: Patient's views and experiences of the 'Know Check Ask' campaign

(16 questions)

Introduction

"Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the 'Know Check Ask' campaign and message. Is it still a good time for you?"

Verbal consent

"Just to remind you that I'm going to record our conversation…is that ok?"

Start recording

"I'll start the tape now."

Assure of confidentiality

"Please be assured that everything you say will be kept confidential."

"Before we start would you like to know more about the study?"

Summarise the purpose of the study

"Before we start I'd just like to tell you a bit about the study. The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the 'Know Check Ask' medication safety campaign, for people who use medicines and carers of those using medicines. The key action the campaign promotes is that people keep a list of their medications and bring it to any appointments or admission. The Know Check Ask is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of people using medicines across Ireland to find out how you manage your medicines, what you think of this campaign, how you think it can be expanded or improved."

Section 1: Awareness of 'Know Check Ask' (KCA) campaign

Q1. "So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?"

Prompts: "When did you first hear about it? (online; posters; recent tv ads; HCP). What were your initial thoughts about it?"

Q2. "Why do you think the Know Check Ask campaign was introduced?"

Prompts: "The HSE by introducing this campaign hoped to empower people taking medicines/help with problems when people are admitted or leaving hospital/have changed GP or pharmacy. What do you think about this?"

Q3. "There are support/resources available to assist you in keeping a list of medicines and/or apply the KCA – have you used the medicine lists, videos, information on the website? If you haven't used them why not?"

Prompts: "e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists."

Section 2: Resources and support

"So now we'll move on to some questions about improving the resources that are available to help you apply the KCA message."

Q4. "There are a number of support/resources (medicine lists, videos, www.safermeds.ie) that are available to assist you in keeping a list of medicines and/or apply the KCA – what do you think about the quality of these resources/materials? Is there anything that can be used or could be more effective that you'd like to have available? If you are looking for information on safe medications which website would you use?"

If unaware of resources "What tools and resources could encourage the person keeping a list? How can these resources best be provided so it's easy for people to use them?"

Q5. "In order to increase the use of this campaign among people who use medicines what resources do you think are needed e.g. digital tools/an app?"

Prompts: "Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could people feel it's worthwhile to keep a medicine list and easy to use?"

Section 3: Views/perceptions of KCA campaign

"So now I'd like to ask you about your views of the campaign and also get some information about what other people who take medicines think of it."

Q6. "What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?"

Prompts: "What do you think about people keeping a list of their medications? Are there certain times/situations when you think it would be particularily useful to have a list? e.g. hospital admission, transitions of care, changes in medicines etc. What impact do you think it would have on your relationship with your healthcare professionals? What reservations do you have (e.g. burden, concerns about accuracy of list)?

Do you think a list prepared by the person taking medicines would be trusted by HCP vs GP/pharmacy?"

Q7. "How do you currently manage your medications - keeping a list of medications? How long have you been keeping a list?"

Prompts: "Has the KCA helped you discover any medication problems/issues?"

If aware of campaign but not applying it in practice: "Is there any reason that you think it is not a good idea to keep a list of medications/use the KCA?"

Q8. "So you keep a list – has it helped, have you found it useful?"

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you provide

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: "If you were to keep a list do you think it would be helpful/useful?"

Q9. "What do you think are the challenges/difficulties about this campaign? What might prevent people using a medication list, asking, checking about medicines?"

Prompts: Consider from individual's perspective - awareness of benefits of keeping a list/confidence to share it with their HCP/access to the tools e.g. list/ records not shared across systems? Can you think of any reasons people might not want to use it? Is it difficult for particular people to use/engage with?”

Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person’s list? Openness of HCP asking about any issues with medicines/if person has a list?”

Q10. “In general what do people think of the campaign? Do you know of people taking medicines who have heard of the KCA or who apply any aspects of the KCA e.g. keeping a list of medicines?”

Prompts*: “*Do opinions about KCA and people keeping a medication list differ among people you know who take medicines? Was the KCA campaign welcomed by them?

If people (s)he knows are not aware or doesn’t know peoples’ opinions on KCA:

“What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get people who take medicines on board?”

Section 4: Applying the KCA campaign

“Now I’ld like to ask you some practical questions about the KCA campaign.”

Q11. “In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use? Who is best suited to doing that?”

Prompts: (people factors) time, organisation skills, literacy, confidence.

(HCP factors) time, level of engagement - will ask if person has any medication issues/a list.

Q12. “Do you have any difficulties remembering to apply the elements of the KCA (using the medication list, asking, checking about medicines)?”

Prompts: “Are different healthcare settings an issue? If there are changes in your medicines/discontinued medicines does that create problems? Do you use any techniques/cues to help you to remember to use it?”

If not using KCA, “If you were to use the KCA campaign, how would you make it part of your medical routine? What are the techniques and cues you would use to remember to engage with the KCA message?”

Q13. “Were there times/situations when you decided not to bring a list of medicines and/or not to check and ask about your medicines. Why was that?”

Prompt: “Are there reasons (practical) why you would decide not to use the medication list/when you felt it was not worth the effort e.g. limited time during appointments, didn’t think of it?”

Section 5: Future improvements

“So now I’ld like to ask some questions about how you think the KCA could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: "Where or by whom could the message be promoted to greatest effect? Is it up to people or HCPs (or both) to promote it?

Are there other, better ways of improving safe use of medicines?"

Q15. "If you were in charge of the health service, what would you do to encourage people to manage their medicines?"

Prompts: "What do you think people taking medicines need to do to make sure they understand their medicines and let doctors, pharmacists etc know about them when seeing different doctors, HCPs?"

Closing question

Q16. "So to finish up is there anything else you would like to discuss?"

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.9;PT]

Interview topic guide: Carer’s views and experiences of the ‘Know Check Ask’ campaign

(16 questions)

Introduction

“Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the ‘Know Check Ask’ campaign and message. Is it still a good time for you?”

Verbal consent

“Just to remind you that I’m going to record our conversation…is that ok?”

Start recording

“I’ll start the tape now.”

Assure of confidentiality

“Please be assured that everything you say will be kept confidential.”

“Before we start would you like to know more about the study?”

Summarise the purpose of the study

“The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the ‘Know Check Ask’ medication safety campaign, for people who use medicines and carers of those using medicines. The key action the campaign promotes is that people keep a list of their medications and bring it to any appointments or admission. The Know Check Ask is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of carers across Ireland to find out how you manage medicines, what you think of this campaign and how you think it can be expanded or improved.”

Section 1: Awareness of ‘Know Check Ask’ (KCA) campaign

Q1. “So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?”

Prompts: “When did you first hear about it? (online; posters; recent tv ads; HCP). What were your initial thoughts about it?”

Q2. “Why do you think the Know Check Ask campaign was introduced?”

Prompts: “The HSE by introducing this campaign hoped to empower people taking medicines/help with problems when people are admitted or leaving hospital/have changed GP or pharmacy. What do you think about this?”

Q3. “There are support/resources available to assist you in keeping a list of medicines and/or apply the KCA with the person you care for – have you used the medicine lists, videos, information on the website? If you haven’t used them why not?”

Prompts: “e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists.”

Section 2: Resources and support

"So now we'll move on to some questions about improving the resources that are available to help you apply the KCA message."

Q4. "There are a number of support/resources (medicine lists, videos, www.safermeds.ie) that are available to assist you in keeping a list of medicines and/or apply the KCA – what do you think about the quality of these resources/materials? Is there anything that can be used or could be more effective that you'd like to have available? If you are looking for information on safe medications which website would you use?"

If unaware of resources "What tools and resources could encourage the carer to keep a list? How can these resources best be provided so it's easy for carers to use them?"

Q5. "In order to increase the use of this campaign among carers what resources do you think are needed e.g. digital tools/an app?"

Prompts: "Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could carers feel it's worthwhile to keep a medicine list and easy to use?"

Section 3: Views/perceptions of KCA campaign

"So now I'ld like to ask you about your views of the campaign and also get some information about what other carers/colleagues think of it."

Q6. “What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?”

Prompts: “What do you think about carers keeping a list of medications? Are there certain times/situations when you think it would be particularily useful to have a list? e.g. hospital admission, transitions of care, changes in medicines etc. What impact do you think it would have on your relationship with your healthcare professionals? What reservations do you have (e.g. burden, concerns about accuracy of list)?

Do you think a list prepared by the carer or the person taking medicines would be trusted vs GP/pharmacy?”

Q7. “How do you currently manage the medications of the person you care for - keep a list of medications? How long have you been keeping a list?”

Prompts: “Has the KCA helped you discover any medication problems/issues?”

If aware of campaign but not applying it in practice: “Is there any reason that you think it is not a good idea to keep a list of medications/use the KCA?”

Q8. “So you keep a list – has it helped, have you found it useful?”

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you provide

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: “If you were to keep a list do you think it would be useful/helpful?”

Q9. "What do you think are the challenges/difficulties about this campaign? What might prevent carers using a medication list, asking, checking about medicines?"

Prompts: Consider from carer's perspective - awareness of benefits of keeping a list/confidence to share it with HCP/access to the tools e.g. list/ records not shared across systems? Can you think of any reasons carers might not want to use it? Is it difficult for particular people to use/engage with?"

Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person's list? Openness of HCP asking about any issues with medicines/if there is a list?"

Q10. "In general what do carers think of the campaign? Do you know of carers who have heard of the KCA or who apply any aspects of the KCA e.g. keeping a list of medicines?"

Prompts*:* "Do opinions about KCA and people keeping a medication list differ among carers you know? Was the KCA campaign welcomed by them?

If carers (s)he knows are not aware or doesn't know carers' opinions on KCA:

"What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get carers on board?"

Section 4: Applying the KCA campaign

"Now I'ld like to ask you some practical questions about the KCA campaign."

Q11. "In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use? Who is best suited to doing that?"

Prompts: (carer factors) time, organisation skills, literacy, confidence.

(HCP factors) time, level of engagement - will ask if there are any medication issues/a medicines list.

Q12. “Do you have any difficulties remembering to apply the elements of the KCA (using the medication list, asking, checking about medicines)?”

Prompts: “Are different healthcare settings an issue? If there are changes in medicines/

discontinued medicines does that create problems? Do you use any techniques/cues to help you to remember to use it?”

If not using KCA, “If you were to use the KCA campaign, how would you make it part of your routine as a carer? What are the techniques and cues you would use to remember to engage with the KCA message?”

Q13. “Were there times/situations when you decided not to bring a list of medicines and/or not to check and ask about medicines. Why was that?”

Prompt: “Are there reasons (practical) why you would decide not to use the medication list/when you felt it was not worth the effort e.g. limited time during appointments, didn’t think of it?

Section 5: Future improvements

“So now I’ld like to ask some questions about how you think the KCA could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: “Where or by whom could the message be promoted to greatest effect? Is it up to carers or HCPs (or both) to promote it?

Are there other, better ways of improving safe use of medicines?”

Q15. “If you were in charge of the health service what would you do to encourage carers to manage the medicines of the person they care for?”

Prompts: “What do you think carers need to do to make sure they understand medicines and let doctors, pharmacists know about them when seeing different doctors?”

Closing question

Q16. “So to finish up is there anything else you would like to discuss?”

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.8;Carer]

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

Page/line no(s).

Title and abstract

Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	i
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	ii

Introduction

Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	1
Purpose or research question - Purpose of the study and specific objectives or questions	2

Methods

Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	2-3
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	3-4
Context - Setting/site and salient contextual factors; rationale**	2-3
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	2-3
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	3-4

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	3-4
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4-5
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	4
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	4
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	4

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	4-12
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	4-12

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	12-15
Limitations - Trustworthiness and limitations of findings	15

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	17
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	16

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research. **The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014 DOI: 10.1097/ACM.0000000000000388

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‘Everyone should know what they’re on’: A qualitative study of attitudes towards and use of patient held lists of medicines among patients, carers and healthcare professionals in primary and secondary care settings in Ireland

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For peer review only

‘Everyone should know what they’re on’: A qualitative study of attitudes towards and use of patient held lists of medicines among patients, carers and healthcare professionals in primary and secondary care settings in Ireland

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Running Title: Attitudes towards and use of patient held medicine lists

Keywords: public health, qualitative research, health & safety, medication reconciliation

(Word count 4223)

Abstract

Objectives

Managing multiple medicines can be challenging for patients with multimorbidity, who are at high risk of adverse outcomes for example hospitalisation. Patient-held medication lists (PHML) can contribute to patient safety and potentially reduce medication errors. The aims of this study are to investigate attitudes towards and use of patient held medication lists among healthcare professionals (HCPs), patients and carers.

Design

Qualitative study based on 39 semi-structured telephone interviews.

Setting

Primary and secondary care settings in Ireland.

Participants

Twenty one HCPs and 18 people taking medicines and caregivers.

Methods

Telephone interviews were conducted with HCPs, people taking multiple medicines (5+ medicines) and carers of people taking medicines who were purposively sampled via social media, patient groups and research collaborators. Interviews were transcribed and thematically analysed based on the Framework approach, with the Consolidated Framework for Implementation Research and Theoretical Domains Framework.

Results

Three core themes emerged: (1) attitudes to PHML (2) function and preferred features of PHML (3) barriers and facilitators to future use of PHML. All participating (patients/carers and HCP) groups considered PHML beneficial for patients and HCPs (for example empowering for patients, improved adherence). While PHML were used in a variety of situations such as emergencies, concerns about their accuracy were shared across all groups. HCPs and patients differed on the level of detail that should be included in PHML. HCPs' time constraints, patients' multiple medicines and cognitive impairments were reported barriers. Key facilitators included access to digital/compact lists and promotion of lists by appropriate HCPs.

Conclusions

Our findings provide insight into the factors that influence use of PHML. Lists were used in a variety of settings but there were concerns about their accuracy. A range of list formats and encouragement from key HCPs could increase the use of PHML.

Strengths and limitations of this study

- This study included a range of viewpoints from a diverse sample of HCPs and non-HCPs.
- Established frameworks were used to comprehensively assess attitudes towards and use of PHML.
- Limitations include the requirement of conducting telephone interviews during the Covid-19 pandemic which may have reduced contextual and nonverbal data.
- Individuals with distinct opinions about PHML may have been motivated to participate so a more biased viewpoint may have been captured.

BACKGROUND

Medication-related harm has been identified internationally as a key area for improvement in all healthcare settings. In 2017, the World Health Organisation (WHO) identified Medication Safety as the theme of its third Global Patient Safety Challenge and aims to reduce the level of severe avoidable harm related to medication by 50% globally in the next 5 years. Polypharmacy (5 or more medicines) and multimorbidity are associated with increased risk of medication-related harm and often result in poorer health outcomes for patients.[1,2,3] Patients with polypharmacy and multimorbidity can experience many transitions of care; multiple interactions with different healthcare professionals (HCPs) and numerous transfers of information about their medicines across healthcare systems for example primary care to secondary care.[4] Systematic reviews have reported discrepancies between medication lists in primary and secondary healthcare sectors, with deficits in transferring information across healthcare settings resulting in medication errors.[5,6] These discrepancies can potentially cause harm and may persist as long term medication errors.[7,8]

A potential solution to deficits in communication across healthcare systems is individual patient or carer involvement in managing their medicines.[9,10] Supporting patient participation in managing medicines has numerous benefits – improving information transfer, reducing errors, empowering patients and leading to improved health outcomes.[9,11] There is evidence that patients can have a crucial role in identifying and managing medication errors during care transitions.[12] Many patients benefit from keeping a list of their medicines[13-21] – as a memory aid or assisting communication with HCPs across care settings.[13,18] However significant barriers to using patient held medication lists (PHML) have been identified including lack of awareness among patients and carers of the purpose and value of keeping medication lists.[13,15] While some research has been conducted on how PHML are perceived across medical and non-medical populations[13-21] the optimal method for supporting patients and implementing the widespread use of PHML in clinical care and during health care transitions remains a challenge. The Irish Health Service Executive (HSE) National Quality Improvement (NQI) team are in the process of introducing a national medication safety campaign – the 'Know Check Ask' (KCA).[22] The key component of this campaign is the use of a medicines list - encouraging everyone who takes medicines regularly to keep an up to date list.[22] To inform implementation of the campaign people's views on the role of PHML in routine medication management are required.

The aim of the study is to examine attitudes to PHML among patients, carers and healthcare professionals (HCPs) and investigate how PHML are routinely used. A secondary objective is to identify barriers and facilitators to widespread integration of PHML in healthcare.

METHODS

Study design and participants

Semi-structured interviews were conducted with patients taking multiple medicines, carers and medical, nursing and pharmacy staff (community and hospital-based). Social media, patient and carers groups and contacts within the research group were used to obtain a purposive sample of patients prescribed multiple medicines (5+ medicines) with at least one chronic long-term illness and a separate sample of carers, unrelated to recruited patients, who care for people who are prescribed 5+ medicines. Sampling strata were age, gender and region. Patients with cognitive/severe functional impairment, non-English speakers were ineligible. As is standard practice within qualitative research, sample size sufficiency was based on saturation parameters as in previous research studies. Transcripts were reviewed while interviews were taking place to assess data adequacy. Recruitment ended when saturation was reached, that is when no new information emerged.[23] A purposive sample of HCPs including anyone/group involved with prescribing of medicines in Ireland, medicine administration and/or information provision (GPs, hospital doctors, pharmacists and nurses) - was generated through social media, emails/newsletters from the Irish College of General Practitioners, Royal College of Physicians of Ireland and the Pharmaceutical Society of Ireland and contacts within the research group. Sampling strata were age, gender, staff grade and region. Interested participants received an information leaflet and consent form and interviews were arranged. PHML were defined as any editable tool carried by patients; paper or electronic or based on documents from healthcare providers; created solely by patients or coproduced by patients and HCPs for example printed repeat medication lists, medication diaries, mobile applications.

Implementation frameworks

The Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF) are established frameworks which identify the theoretical and evidence-informed constructs, at organisational and individual levels, which influence behaviour.[24, 25] They have been used to develop and evaluate interventions in a variety of healthcare settings.[26-28] They were selected as appropriate tools to be used in combination to comprehensively assess patient level and system level factors that influence use of PHMLs. The CFIR has 39 constructs associated with successful implementations across 5 domains – Intervention characteristics, Outer setting, Inner setting, Characteristics of individual and Process.[24] The TDF is a synthesis of 33 theories of behaviour change clustered into 12 domains and provides a theoretical lens to view the cognitive, affective, social and environmental influences on HCP and patient's behaviour.[25]

Interviews

Semi-structured topic guides were developed from literature review and informed by the CFIR and TDF (See Supplementary file). Signed consent forms were returned by all participants before interviews. Interviews were conducted by phone with a postdoctoral researcher (BO'D), between February and August 2021. Verbal consent to record the interviews was obtained, recordings were transcribed verbatim and anonymised and made available for participants' feedback/correction. Ethical approval was obtained from the Royal College of Surgeons of Ireland ethics committee in July 2020 (REC: 202005008) and all participants provided informed consent.

Data analysis

Thematic analysis was conducted based on the Framework approach, with CIFR and the TDF informing the analysis framework.[29] The 12 domain TDF was used for the purpose of this study. An overview of the data set was initially obtained and after familiarisation, investigators (BO'D, CC) independently coded 10% of interviews. Results were then compared and discussed to develop a coding index based on CIFR and TDF applied to the remainder of the interviews. The index was then applied deductively to the data and used to construct a set of thematic charts categorised according to key CFIR and TDF domains. The software package NVivo 10 was used to facilitate analysis. Key/dominant domains were identified based upon previous research criteria: (i) strong views - discussed at great length/intensity; (ii) frequently expressed views and (iii) conflicting views within the domain.[30] Each domain was plotted on a separate thematic chart and grouped into key overarching themes (see Figure 1). The Standards for reporting qualitative research (SRQR) guidelines were adhered to throughout this study.[31]

Patient and public involvement

Key stakeholders were involved in the conceptualisation of the study. We invited the PPI consultative group to provide feedback on recruitment methods and study materials including topic guides, recruitment documents, information sheets, consent forms etc.

RESULTS

Characteristics of study participants

A total of 39 interviews (18-68 minutes in duration; mean 35 minutes) were conducted with 21 HCPs and 18 patients and carers. The majority of interviewees were female (n = 29, 74%) with a median age of 60 years (IQR=52-68) for patients, 55 years (IQR=48.5-57) for carers and 45 years for HCPs (IQR=37-48). See *Table 1: Characteristics of participants*.

Table 1: Characteristics of participants - HCP (n=21) and patient/carers (n=18)

Characteristics	**Frequency**	
	HCP (n=21)	**Patients/carers (n=18)**
Gender		
Male	6 (29%)	4(22%)
Female	15(71%)	14(78%)
Age (years)		
<40	9(43%)	1(6%)
40-65	11(52%)	15(83%)
65 and older	1(5%)	2(11%)
HCP role		
Doctor	8(38%)	N/A
Pharmacist	9(43%)	N/A
Nurse	4(19%)	N/A
Region		
East	9(43%)	3(17%)
West	5(24%)	7(39%)
South	7(33%)	8(44%)

* *All patients used PHML*; N/A=Not applicable

Summary of overarching themes, CFIR and TDF domains

Three overarching themes were identified: (1) attitudes to PHML; (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML. Within these themes, five dominant CFIR domains were identified with associated constructs: (1) Intervention characteristics - *design quality & packaging, adaptability*; (2) Characteristics of Individuals - *knowledge & beliefs about intervention*; (3) Process – *engaging*; (4) Inner setting – *implementation climate* and (5) Outer setting – *patient needs & resources*. Twelve TDF domains were identified with four dominant domains: *Environmental context & resources*; *Beliefs about consequences*; *Behavioural regulation (barriers/facilitators)* and *Professional/social role & identity*.

Summary of subthemes within overarching themes

Within the overarching themes, five dominant CFIR domains were identified with associated constructs: (1) Intervention characteristics - *design quality & packaging*; (2) Characteristics of Individuals - *knowledge & beliefs about intervention*; (3) Process – *engaging*; (4) Inner setting – *implementation climate* and (5) Outer setting – *patient needs & resources*. Twelve TDF domains were identified with four dominant domains: *Environmental context & resources*; *Beliefs about consequences*; *Behavioural regulation (barriers/facilitators)* and *Professional/social role & identity*.

Each of the overarching themes and related subthemes are described below and where appropriate, illustrative anonymised quotes are included. See Supplementary Table 1.

Attitudes to PHML

Participants expressed both positive and negative attitudes to lists which mapped onto three CFIR domains and four TDF domains - see supplementary table 1.

All interviewees positively assessed lists, believing them to have multiple benefits for patients, carers and HCPs. The three groups believed that lists were empowering for patients, in particular knowing, what medicines they were taking, understanding why they were taking them as well as the importance of having a record of their medicines on their person. It was also felt that keeping a list increased awareness of the purpose of their medicines could improve adherence. Lists helped them to manage multiple/changing medicines across different healthcare settings and were identified as beneficial in emergencies, out of hours services, at initial diagnoses and in transitions across healthcare settings.

All groups believed that lists could assist patient/HCP interactions – reduce confusion/stress of emergency admissions or improve communication during consultations:

> "every time you go to your cardiologist they ask what medications you're on…I always find that I can just give them that [list]"
>
> (DS300064, patient)

HCPs also identified additional clinical advantages such as reductions in medicine errors and unused/wasted medicines. They highlighted the issue of excess medicines for many patients as a result of poor or sporadic adherence.

Negative attitudes were also expressed - all groups had concerns about the accuracy of lists and were aware that many older patients could struggle to keep lists up-to-date. Most HCPs had encountered inaccurate lists and often used visual cues to assess the accuracy of lists; lists with worn/creased appearance, numerous errors or crossed out texts created doubts about accuracy and increased their scrutiny. However, HCPs described the steps they took to check/confirm lists as part of their professional practice:

> "I wouldn't have an issue with that [accuracy]. Like I'm not going to prescribe off a list that a patient comes in with. I'm going to check..I mean it's good practice"
>
> (DS300045, hospital nurse)

HCPs also had concerns about the impact of stigma on use of lists:

> "there's still a lot of stigma around mental health conditions…so that could potentially be a problem, people might leave that off the list"
>
> (DS300053, pharmacist)

HCPs supported PHML and considered them to be useful tools however they also considered that lists were not extensively used by their patients. Some HCPs reported that only a minority of patients produced lists when prompted/questioned about their medicines during consultations.

Function and preferred features of PHML

This theme included the following factors: variation in use of lists; evolving list function (multiple, adapted/customised lists), varied information needs and HCP support for lists in their practice. These factors mapped onto four CFIR domains and six TDF domains – see supplementary table 1. All patients that were interviewed used lists and identified some features which facilitated that use – customised lists, simple lists with minimal information. Most of the patients reported they wanted to know what medicines they were taking and the majority kept a list as part of their routine medication management. They used lists in variety of ways and found practical benefits, for example, when medicines were changing, while travelling or in hospital:

> "I've used it [list] quite a number of times now, I was in hospital there recently, quite a number of times I used it, it's a very, very valuable thing to do"
>
> (DS300054, patient)

Among those using lists, the function of lists evolved over time. Some patients reported initially using lists as a short-term memory aid until they progressed to a more stable medication regime. Many patients and carers reported that they used multiple lists, creating numerous versions – both paper based and digital. This replication ensured they would have access to their list when needed. Patients were confident in their ability to maintain their lists and provided detailed descriptions of how they had customised their lists to suit them:

> "I have the little stick-on labels that the pharmacist puts on the pack, I have all those on a piece of paper, folded up and it's in my wallet"
>
> (DS300061, patient)

Many carers also used lists which they had adapted from prescriptions or from blister packs.

There were some differences between patients and HCPs on the level of information - in terms of content and detail - that should be included in PML. Some patients wished to keep their lists simple and easy to use with minimum information:

> "So I suppose you can make it as easy or as complicated as you like but I just list them and list the dosage, the strength and that's it"
>
> (DS300046, patient)

In contrast a lack of detailed information in a number of lists was an issue for most HCPs. They were concerned that lists may not reflect over-the-counter (OTC) or herbal medications:

> "people don't look at stuff that they get in a health food shop or that they buy online as a medicine because its herbal..they're the ones that they don't tell you about"
>
> (DS300065, GP)

There was agreement across groups that the desire for general information on medicines can vary - some patients want to know everything while others basic information about their medicines. All HCPs, patients and carers believed that effective patient/HCP communication was needed to ensure appropriate information was provided:

> "I suppose people are looking for different things..So I suppose it's to get the right balance"
>
> (DS300046, patient)

Many patients described positive engagement with HCPs about medicines, who they felt were open to being asked about medicines and saw lists as useful tools for managing medicines. Some HCPs reported inclusion of lists in their routine consultations particularly with their elderly patients.

Barriers and facilitators to future use of PHML

Across the groups a number of barriers to using medicine lists were commonly reported - time constraints, difficulty in maintaining lists for particular patients and confusion about generic medicines. All groups identified similar facilitators - encouragement from key HCPs and access to multiple types of lists formats. Some facilitatory factors reported by patients and carers included patients' confidence in their self-efficacy to maintain accurate lists, the role of internal and external strategies and social support from family in managing medicines. Barriers and facilitators mapped onto five CFIR domains and five TDF domains – see supplementary table 1.

Barriers and facilitators to using medicine lists recognised across all groups (HCPs, patients, carers)

There were similarities across groups in reported barriers to patient held lists. The most frequently reported practical barrier across the groups was HCPs' lack of time:

> "I think it's all part of the whole how busy we are and there would be an awful lot to squash into the consultation…but a lot of the time you are time constrained"
>
> (DS300067, GP)

All the groups (HCPs, patients and carers) reported that particular groups such as older patients, those with cognitive impairment, literacy issues or those on multiple/changing medication would have difficulties with keeping medicine lists. All groups believed that many older patients accepted the authority of HCPs and would not question them about their medicines. In addition, they all expressed their concerns about the confusion generic medicines can cause for patients and carers:

> “they just don’t know what they’re taking to be honest with you, you know the elderly people get very confused with the generics”
>
> (DS300087, public health nurse)

There was agreement across all the groups that key HCPs – particularly pharmacists - had an important role in facilitating use of lists. GPs and public health nurses were also mentioned as trusted HCPs that could engage with patients and carers to use lists.

HCPs, patients and carers believed that practical tools such as compact (wallet-sized) versions of patient lists or digital options (phone app) could increase their use. However, all groups were aware that digital resources could exclude many older patients who might not use a phone app/have smart phones.

Barriers and facilitators to using medicine lists relevant to patients and carers

Generally, patients reported they were confident in their ability to maintain their lists and this self-efficacy in managing medicines was often linked to internal and external strategies. Internal strategies could involve cognitive activities such as linking task with routine behaviours for example updating lists after each GP visit, taking tablets at meal times. Patients and carers also established external strategies to support adherence – medication lists; pill box organisers; blister packs, verbal reminders from family or memory aids with audio/visual cues.

Patients and carers described the important role that family support had in medical management, which included accessing information on medicines or creating lists:

> "I have a list of my drugs that I take, the tablets I take and [spouse] put it on my phone just in case I haven't got it on me. She put it into my phone."
>
> (DS300063, patient)

Patients identified a key facilitator of HCP communication about medicine and the value of lists – using simple non-medical language that the patient can understand:

> "..tell people why and speak to them in their own language."
>
> (DS300061, patient)

Carers supported lists as practical aids but highlighted a general lack of engagement with them by HCPs on the benefits of lists for caregivers. They also identified specific concerns about privacy and right to control of lists:

> "The information should be in the person's house and not taken away by the carer. That's my only concern"
>
> (DS300080, carer)

Barriers and facilitators to using medicine lists relevant to HCPs

The majority of carers used blister packs and considered them a valuable resource. However, some HCPs identified them as potential barriers and reported their reservations that blister packs could reduce patient knowledge and potentially led to errors:

> "I would see blister packs as a big source of medication errors. The patient no longer knows what the medicines are for at all. And doesn't have an idea of their names anymore at all either"
>
> (DS300059, GP)

Generally, HCPs believed they had the necessary skills to engage with patients on medicine lists. They focused on the value of regular medication reviews to reduce confusion about medicines and identify unused medicines/errors. They also highlighted the key role of medication counselling – both structured and opportunistic:

> "if there's a document there that's been filled in by a doctor and if it's given to the person, they will have that..So it will be..quite opportunistic"
> (DS300043, hospital doctor)

DISCUSSION

This study explored attitudes and use of PHML among HCPs, patients and carers of those taking medicines. We identified three key themes: (1) attitudes to PHML (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML which linked to five dominant CIFR domains and four TDF domains. Patient and system level influences that can inhibit and promote use of lists were identified using the CFIR and TDF. The frameworks provide a platform for the refinement of evidence-based interventions, such as the KCA, to facilitate behaviour change. Links can be made from dominant CFIR and TDF domains to tools for designing behavioural change interventions such as the Behavioural Change Wheel (BCW) and Behavioural Change Taxonomy (BCTT).[32,33] The BCW has nine intervention functions that can be used to enable behaviour change for example education while the BCTT lists the techniques that can be used to deliver these functions such as feedback, social support.[32,33] Pertinent intervention functions and supporting policies to promote use of PHML in the future can thus be identified.

Overall all groups reported a range of perceived benefits – both practical and psychological – from using PHML. These included empowering patients to manage their medicine safely, aiding memory, improving adherence and improving communication during patient/HCP interactions. This is similar to other studies illustrating benefits as well as beliefs among patients, carers and HCPs that accurate lists were a valuable tool in improving medication reconciliation and patient safety.[15,17,20].

An interesting finding related to the day-to-day use of PHML across settings. It has been previously established that many patients have some type of medicine list when admitted to hospital.[15-22] We found that patients and carers had used PHML to bridge information gaps in a variety of healthcare settings and during care transitions. However, our research also identified further use of medicine lists by patients and carers in a range of settings - routine medical appointments; emergencies; hospital discharge; outpatient clinics, when medicines were changing; while travelling, during respite care and when the main carer was absent.

A key finding of this study was related to the preferred features of PHML which suggests a divergence between patients and HCPs on the amount of information that should be included. Some patients believed a simple list with minimum information was easy to use. This contrasted with concerns among HCPs that lists with insufficient information may not reflect patients' adherence or list all medicines that are being taken. Non-adherence to prescribed medicines is a significant issue in polypharmacy, particularly among older patients[34] and patients with multimorbidity frequently manage complex medication regimes. Our findings suggest that a variety of list formats such as compact version, paper/digital version with additional fields for more detailed information - could encourage patients to include all the medicines they are taking. Access to a range of formats could help address the divergence of opinion between patients and HCPs in relation to list content.

All groups had concerns about the accuracy of lists and identified specific barriers to their use among older patients. Older patients taking multiple medicines are likely to experience benefits from using medicine lists.[21] They can be poorly informed about their medicines and often not understand their increased risk of adverse drug reactions.[35] However all groups in this study believed that older patients could struggle to keep their lists accurate and up to date. These concerns are supported by studies among older patients at hospital admission that found medicine lists can display poor accuracy when compared to pharmacy records - with many older patients taking additional medicines or not listing dispensed medicines.[22,34,36] Support from HCPs; who prioritise older patients with multiple medicines for regular reviews and support from families and caregivers in maintaining accurate lists could benefit older patients and improve health-related quality of life.[22,36,37]

Consistent with previous research[15,38] our findings suggest agreement across all groups that HCPs, specifically pharmacists, had a key role in encouraging use of PHML. As in previous studies[39] patients identified the use of simple non-medical language by HCPs to explain medicines to their patients as an important facilitator. These findings suggest that trusted HCPs such as pharmacists could have an essential role in promoting PHML. However, it should be noted that hospital pharmacy staff who had not received training about patient held medicine information tools (for example ‘My Medication Passport’) lacked confidence to promote them.[18] Therefore, appropriate training and guidance about PHML, with a focus on providing clear, simple information; is essential for pharmacists.

Social support was a significant factor for patients and carers in creating medicine lists. Our study indicated that family members/carers often encouraged patients to use lists or some family members/carers had responsibility for keeping accurate lists of patients’ medicines. This is consistent with previous research which found that family support can increase medicine adherence and medicine management generally transfers to family carers when cognitive function decreases.[40-42] Similar to other studies[43-45] our findings indicate that effective medication counselling; structured (for example medication review) or opportunistic (for example routine dispensing); can increase patients’ use of lists. In this context peer support from colleagues could encourage less experienced HCPs to identify opportunities during everyday practice to engage with patients about PHML.

Strengths and limitations

A major strength of this study are the perspectives which have been gathered from a wide range of relevant participants – patients, carers and HCPs. However, it should be noted that those who were interviewed were motivated to participate and may have distinctive opinions about PHML. Efforts were made to address selection bias with a diverse group of participants with a variety of clinical experience and health conditions. However, there were some challenges related to the Covid-19 pandemic -recruiting patients and carers proved difficult and resulted in lower numbers in the non-HCP group compared to the HCPs. Initial plans to conduct focus groups also had to be amended and all interviews were conducted by telephone which may have compromised rapport with the loss of non-verbal cues.

Implications for practice and policy

Our findings have implications for medication safety campaigns such as the HSE's 'Know Check Ask', which empower patients and carers to engage with their medicines. They suggest that future implementation and adoption of such campaigns into clinical practice, may be improved by addressing shared concerns about accuracy and supporting key HCPs in encouraging patients to keep lists. Effective promotion of PHML by HCPs as a beneficial patient tool will require appropriate training. Practical strategies to increase the accuracy of lists could include prioritising older patients with multiple medicines for medicine reviews, opportunistic medication counselling or encouraging family members to support patients in keeping up-to-date lists.

CONCLUSION

This study comprehensively assessed the factors that can influence attitudes towards and use of PHML. It offered new insights into the use of lists across a range of settings and identified shared concerns among HCPs and non-HCPs about list accuracy. Another novel finding was the divergence in opinions between patients and HCPs on the level of information that should be included in lists. Future refinement of evidence-based interventions which addresses these factors could increase the use of PHML.

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Author contributions

KB, CC and CK conceived and designed the study; BO'D collected the data, KB, CC, CK, MP SM and BO'D contributed to analysis and interpretation of data. All authors critically reviewed the manuscript and approved the final version.

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Competing interests

None declared.

Consent for publication

Not required.

Ethical approval

Ethical approval was obtained from the Royal College of Surgeons Ireland research ethics committee (REC: 202005008).

Data availability statement

Data not publicly available due to privacy or ethical restrictions.

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FIGURE LEGEND

Fig 1: Flow diagram of coding process – framework analysis. Thematic analysis was conducted based on the Framework approach, with the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF). Key/dominant domains were identified and each domain grouped into overarching themes. Five dominant CFIR and four dominant TDF domains were identified, leading to three overarching themes: (1) attitudes to patient held medication lists (PHML); (2) function and preferred features of PHML and (3) barriers and facilitators to future use of PHML.

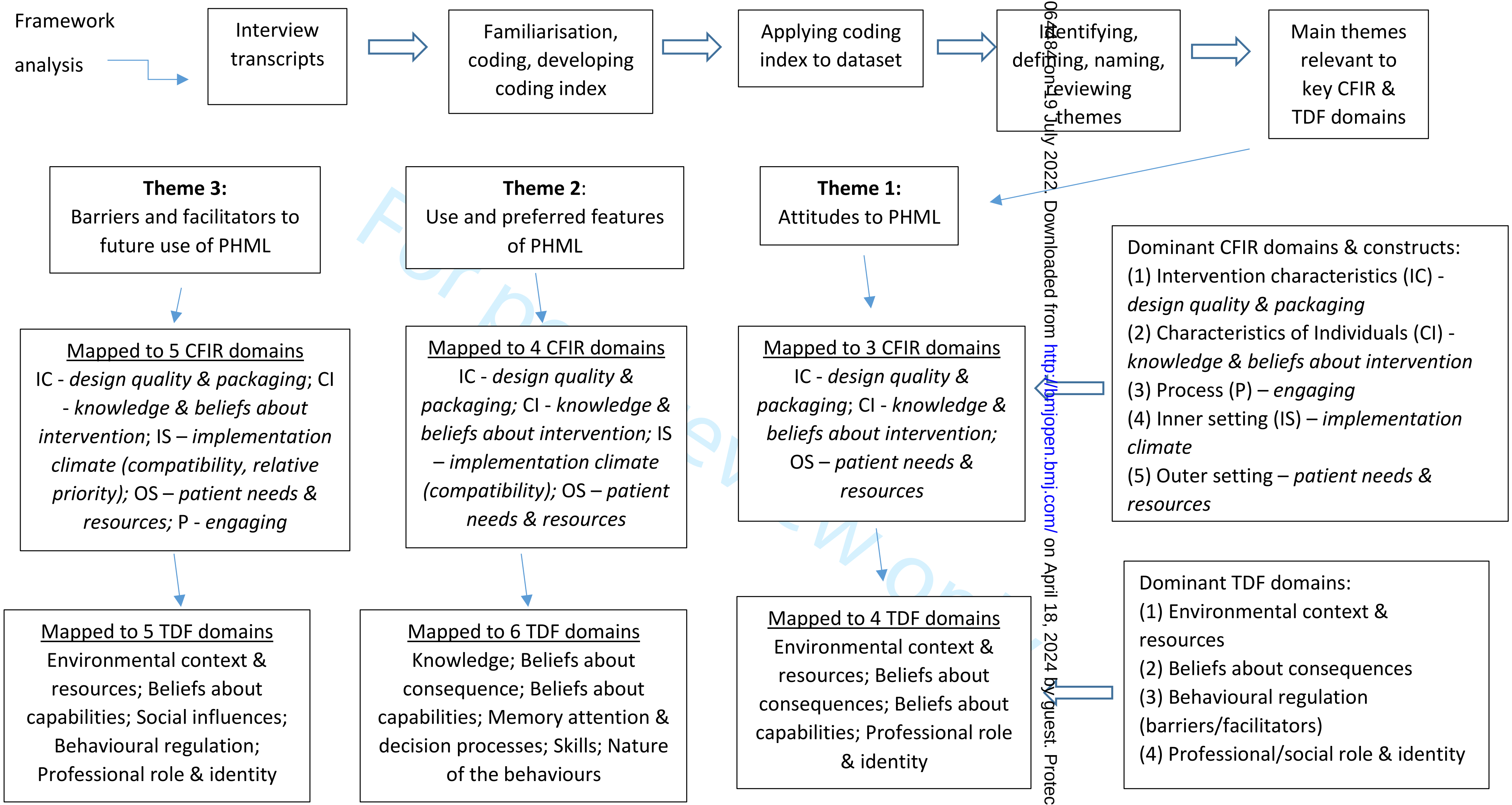

Figure 1: Flow diagram of coding process – framework analysis (CFIR=Consolidated Framework for Implementation Research; TDF=Theoretical Domain Framework)

Supplementary Table 1: CFIR & TDF analysis: sub-themes, themes & illustrative quotes

Themes & related subthemes	CFIR domains & constructs	TDF domains	Illustrative quotes
<u>Attitudes to patient held lists:</u> **Positive** - **empowering** - **increase adherence/awareness** - **reduce errors/unused meds** - **aid to patient/HCP communication across healthcare setting, transitions of care, while travelling** - **reduce** **Negative** - **concerns about accuracy** - **concerns about stigma** - **visual cues used by HCPs to assess lists** - **HCPs report limited use of lists among patients**	Intervention characteristics - *design quality & packaging;* Characteristics of individuals - *knowledge & beliefs about intervention;* Outer setting – *patient needs & resources*	Environmental context & resources; Beliefs about consequences; Beliefs about capabilities; Professional role & identity.	<u>Positive attitudes</u> *“it’s kind of empowering the person to actually have some selfdetermination on their, you know, on the drugs they’re on and to understand why they’re on the drugs, and to understand like, you know, as well that it’s important for them to have a record of it on their person” (DS30076, hospital nurse)* *“You know they’re not going to take it [medicine] if they don’t understand what its going to do for them…they need to know, everybody needs to know why they’re doing something.” (DS30046, patient)* *“they [patients on multiple medicines] are where the potential for making medication errors is highest..it’s probably the most important that they have a list, they’ll be the sickest, they’ll be the ones going to hospitals and appointments the most frequently.” (DS300056, GP)* *“lots of times you’ll do the repeat prescription and they’ll say I don’t need that I’ve loads of that and you’re ok so you’re not taking that, why?” (DS300065, GP)* *“certainly for out of hours, it makes a big difference..very often sometimes like that in out of hours setting, they’re out of their comfort zone..So I think definitely for out of hours and for if somebody had to go to hospital” (DS300065, GP)* *“I was traveling extensively, I mean on my holidays..So I always kept, I was always aware that I needed to have something that I could produce to somebody.” (DS300054, patient)* *<u>Negative attitudes</u>*

			“sometimes the ones they pull out of their wallet is 2 years old. And in the meantime we have changed things..they can be helpful but they can be very inaccurate.” (DS300059, GP)

			“certainly if there’s like misspellings and that you’d have to have some doubts as to whether, you know, there are other errors…Like we’re all influenced by presentation so if something is presented nicely and well done and thought and effort has gone into it and it’s been kept well then, you know, that creates a better impression” (DS300044, pharmacist)

<u>Function and preferred features of patient held lists:</u> - **variation in use** - **evolving lists - multiple versions, customised lists** - **varied information needs related to content and detail** - **HCP support for lists (part of routine practice)**	Intervention characteristics - *design quality & packaging* Characteristics of Individuals - *knowledge & beliefs about intervention* Inner setting – *implementation climate (compatibility)* Outer setting – *patient needs & resources*	Knowledge; Beliefs about consequence; Beliefs about capabilities; Memory attention & decision processes; Skills; Nature of the behaviours	<u>Variation in use</u> *“Well I was with a consultant there about a week ago and I gave him the list and he was delighted” (DS300054, patient)* <u>Multiple lists</u> *“So I have to carry a list everywhere, I have one in my bag and one in the car. If I was ever stuck they’re there” (DS300064, patient)* <u>Customised lists</u> *“I have it in the phone, I also have, you know the little stick on labels that the pharmacist puts on the pack, I have all those on a piece of paper, folded up and its in my wallet as well. And I also keep the copy of the prescription in my folder here at home” (DS300061, patient)* *“normally 99% of the times it’s a print out from my GP with a list of my meds, all of my meds on it and I photograph it, so its in my photographs. I’ve also printed off the photograph and cut it down to size and its actually stuck on to my phone as well.” (DS300062, patient)* <u>HCP support</u> *“every time patients come in, especially elderly, kind of complicated patients we generally would go through their medications with them all the time anyway” (DS300065, GP)* *“…an automatic thing if you’re doing a prescription for a patient..particularly a repeat prescription…I take that as the cue” (DS300056, GP)*

Barriers & facilitators to future use of lists: **Barriers** - **lack of time** - **difficult for older patients, those with cognitive impairments, literacy issues, multiple/changing medicines** - **perceived reticence among older patients** - **generic medicines cause of confusion** - **lack of engagement about PHML from HCPs*** - **concerns about privacy*** - **blister packs**[#] **Facilitators** - **role for trusted HCPs (pharmacists, GPs, public health nurses) - practical tools e.g. compact (wallet-sized version) or digital options (phone app)** - **self efficacy**[##] - **internal & external strategies** * *e.g. routine behaviour, medicine lists, blister packs*, memory aids (phone**	Intervention characteristics - *design quality & packaging* Characteristics of Individuals - *knowledge & beliefs about intervention* Inner setting – *implementation climate (compatibility, relative priority)* Outer setting – *patient needs & resources* Process - *engaging*	Environmental context & resources; Beliefs about capabilities; Social influences; Behavioural regulation; Professional role & identity	**Barriers** HCPs' lack of time *"you could ask to talk to the pharmacist and they're so busy that they can't talk to you" (DS300064, patient)* Difficulties for older patients *"some older patients..a lot of them would be on polypharmacy, not all of them but most of them, some of them aren't tech savvy" (DS300065, GP)* Reticence in questioning HCPs *older people just think well the doctor knows..they just see the doctor as god" (DS300079, carer)* Confusion associated with generics *"sometimes, they'll [his tablets] change in name and that can be very confusing actually, these generic medications where the names are changing, that's a big thing now I just find that's really difficult" (DS300051, carer)* Lack of enagement with carers from HCPs *"I think that there's no information about this [lists] coming from you know the GPs or the public health nurses or even from the hospitals…none of this information is passed on from any of those people." (DS300084, carer)* **Facilitators** Role for key HCPs *"It has to come from the GP or the pharmacist because they're the ones that are prescribing the medicine and giving you the medicine." (DS300051, carer)* *"I think pharmacists have a really big part to play in it" (DS300046, patient)*

apps) - **family support****			*"That's our role. We are supposed to counsel and we are supposed to manage medication" (DS300044, pharmacist)*

- **use of simple language by HCPs[##]** - **regular medication reviews for specific patients[#] (older/multiple medicines)** - **medication counselling[#]**			Digital tools *“I’d love something like that [phone app] because, well most people now live by their phone don’t they really, it’s all apps, everything is on an app. I’d love it.” (DS300051, carer)* Routine behaviour *“So you know when we are sitting down having a cup of tea or something at the table that’s when, like I never forget taking my tablets. Just got used to it now simple as that” (DS300063, patient)* Memory aids *“I’ve an app on the phone that reminds me to take it” (DS300078, patient)* Blister packs* *“I think they’re fantastic because there can be no mistakes made with medication when its blister packed…You couldn’t make a mistake if you tried” (DS300085, carer)* Family support** *“I’ve always had a list in the house for him…we’re always coming in and out so..if they ever need it I’d have a list there in the house stuck up on the wall” (DS300051, carer)* Regular medication reviews[#] *“one time they had a pain in their big toe and they were prescribed a painkiller and that suddenly stayed in their regular prescription. So they have bottles and bottles and bottles of paracetamol which they probably take once every six months…so they’re definitely is room there for, definitely for review for medications.” (DS300073, GP Nurse)*

*reported by carers; **reported by patients & carers; [#]reported by HCPs; [##]reported by patients

Interview topic guide: Healthcare professionals’ views and experiences of the ‘Know Check Ask’ campaign

Script 1: HCPs (16 questions)

Introduction

“Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the ‘Know Check Ask’ campaign and message. Is it still a good time for you?”

Verbal consent

“Just to remind you that I’m going to record our conversation…is that ok?”

Start recording

“I’ll start the tape now.”

Assure of confidentiality

“Please be assured that everything you say will be kept confidential.”

“Before we start would you like to know more about the study?”

Summarise the purpose of the study

The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the ‘Know Check Ask’ medication safety campaign, for people who use medicines and carers of those using medicines. The key aim is to encourage people to keep a list of their medications and bring it to any appointments or admission. The Know Check Ask campaign is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of HCPs across Ireland to find out what you think of this campaign, how you think it can be expanded or improved."

Section 1: Awareness of 'Know Check Ask' (KCA) campaign

Q1. "So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?"

Prompts: "When did you first hear about it? What were your initial thoughts about it?"

Q2. "Why do you think the Know Check Ask campaign was introduced?"

Prompts: "The HSE by introducing this campaign hoped to improve medication safety at transitions of care/patient safety with medicines/improve quality of medication history at OPD appointments/admission. What do you think about this? The HSE also hoped to resolve problems with getting good medication history/adherence/empower people taking medicines. What do you think about this objective?"

Q3. "There are support/resources available to assist you in encouraging people using your service to keep a list of medicines and/or promote the KCA message - are you familiar with how these resources and support can be accessed?"

Prompts: “What types of support e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists? Have you used the posters, medicine lists, videos, information on the website? If you haven’t used them why not?”

Section 2: Resources and support

“So now we’ll move on to some questions about improving the resources that are available to help you apply the KCA message.”

Q4. “We asked you to look at the safer meds website - what do you think about the quality of the resources/materials (posters, medicine lists, videos)? Is there anything that can be used or could be more effective that you’d like to have available?”

If unaware of resources “What tools and resources could help HCPs promote KCA, encourage the person keeping a list and the HCP using it? How can these resources best be provided so it’s easy for HCPs to use them?”

Q5. “In order to gain support for this campaign within your profession what resources do you think are needed? What support is required e.g. digital tools/an app?”

Prompts: “Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could HCPs feel it’s worthwhile and easy to promote it?””

Section 3: Views/perceptions of KCA campaign

"So now I'd like to ask you about your views of the campaign and also get some information about what your colleagues think of it."

Q6. "What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?"

Prompts: "What do you think about patients keeping a list of their medications? How do you think it could be used? e.g. hospital admission, transitions of care etc. What impact do you think it would have on your relationship with your patients? What reservations do you have (e.g. lack of trust in patient held lists)?"

Q7. "Have you applied any aspects of the Know Check Ask campaign or its message in your workplace? Are you using something similar to the Know Check Ask Campaign in your practice, could you tell me about that?"

Prompts: "For example do you encourage people attending your healthcare setting to keep a list of medications? If so, how do you use this list? Do you encourage people to know what their medicines are for, check the dose and frequency and ask you/HCPs about the medicines if they have any questions? Do you use the KCA campaign materials/message? Is there anything that you find particularly helpful/useful about the KCA campaign e.g. helped you discover any medication problems/issues?"

If aware of campaign but not applying it in practice: "Is there any reason why you think it is not a good idea to encourage people to keep a list of their medications? Prompts: Clinical reasons/practical reasons e.g. too busy?"

Q8. "So you have used the KCA approach/resources - what effects have you seen?"

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you give

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: "If you were to use the KCA approach/resources what benefits do you think you would see? What impact do you think it would have on your day to day care/practice?"

Q9. "What do you think are the challenges/difficulties about this campaign? What might prevent people using a medication list, asking, checking about medicines?"

Prompts: Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person's list? Openness of HCP asking about any issues with medicines/if person has a list?"

Consider from individual's perspective -awareness of KCA message/benefits of keeping a list/confidence to share it with their HCP/access to the tools e.g. list? Can you think of any reasons people might not want to use it? Is it difficult for particular people to use/engage with?"

Q10. "In general how do you think your profession perceives this campaign? What do they think of it? Do you know of colleagues who have heard of the KCA or who apply any aspects of the KCA with people attending their service e.g. keeping a list of medicines?"

Prompts*:* "Do opinions about KCA and people keeping a medication list differ among your colleagues? Was the KCA campaign welcomed by your colleagues?

If colleagues not aware or doesn't know colleagues' opinions on KCA: "What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get HCPs on board?"

Section 4: Applying the KCA campaign

"Now I'd like to ask you some practical questions about the KCA campaign."

Q11. "In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use where you work? Who is best suited to doing that (what role) and what could they do?"

Prompts: (HCP factors) "e.g. clinical experience, medication knowledge, time, role. Do you think other HCPs might be better placed to promote the KCA? Could a pharmacy technician/practice nurse/OPD secretaries promote it?"

Q12. "Do you have any difficulties remembering to promote the KCA with people (e.g. giving them a blank medication list, encouraging people to ask and check about medicines) in your practice?"

Prompts: "Do you use any techniques/cues to help you to remember to apply it with people attending your healthcare settings?"

If not using KCA, "If you were to use the KCA campaign, how would you integrate it into your daily practice? What are the techniques and cues you would use to remember to actively promote and engage with the KCA message?"

Q13. "Do you ever intentionally decide not to use a person's medication list, or not give them a blank list, or not to encourage them to check and ask about their medicines [pause] and why is that?"

Prompt: (HCP perceptions of patient-held lists) “Do you trust a list prepared by the person vs GP/pharmacy?”

Section 5: Future improvements

“So now I’d like to ask you how you think the KCA message could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: “Where or by whom could the message be promoted to greatest effect? Are there other, better ways of getting improving safe use of medicines?”

Q15. “If you were in charge of the health service, what would you do to encourage and enable people to understand and check their medicines and communicate about them with HCPs more effectively, particularly at transitions?”

Prompts: “What kind of changes do you think need to be made to healthcare organisation to support people to understand and check their medicines and to use a medicines list? What should the HSE do overall? What local actions are needed to support people to use a medicines list?”

Closing question

Q16. “So to finish up is there anything else you would like to discuss?”

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.9;HCP]

Interview topic guide: Patient’s views and experiences of the ‘Know Check Ask’ campaign

(16 questions)

Introduction

“Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the ‘Know Check Ask’ campaign and message. Is it still a good time for you?”

Verbal consent

“Just to remind you that I’m going to record our conversation…is that ok?”

Start recording

“I’ll start the tape now.”

Assure of confidentiality

“Please be assured that everything you say will be kept confidential.”

“Before we start would you like to know more about the study?”

Summarise the purpose of the study

“Before we start I’d just like to tell you a bit about the study. The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the ‘Know Check Ask’ medication safety campaign, for people who use medicines and carers of those using medicines. The key action the campaign promotes is that people keep a list of their medications and bring it to any appointments or admission. The Know Check Ask is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of people using medicines across Ireland to find out how you manage your medicines, what you think of this campaign, how you think it can be expanded or improved."

Section 1: Awareness of 'Know Check Ask' (KCA) campaign

Q1. "So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?"

Prompts: "When did you first hear about it? (online; posters; recent tv ads; HCP). What were your initial thoughts about it?"

Q2. "Why do you think the Know Check Ask campaign was introduced?"

Prompts: "The HSE by introducing this campaign hoped to empower people taking medicines/help with problems when people are admitted or leaving hospital/have changed GP or pharmacy. What do you think about this?"

Q3. "There are support/resources available to assist you in keeping a list of medicines and/or apply the KCA – have you used the medicine lists, videos, information on the website? If you haven't used them why not?"

Prompts: "e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists."

Section 2: Resources and support

"So now we'll move on to some questions about improving the resources that are available to help you apply the KCA message."

Q4. "There are a number of support/resources (medicine lists, videos, www.safermeds.ie) that are available to assist you in keeping a list of medicines and/or apply the KCA – what do you think about the quality of these resources/materials? Is there anything that can be used or could be more effective that you'd like to have available? If you are looking for information on safe medications which website would you use?"

If unaware of resources "What tools and resources could encourage the person keeping a list? How can these resources best be provided so it's easy for people to use them?"

Q5. "In order to increase the use of this campaign among people who use medicines what resources do you think are needed e.g. digital tools/an app?"

Prompts: "Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could people feel it's worthwhile to keep a medicine list and easy to use?"

Section 3: Views/perceptions of KCA campaign

"So now I'd like to ask you about your views of the campaign and also get some information about what other people who take medicines think of it."

Q6. "What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?"

Prompts: "What do you think about people keeping a list of their medications? Are there certain times/situations when you think it would be particularily useful to have a list? e.g. hospital admission, transitions of care, changes in medicines etc. What impact do you think it would have on your relationship with your healthcare professionals? What reservations do you have (e.g. burden, concerns about accuracy of list)?

Do you think a list prepared by the person taking medicines would be trusted by HCP vs GP/pharmacy?"

Q7. "How do you currently manage your medications - keeping a list of medications? How long have you been keeping a list?"

Prompts: "Has the KCA helped you discover any medication problems/issues?"

If aware of campaign but not applying it in practice: "Is there any reason that you think it is not a good idea to keep a list of medications/use the KCA?"

Q8. "So you keep a list – has it helped, have you found it useful?"

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you provide

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: "If you were to keep a list do you think it would be helpful/useful?"

Q9. "What do you think are the challenges/difficulties about this campaign? What might prevent people using a medication list, asking, checking about medicines?"

Prompts: Consider from individual's perspective - awareness of benefits of keeping a list/confidence to share it with their HCP/access to the tools e.g. list/ records not shared across systems? Can you think of any reasons people might not want to use it? Is it difficult for particular people to use/engage with?"

Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person's list? Openness of HCP asking about any issues with medicines/if person has a list?"

Q10. "In general what do people think of the campaign? Do you know of people taking medicines who have heard of the KCA or who apply any aspects of the KCA e.g. keeping a list of medicines?"

Prompts*:* "Do opinions about KCA and people keeping a medication list differ among people you know who take medicines? Was the KCA campaign welcomed by them?

If people (s)he knows are not aware or doesn't know peoples' opinions on KCA:

"What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get people who take medicines on board?"

Section 4: Applying the KCA campaign

"Now I'ld like to ask you some practical questions about the KCA campaign."

Q11. "In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use? Who is best suited to doing that?"

Prompts: (people factors) time, organisation skills, literacy, confidence.

(HCP factors) time, level of engagement - will ask if person has any medication issues/a list.

Q12. “Do you have any difficulties remembering to apply the elements of the KCA (using the medication list, asking, checking about medicines)?”

Prompts: “Are different healthcare settings an issue? If there are changes in your medicines/discontinued medicines does that create problems? Do you use any techniques/cues to help you to remember to use it?”

If not using KCA, “If you were to use the KCA campaign, how would you make it part of your medical routine? What are the techniques and cues you would use to remember to engage with the KCA message?”

Q13. “Were there times/situations when you decided not to bring a list of medicines and/or not to check and ask about your medicines. Why was that?”

Prompt: “Are there reasons (practical) why you would decide not to use the medication list/when you felt it was not worth the effort e.g. limited time during appointments, didn’t think of it?”

Section 5: Future improvements

“So now I’ld like to ask some questions about how you think the KCA could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: "Where or by whom could the message be promoted to greatest effect? Is it up to people or HCPs (or both) to promote it?

Are there other, better ways of improving safe use of medicines?"

Q15. "If you were in charge of the health service, what would you do to encourage people to manage their medicines?"

Prompts: "What do you think people taking medicines need to do to make sure they understand their medicines and let doctors, pharmacists etc know about them when seeing different doctors, HCPs?"

Closing question

Q16. "So to finish up is there anything else you would like to discuss?"

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.9;PT]

Interview topic guide: Carer's views and experiences of the 'Know Check Ask' campaign

(16 questions)

Introduction

"Hello, my name is x from the RCSI, we spoke last week and arranged to talk about your views of the 'Know Check Ask' campaign and message. Is it still a good time for you?"

Verbal consent

"Just to remind you that I'm going to record our conversation…is that ok?"

Start recording

"I'll start the tape now."

Assure of confidentiality

"Please be assured that everything you say will be kept confidential."

"Before we start would you like to know more about the study?"

Summarise the purpose of the study

"The WHO global patient safety challenge, Medication Without Harm, aims to reduce the level of severe avoidable harm related to medication use by 50% over 5 years, globally. Building on WHO campaign materials the HSE National Quality Improvement (NQI) team launched the 'Know Check Ask' medication safety campaign, for people who use medicines and carers of those using medicines. The key action the campaign promotes is that people keep a list of their medications and bring it to any appointments or admission. The Know Check Ask is about people knowing the medication they use (use a list, read labels, instructions, leaflets), checking (make sure prescription details are clear, check understanding), and asking their healthcare professional if they are unsure about their medication. We are interviewing a number of carers across Ireland to find out how you manage medicines, what you think of this campaign and how you think it can be expanded or improved."

Section 1: Awareness of 'Know Check Ask' (KCA) campaign

Q1. "So to start off could you tell me about what you know about the Know Check Ask campaign? Were you aware of it before you were asked to take part in this study?"

Prompts: "When did you first hear about it? (online; posters; recent tv ads; HCP). What were your initial thoughts about it?"

Q2. "Why do you think the Know Check Ask campaign was introduced?"

Prompts: "The HSE by introducing this campaign hoped to empower people taking medicines/help with problems when people are admitted or leaving hospital/have changed GP or pharmacy. What do you think about this?"

Q3. "There are support/resources available to assist you in keeping a list of medicines and/or apply the KCA with the person you care for – have you used the medicine lists, videos, information on the website? If you haven't used them why not?"

Prompts: "e.g. posters, videos, website information on www.safermeds.ie, articles in newsletters, presentations, access to printed medicine lists."

Section 2: Resources and support

"So now we'll move on to some questions about improving the resources that are available to help you apply the KCA message."

Q4. "There are a number of support/resources (medicine lists, videos, www.safermeds.ie) that are available to assist you in keeping a list of medicines and/or apply the KCA – what do you think about the quality of these resources/materials? Is there anything that can be used or could be more effective that you'd like to have available? If you are looking for information on safe medications which website would you use?"

If unaware of resources "What tools and resources could encourage the carer to keep a list? How can these resources best be provided so it's easy for carers to use them?"

Q5. "In order to increase the use of this campaign among carers what resources do you think are needed e.g. digital tools/an app?"

Prompts: "Are the tools and methods of the KCA campaign good, and just need to promote them more and get them embedded into practice? How could carers feel it's worthwhile to keep a medicine list and easy to use?"

Section 3: Views/perceptions of KCA campaign

"So now I'ld like to ask you about your views of the campaign and also get some information about what other carers/colleagues think of it."

Q6. “What are your thoughts about the Know Check Ask campaign? Is there anything that you find particularly helpful/useful about this campaign?”

Prompts: “What do you think about carers keeping a list of medications? Are there certain times/situations when you think it would be particularily useful to have a list? e.g. hospital admission, transitions of care, changes in medicines etc. What impact do you think it would have on your relationship with your healthcare professionals? What reservations do you have (e.g. burden, concerns about accuracy of list)?

Do you think a list prepared by the carer or the person taking medicines would be trusted vs GP/pharmacy?”

Q7. “How do you currently manage the medications of the person you care for - keep a list of medications? How long have you been keeping a list?”

Prompts: “Has the KCA helped you discover any medication problems/issues?”

If aware of campaign but not applying it in practice: “Is there any reason that you think it is not a good idea to keep a list of medications/use the KCA?”

Q8. “So you keep a list – has it helped, have you found it useful?”

Prompts: Positives - improved communication/relationships/patient safety/improved the health care you provide

Negatives – burden on people/HCPs/unreliable lists? (Ask for examples.)

If the KCA approach and/or resources not been used: “If you were to keep a list do you think it would be useful/helpful?”

Q9. “What do you think are the challenges/difficulties about this campaign? What might prevent carers using a medication list, asking, checking about medicines?”

Prompts: Consider from carer’s perspective - awareness of benefits of keeping a list/confidence to share it with HCP/access to the tools e.g. list/ records not shared across systems? Can you think of any reasons carers might not want to use it? Is it difficult for particular people to use/engage with?”

Consider from HCP perspective - awareness of HCP of importance of good quality medication history/benefits of reviewing person’s list? Openness of HCP asking about any issues with medicines/if there is a list?”

Q10. “In general what do carers think of the campaign? Do you know of carers who have heard of the KCA or who apply any aspects of the KCA e.g. keeping a list of medicines?”

Prompts*:* *“*Do opinions about KCA and people keeping a medication list differ among carers you know? Was the KCA campaign welcomed by them?

If carers (s)he knows are not aware or doesn’t know carers’ opinions on KCA:

“What kind of evidence is needed about the effectiveness of KCA or of people sharing their list with HCPs to get carers on board?”

Section 4: Applying the KCA campaign

“Now I’ld like to ask you some practical questions about the KCA campaign.”

Q11. “In your opinion is there a particular knowledge or skill set needed to promote this campaign or support its use? Who is best suited to doing that?”

Prompts: (carer factors) time, organisation skills, literacy, confidence.

(HCP factors) time, level of engagement - will ask if there are any medication issues/a medicines list.

Q12. “Do you have any difficulties remembering to apply the elements of the KCA (using the medication list, asking, checking about medicines)?”

Prompts: “Are different healthcare settings an issue? If there are changes in medicines/

discontinued medicines does that create problems? Do you use any techniques/cues to help you to remember to use it?”

If not using KCA, “If you were to use the KCA campaign, how would you make it part of your routine as a carer? What are the techniques and cues you would use to remember to engage with the KCA message?”

Q13. “Were there times/situations when you decided not to bring a list of medicines and/or not to check and ask about medicines. Why was that?”

Prompt: “Are there reasons (practical) why you would decide not to use the medication list/when you felt it was not worth the effort e.g. limited time during appointments, didn’t think of it?”

Section 5: Future improvements

“So now I’ld like to ask some questions about how you think the KCA could be improved.”

Q14. “Is it worth continuing the KCA campaign/message? Do you have any suggestions on how it can be improved?”

Prompts: “Where or by whom could the message be promoted to greatest effect? Is it up to carers or HCPs (or both) to promote it?

Are there other, better ways of improving safe use of medicines?”

Q15. “If you were in charge of the health service what would you do to encourage carers to manage the medicines of the person they care for?”

Prompts: “What do you think carers need to do to make sure they understand medicines and let doctors, pharmacists know about them when seeing different doctors?”

Closing question

Q16. “So to finish up is there anything else you would like to discuss?”

Thank interviewee for their time.

Reassure again re confidentiality.

Provide contact details if they have any questions, wish to review their transcripts or if further information is required.

Stop recording.

[Version 1.8;Carer]

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

Page/line no(s).

Title and abstract

Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	i
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	ii

Introduction

Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	1
Purpose or research question - Purpose of the study and specific objectives or questions	2

Methods

Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	2-3
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	3-4
Context - Setting/site and salient contextual factors; rationale**	2-3
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	2-3
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	3-4

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	3-4
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4-5
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	4
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	4
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	4

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	4-12
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	4-12

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	12-15
Limitations - Trustworthiness and limitations of findings	15

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	17
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	16

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research. **The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388