



From policy to patient: Using a socio-ecological framework to explore the factors influencing safe practice in UK primary care

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ARTICLE INFO

Keywords:

Primary care
Patient safety
Health services research

ABSTRACT

Background: The recent and rapid changes in the model of primary care delivery have led to an increased focus on patient safety in what is one of the most diverse and complex healthcare settings. However, previous initiatives have failed to deliver the expected improvements, leading to calls for a better understanding of how a range of personal and contextual factors influence the decisions and behaviours of individual care providers.

Methods: The socio-ecological framework, successfully used in public health settings to interpret the complex influences on individual behaviours, enabled a post-hoc deductive analysis of a series of semi-structured interviews conducted with clinical staff and senior managers at a range of practices across five geographically diverse regions in England to explore their perspectives on the factors that influence safe practice.

Results: The five levels of the socio-ecological framework successfully helped unpick the myriad influences on safe primary care practice, including, at the Individual level, assumptions of responsibility and previous experience; at the Interpersonal, equitable communication in support of a team ethos; at the Organisational, the physical infrastructure, size and complexity of the practice; at the Community, the health profile and literacy of patients; and at the Policy, meeting the demands of competing local and national governing bodies.

Conclusions: Coherent, realistic and achievable goals are needed for improving patient safety in primary care addressing personal, organisational and environmental factors. Such goals and the tools and interventions designed to meet them must therefore be sympathetic to the demands on resources and the characteristics of patients, staff, and their organisations. Using the framework to interpret our findings provided much needed insight into the impact of these varying influences, and highlights the importance of recognising and communicating the relationship between specific contextual factors and the ability of individual providers to provide safe primary care.

1. Introduction

A commitment to delivering safer, high-quality healthcare has been a policy goal of governments worldwide for more than a decade, but progress on delivering these aspirations has been modest (Kachalia et al., 2016) and patients continue to experience avoidable harm and substandard care (NHS Improvement, 2019; Wachter, 2010). One setting in the UK where patients are increasingly at risk is primary care,

where the diversity, scope, and variation in infrastructure is combined with mounting pressure on services from an ageing population with multiple morbidities (Gandhi and Lee, 2010; Panesar et al., 2016). It is estimated that patient safety incidents occur within 1% and 2% (between 3 and 6 million) consultations per year (NHS Digital, 2019a).

With a culture fond of blaming the individual for errors (Naylor, 2016; Woodward, 2016), the numerous recommendations, policies and interventions intended to improve patient safety in primary care have

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<https://doi.org/10.1016/j.socscimed.2021.113906>

Received in revised form 18 December 2020; Accepted 1 April 2021

Available online 5 April 2021

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failed to deliver sustained improvements (Hatoun et al., 2017; Hignett et al., 2018). This may be due in part to the lack of consistent messaging and sympathetic policy and commissioning from organising bodies, but also that the initial focus fell on identifying categories of harm, such as diagnosis, prescribing, or communication (Cooper et al., 2017; Daker-White et al., 2015). This led to the development of improvement tools capable of describing ‘what’ is happening, but less so ‘why’ (Bhattacharyya et al., 2006; Bowie et al., 2015; de Wet et al., 2019). It is now understood the importance of contextual factors in sustaining improvement, including patient characteristics, organisational structures, and the physical and political environment (Damschroder et al., 2009; Hignett et al., 2018; Melnyk et al., 2017; Michie et al., 2011; Woods et al., 2010). The need for a greater awareness of the dynamic interplay between the providers charged with delivering safe care and their environment was acknowledged in the latest NHS Patient Safety Strategy, which states: “The NHS does not yet know enough about how the interplay of normal human behaviour and systems determines patient safety” (NHS Improvement, 2019).

Critical realism (CR) is one way we might understand this interplay between individual determinants of how people act and the circumstances that influence that action (Connelly, 2001; Oladele et al., 2013). It differs to the positivist approach that believes cause is objectively conjoined to measurable effect (Porter, 2001; Ryan et al., 1973) by assuming that objective reality is ‘historically, socially, and culturally situated’ (Archer, 1995, 2016); i.e. it is reliant on the interaction between the social dimensions of people and their behaviour (Archer, 2016). The underlying influences CR explores occur within three realms; the *micro*-relating to influences on individual actions, the *meso*-relating to influences at group and organisational levels and the *macro*-relating to influences at a societal level (Blom and Morén, 2009). The perspective it provides helps us understand why ostensibly similar providers can respond differently to the multiple inputs and resources at play when they provide care (Bhaskar, 1998; Oltmann and Boughey, 2012). Equally importantly, it can offer robust explanations as to why certain interventions or initiatives do or don’t work and within which circumstances or contexts (Bhaskar, 1998; Oltmann and Boughey, 2012). This has led to it being widely and successfully used in the design and evaluation of quality improvement initiatives in multiple domains of healthcare (Bhaskar and Danermark, 2006; Rycroft-Malone, 2008; Scambler et al., 2010).

One tool that can unpick the complex range of contextual, and often unobserved, influences on care delivery supporting both a CR interpretation of patient safety in primary care whilst simultaneously providing key stakeholders with practical insight is the socio-ecological framework (SEF) (McLeroy et al., 1988). The SEF provides the opportunity to identify and unpick both individual determinants and contextual influences on individual health care provider (HCP) behaviour and their ability to practice safely. It was initially developed to describe the relatedness between person and context in the development and implementation of public health initiatives (Golden and Earp, 2012; McLeroy et al., 1988) and shares the critical realist understanding that individual behaviours both shape and are shaped by multiple societal influences that are not immediately apparent. The SEF stratifies these influences into five levels ranging from the individual beliefs and experiences of HCPs to overarching policy (McLaren and Hawe, 2005; McLeroy et al., 1988), with the assumption of interaction and reciprocal causation between each level (Stokols, 2000). Its ability to present a complex array of influencing factors in an intuitive and readily interpretable framework has seen it increasingly adopted in attempts to improve health service delivery. These include programmes to progress access to services (Haines et al., 2018; Ma et al., 2017; Onono et al., 2015; Pendergrass et al., 2017), as well as increasing our understanding of broader concepts of care such as the influences on ethical practice (Davidson et al., 2018).

The work we present here populated the SEF via a deductive content analysis to help understand the influences on HCPs’ safety-related

behaviour. Data were gathered from a series of semi-structured interviews with clinical and non-clinical family practice staff including general practitioners (GPs), health care assistants (HCAs), and practice managers from across England. The interviews explored their experiences and perceptions on the provision of safe care and the data were used to populate each of the five levels of the SEF, for the first time presenting a coherent framework of the personal determinants and contextual factors that impact on the delivery of safer primary care.

2. Method

2.1. Study design and research team

We conducted a series of semi-structured interviews with GPs, HCAs, nurses, and practice managers (Elo and Kyngas, 2008) working within five geographically diverse regions in England. The interviews were conducted as part of a wider study funded by the NIHR National Centre for Primary Care to develop and evaluate a patient safety toolkit (PST) (Bell et al., 2016). The multi-disciplinary research team was led by senior sociologists, GPs and health service researchers with interviews undertaken by non-clinical research fellows experienced in qualitative research. Ethical approval was obtained from East Midlands - Nottingham Research Ethics Committee – REC/REF - 13/EM/0258 15 July 2013 for all organisations involved and signed consent gained from all participants in line with the approval granted.

2.2. Settings, recruitment and data gathering

Data collection occurred within Greater Manchester in the North West; the East Midlands, West Midlands and North Staffordshire in Central England; and Hampshire in the South. Ten practices were invited to participate from within each geographical area, purposively selected to reflect a range of societal deprivation and practice size (Bell et al., 2016). This maximum variation sampling meant we could explore influences on patient safety across a broad range of demographically varied cases (Sandelowski, 1995). Semi-structured interviews were conducted with the clinical and non-clinical staff involved in the implementation of the PST (Bell et al., 2016). So as to contextualise their reaction to the various elements of the toolkit, we also explored participants’ broader experiences of patient safety. The interview schedule included questions on safety awareness, and the influences of patient, clinician and system factors as summarised in Box 1. A combination of telephone and face to face interviews were conducted by authors IL, a Research Fellow employed by the University of Birmingham, KP, a Research Fellow at the University of Manchester, and a Research Associate at the University of Nottingham; KP and the Research Associate had worked with the practices and interviewees in Greater Manchester and East Midlands respectively during an earlier phase of the PST project (Bell et al., 2016). Interviews were conducted until data saturation was reached (Guest G and Johnson, 2006) and all were digitally recorded and transcribed verbatim.

2.3. Data management, analysis and theory development

Staff experience of patient safety was analysed using the SEF to underpin a deductive content analysis (Elo and Kyngas, 2008) that stratified individual determinants and environmental influences on behaviour within one of five levels (McLeroy et al., 1988), as summarised in Box 2 alongside the corresponding level of societal mechanism as understood through CR (Blom & Morén, 2009, 2011). The transcripts were analysed independently by two authors experienced in qualitative research; IL and SG. The data were examined for text relating to each level of the model, and any issues that arose over where data should be placed were discussed and agreed upon by both. Having placed the data within one of the five levels, it was then grouped into sub-themes that were also consensually agreed. This enabled the presentation of the five

Box 1
Topic guide for semi-structured interviews

- Do you think your practice is aware of patient safety issues?
Prompts
Are you aware of how you might improve patient safety?
 - Can you describe what measures your practice employs to ensure patient safety?
 - How is patient safety supported by management and staff (both clinicians and non-clinicians),
Prompts
 - Policy,
 - Allocation of money, staff time, material resources?
- What do you think are the clinician factors that may affect patient safety in a practice?
Prompts
- Attitudes of doctors
 - Knowledge and skills
 - Past experiences – e.g. have they had a patient safety incident that has altered their perception?
- What do you think are the patient factors that may affect patient safety in a practice?
Prompts
- Deprivation
 - Size of practice
 - Age
 - Multi-morbidity
 - Ethnicity
- What do you think are the system factors that may affect patient safety?
Prompts
- Practice processes
 - Staff training
 - Capacity/access/physical environment of the practice

levels of the framework populated with sub-themes pertinent to patient safety. The data were managed using NVivo 10 software.

Box 2
The five-levels in the social-ecological framework and related level of societal mechanism (McLeroy et al., 1988) and (Blom and Morén, 2011)

Level within social-ecological framework*	Description*	Corresponding level of societal mechanism**	Description**
Individual	Characteristics of an individual that influence behaviour including knowledge, attitudes, self-efficacy, gender, age, beliefs and capabilities	<i>Micro-</i>	Social interaction between dyads and smaller groups involving oral and written communication and social structures that include role expectations related to gender, or hierarchical position.
Interpersonal	The formal and informal social networks or support systems that can influence individual behaviours including family, friends, peers and co-workers.		
Organisational	Organisations or enterprises with rules and regulations that provide a service or services.	<i>Meso-</i>	The social interplay that occurs within and between groups, networks and organisations. This includes routines, regulations and documentation.
Community	Environmental influences within a defined boundary		

(continued on next column)

Box 2 (continued)

Level within social-ecological framework*	Description*	Corresponding level of societal mechanism**	Description**
	that can include the built environment, and includes relationships between organisations, institutions, and informational networks.		
Policy	Local, national and international laws and policies including those relating to the allocation and prioritisation of resources for the delivery of healthcare services for defined groups of patients.	<i>Macro-</i>	The social interplay within and between societies that includes social structures such as political parties, policies and educational systems.

3. Results

Interviews were conducted with representatives from 39 practices with characteristics of study practices reflective of those found across the UK, in terms of both practice organisation and their patients (see Table 1). The 39 interviews lasted between 17 and 46 min and were conducted individually with 21 GPs, 15 practice managers, 4 nurses and 1 HCA, with the exception of Practice 07 in the West Midlands, where the interview was conducted jointly with a GP and practice manager. The job title and region of each participant is summarised in Table 2.

Table 1
Characteristics of study practices and their patients.

	Practice characteristics		Patient characteristics				
	List Size ^a	QOF Score (2013) ^a	% Under 18 ^a	% 65+ ^a	% Non-White ^b	% Female ^b	Deprivation Score ^a
Practice Average/SD ¹	8824/6289	976.7/19.6	20.4%/4.7%	15.5%/7.4%	17.7%/22.6%	51.1%/5.0%	21.8/12.4
English Average	7041 ^a	961 ^a	20.8% ^a	16.7% ^a	13.0% ^b	51.0% ^b	21.5 ^a

^a Taken from National General Practice Profiles (Public Health England)(Public Health England, 2017).

^b Taken from the GP Patient Survey July 2014 (NHS England, 2015).

Table 2
Job role of those interviewed at each practice.

	East Midlands (EM) n	Greater Manchester (GM) n	Hampshire (H) n	North Staffordshire (NS) n	West Midlands (WM) n	Total n
GP	7	4	5	3	1 ^a	21
Practice Manager	1	2	–	4	8	15
Practice Nurse	1	–	–	1	2	4
Health Care Assistant	–	–	–	1	–	1
Total number of interviews	9	6	5	9	10	39

^a Interviewed alongside Practice Manager.

3.1. Semi-structured interviews

Following our consensual post-hoc deductive analysis, there were no instances where data could not be placed into at least one of the levels of the SEF. Here, we present the influences on patient safety that emerged as sub-themes within each of the five-levels of the SEF. These are described below alongside illustrative quotes and summarised in Fig. 1.

3.2. Individual

The knowledge, beliefs and experiences of individuals are key in influencing their response in any given situation. In general practice, the responsibility for delivering safe care extends across clinical and non-clinical staff, each of whom has a range of backgrounds, training, motivation, and engagement with their role (Weller et al., 2014). In relation to this, we heard participants describe their personal beliefs on provider responsibilities for patient safety and how the influence of previous experiences of safety related issues affected their perceptions of risk.

3.2.1. Beliefs

Participants described how they considered the safe care of patients a personal responsibility and integral to the care they provided. One

practice manager explained how it is intrinsic to each patient contact, and elsewhere a practice nurse felt that failing to provide anything but safe care was failing patients.

“We just assume that patient safety is what we deal with on a daily basis...each contact we have with the patient is ‘patient safety’.” *Practice Manager, West Midlands, Practice Code- 08*

“At the end of the day, we’re here for the patients, aren’t we? We try to give them a service and it’s got to be as safe as possible and if we’re not doing that, then we’re not doing our job properly.” *Practice Nurse, West Midlands- P02*

3.2.2. Experiences

The awareness of patient safety can be shaped by previous experiences, and in particular, exposure to instances where such safety was compromised. One GP described how staff that had witnessed patient safety incidents would change the way they practiced as a result.

“I think people’s past experience ... if they have seen incidents before then it raises their awareness and encourages them to adopt very safe practices.” *GP, East Midlands- P02*

However, amongst those that had practiced without being either

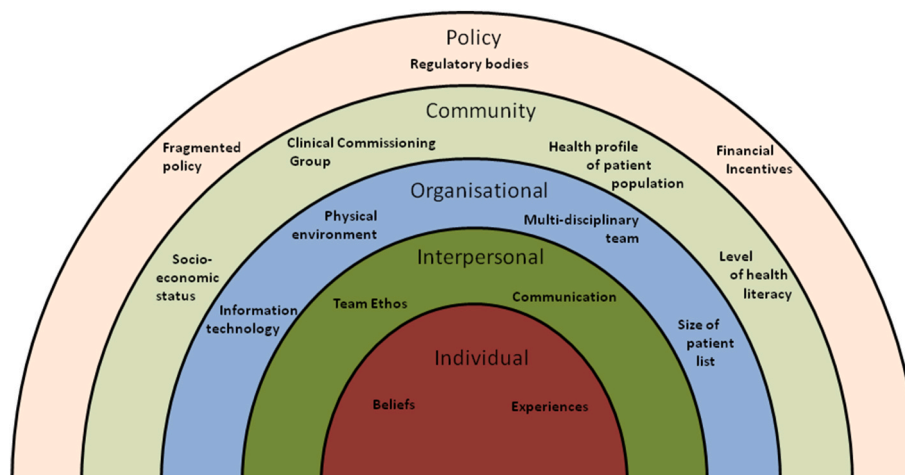


Fig. 1. Socio-ecological framework showing the influences on patient safety in primary care (after Rubio-Valera et al., 2014).

aware or involved in such incidents, there appeared a lack of awareness of their continuing responsibilities for safety. As one practice manager described, for some senior GPs, the years of successfully treating patients, apparently without issue, could lead to complacency and reliance on a potentially outdated skill set.

“They may become a bit more blasé as they get older and more experienced, and that’s where the constant professional development needs to start kicking in...if they don’t continually develop then they will start to fall into areas where patient safety is at risk because they may well be using out of date practices.” *Practice Manager, Greater Manchester-P01*

3.3. Interpersonal

Interpersonal factors describe the relationships and networks developed by individuals with their peers and co-workers. In modern primary care this involves clinicians working alongside non-clinical staff who provide both administrative support and perform key patient facing roles (Litchfield et al., 2017). The importance and range of these networks to patient safety were manifest in two key domains; communication and team ethos.

3.3.1. Communication

Primary care can be considered a ‘professional hierarchy’ where much of the decision making is decentralised and led by highly trained professionals (Mintzberg, 1980). However, the importance of open and equitable communication across hierarchical boundaries was recognised as an important component of delivering safe care by our participants. As one GP reflected, all staff regardless of rank or role should feel comfortable in voicing their opinion of the care provided with even the most senior members of the practice team.

“I think, as a practice, we should allow all categories of staff to have the confidence to say, ‘Well, I think something needs to be done in a better way’ ... ‘can I raise it at the highest level?’ So I think that’s really important, allowing people to have the confidence to raise concerns.” *GP, East Midlands- P08*

Recognising how frank communication can support safe care, one senior GP described how staff participated in regular discussions on patient safety as part of regular practice-wide meetings.

“... there’s a general attitude in the practice where at the lunchtime meetings we’ll meet up, discuss difficult cases, try and troubleshoot difficult patients and I suppose pre-empt those cases which can lead to patient safety problems.” *GP, Greater Manchester- P03*

3.3.2. Team ethos

The benefits of an ethos that understands how all members of the healthcare team contribute to patient safety have been recognised (Weller et al., 2014). In general, practice GPs take the clinical lead, assuming a responsibility for the safety of their patients in proportion to their role. However, the importance of non-clinical staff in the provision of a safe and reliable service was apparent, particularly those with patient facing roles, as one practice manager noted.

“I would feel that the frontline staff are the key people in an organisation, they deal with patients, they deal with queries, they deal with us. There’s a lot that they deal with ...” *Practice Manager, West Midlands- P08*

3.3.3. Organisational

For any organisation both operational elements and aspects of the physical environment contribute to how successfully they provide a service (Kemsley, 2008; Windermere, 2018). Participants described how

both contributed to their ability to deliver safe care, including the design of their premises, the size of the patient list, the range of services provided, and the sophistication of their information technology (IT).

3.3.4. Physical environment

Our participants recognised how elements of design and finish can adversely affect patients. For example, a nurse at one practice disclosed how the layout of the surgery presented such a risk to patients that certain rooms were seldom used.

“We have got clinical rooms upstairs; we don’t often use them as clinical rooms, erm, because there was some kind of issue with insurance with people going up and down the stairs...I did suggest before all this building finished, that we had a lift installed, but nobody listened.” *Practice Nurse, West Midlands- P02*

Elsewhere a practice manager noted the potential hazard presented by inappropriate floor surfaces.

“If you’ve got unsuitable types of flooring then that’ll be an increased risk and that could be either from slips or falls ...” *Practice Manager, Greater Manchester- P01*

3.3.5. Size of patient list

The size of the patient list impacts the ability of a practice to provide continuity of care; i.e. the ability of a HCP to contextualise the presentation of a particular issue with their prior knowledge and experience of a patient (van Walraven et al., 2010). Those working within smaller practices felt the knowledge of individual patients learned over time led to safer care. As one registrar based in the East Midlands explained,

“I think the size of the practice is important. One of the foundations of being a reasonably average size or smaller practice is that you... tend to have first-hand knowledge of your patients... and often in terms of safety and quality that’s got a vital role to play.” *GP Registrar, East Midlands- P03*

A similar opinion was expressed by a practice nurse who worked at one of the reducing number of practices manned by a single GP (NHS Digital, 2020a).

“Because we’re such a small single-handed practice, we know our patients. So I think that makes things a little bit easier and avoids them slipping through the net.” *Practice Nurse, West Midlands- P04*

3.3.6. Multi-disciplinary team

Modern primary care in the UK is predicated on the patient accessing a range of expertise through their local general practice (NHS England, 2018), and the benefit to patient safety of having specialised support as part of the practice team was described by our participants. For example, a practice nurse in the West Midlands described the advantages of incorporating a pharmacist into the practice team.

“Well, we have a very proactive community pharmacist that comes in weekly and she’s often bringing things into me and highlighting things generally, so... we’ve updated policies as regards prescribing and everything.” *Practice Nurse, West Midlands- P02*

Related to this a nurse in the East Midlands practice felt the ability of pharmacists to identify issues could help reduce the pressure on GPs.

“... I don’t think now it’s all GPs, I think it’s less GPs, ...but you’ve got to look at what a person can do...I think pharmacists are brilliant at patient safety, they pick up so much.” *Practice Nurse, East Midlands- P05*

3.3.7. Information technology

The digital transformation of primary care continues (NHS Digital, 2019b) and has led to increasingly sophisticated clinical management systems (CMS), and a variety of apps, websites, and portals designed to connect patient and staff to the relevant clinical information (NHS Digital, 2019b). As a result, practice systems can incorporate a variety of decision support tools some of which have been developed to enhance patient safety.

“The medication prompts for instance that we get generated automatically by the electronic records systems... it is able to do things which in your time pressured space you can't do, such as look at the safety of the medication based on their previous drug results and interactions.” *GP, Greater Manchester-PO3*

At another practice, the benefits of the more sophisticated functionality of the latest CMS was recognised. One practice nurse explained how it had improved the follow-up of blood test results.

“Abnormal blood results, they're always followed up. There's a procedure for that. We can - now we've moved onto EMIS web - we can allocate any abnormal results to, escalate it to a member of staff, so it's dealt with ...” *Practice Nurse, West Midlands- PO4*

3.4. Community

This level of the framework describes how the location of a general practice organisation within specific geographic boundaries can affect its ability to deliver safe care. It has been previously acknowledged that service utilisation varies across the UK, mediated by the characteristics of the local population including their socio-economic status and the prevalence of chronic disease and multi-morbidity (Stringhini et al., 2017). In addition, in England, the identity of the clinical commissioning group (CCG), and their ensuing priorities also varied by practice location.

3.4.1. Health profile

As was explained by one practice nurse, the prevalence of long-term conditions in their local population significantly affected the demand on practice services due to the number of patients that required regular consultations and monitoring.

“It is the volume of work that comes through, we just don't physically have the hours of the day and the problem is, is in this particular area, we've got a lot of people that are chronically ill.” *Practice Nurse, East Midlands- PO5*

3.4.2. Socio-economic status

Socio-economic status (SES) is a measure of an individual's social status and economic value relative to others and is based on income, education, and occupation (Baker, 2014). Staff from practices situated in areas with lower income or chronic unemployment described the repercussions of this financial hardship on the psychological well-being of patients and the increased burden on already busy practice staff.

“We get a lot of people that... they're starting to lose their benefits, they need that benefit, a lot of them haven't ever worked so they'll start to, you know, come in with unusual symptoms that have to be pursued and everything, so it's very time consuming.” *Practice Nurse, East Midlands- PO5*

3.4.3. Health literacy

Where practices were situated in areas with low-levels of health literacy, i.e. the ability of individuals to understand and assimilate information related to their health care (Protheroe et al., 2009), its impact on patient safety was raised. For example, at one practice situated in a

location where for many English was their second language, staff regularly assumed responsibility for ensuring patients understood referrals from secondary care.

“... we've got issues with patients not attending follow-up appointments at hospital because they've not understood the letter or they say they've 'not received the letter' and so on. We then spend a lot of time chasing up hospital bits and pieces and I did mention to my colleague last week, 'Look, do we need to put all this time and effort in? Ultimately this is between the hospital and the patient...' and actually he felt quite strongly that it was our responsibility to do that because we're part of that chain and we know that there are issues with this patient and they might not necessarily understand the information that they've had.” *GP, West Midlands- PO7*

3.4.4. Clinical commissioning group

In England, each general practice belongs to a CCG determined by their geographical location and responsible for procuring locally sensitive services (NHS Clinical Commissioners, 2020). However, this can lead to variations in the priority each places on patient safety (Roberts, 2016). For example, it was only within the East Midlands that a CCG intervened to improve the precision of discharge letters.

“I think the single thing that has improved our patient safety more than anything is the fact that the CCG have negotiated with the hospital to have a standard format of discharge letter and clinic letter so now in the clinic letter it clearly says 'these are actions for the GP'.” *GP, East Midlands- PO2*

3.5. Policy

The Policy level relates to the various regulations, laws and initiatives introduced by governing bodies at local and national level. Participants spoke of attempting to satisfy the evolving agendas of regulatory bodies and financial incentive schemes, whilst negotiating conflicting local and national policies.

3.6. Regulatory bodies

In England, the Care Quality Commission (CQC) is the regulatory body of health and adult social care designated to assess, amongst other elements of health service delivery, patient safety (Care Quality Commission, 2018). However, the relevance of the measures selected to determine safety in primary care was questioned.

“The way CQC is going is targets, targets, and what you have to meet in terms of standards... I can say 'The jury's out.' For what you're doing is you're saying 'You're safe.' But it's according to one standard, which is CQCs and who are they referring to? Who's their reference point to say that 'what we're saying is safe'?” *Practice Manager, West Midlands- PO7*

3.7. Financial incentives

The UK's Quality Outcomes Framework (QOF) is a point based system offering monetary reward for following various measures of best practice (NHS Digital, 2020b) that remains susceptible to manipulation (Kramer, 2012). One practice manager described how measures intended to improve overall patient safety were engaged with only to earn QOF points.

“I know a lot of people brush stuff under the carpet and the only reason they do Significant Event Analysis is because they have to do at least two a year for QOF.” *Practice Manager, Greater Manchester- PO1*

3.8. Fragmented policy

Senior staff responsible for management decisions within their practice described feeling overwhelmed by the conflicting priorities of national and local organisation. As one practice manager described, "... you've got information coming from the CCG, you've got different information coming from the area team, you've got information coming from NHS England. So you've got three or four - even the council! So you've got three or four different sources that I regularly get information from which I've got to act upon as a consequence. So it's quite, it's quite, disparate. Nothing's connected... the reality is what's happening is this fragmentation is creating even more risks, which have been inadvertently put on practices." *Practice Manager, West Midlands- P07*.

The manager at another practice in the West Midlands described similar issues with aligning the competing demands of local and national policymakers with the practice's own systems, whilst trying to treat patients safely.

"... you're dealing with CCG, you're dealing with NHS England, City Council... You're dealing with the patients, you're dealing with your policies and procedures, you're dealing with an audit... So there's a whole sort of set of things that you need to do..." *Practice Manager, West Midlands- P08*

4. Discussion

4.1. Summary of main Findings

An individual HCP's capability to deliver safe care is dependent upon a number of little understood personal and contextual factors (NHS Improvement, 2019). The concept of critical realism (CR) describes these influences at the *micro*-, *meso*-, and *macro*-level (Blom and Morén, 2011) which combine to act upon the provider's ability to practice safely, often in ways not immediately apparent (Angus and Clark, 2012; Melnyk et al., 2016; Williams et al., 2017). We found that the SEF proved an effective means of identifying and presenting these underpinning influences that can support both the academic pursuit of the underlying mechanisms that act on individuals as theorised by CR, but also their interpretation by multiple stakeholders including providers, commissioners, and policymakers. Specifically, the SEF allowed us to place the actions of individual providers in context with personal beliefs and experiences; the level of open engagement with their practice team; the size and complexity of their organisation; the characteristics of their patients and commissioning organisations; and above all, the impact of multiple and sometimes incoherent policies. This stratification has enabled a more holistic approach to understanding patient safety in primary care that has previously been absent (Dixon-Woods et al., 2014).

4.2. Specific findings

4.2.1. Individual

Participants recognised patient safety as central to every patient contact, though awareness of its importance varied with personal exposure to patient safety incidents affecting attitudes toward its relevance. It is known that inconsistent experiential learning informs clinical practice (Greenhalgh and Douglas, 1999). In attempting to minimise discrepancies between clinicians, the World Health Organisation developed a patient safety curriculum for medical schools (Walton et al., 2010), though its implementation has varied with the priorities of academic leads (Usher et al., 2018). The complacency regarding updating skill sets observed in some staff echoes previous concerns (Tingle, 2018). These are compounded by ongoing problems implementing Continuing Professional Development in UK healthcare due to a lack of individual motivation and engagement with the process from managers (Karas

et al., 2020).

4.2.2. Interpersonal

Our participants recognised the importance of open and honest discussion across staff groups; a collaborative ethos recognised as a hallmark of effective teamwork (Daker-White et al., 2015; Primary Care Workforce Commission, 2015). However, the organisational structures of general practices typically consist of a hierarchy dominated by highly skilled clinical professionals (Mintzberg, 1980). Embedded within this are imbalances in power, authority, and responsibility, exemplified by a number of high profile failures to protect patients from the harm caused by senior staff (Alexander, 2018; Francis, 2015). Inter-professional training offers one solution (Reeves et al., 2013), and its ability to improve communication and patient care (Carney et al., 2019) has led to recommendations for its inclusion in qualifying and CPD programmes from the European Forum for Primary Care (Miller et al., 2019).

4.2.3. Organisation

Participants recognised the influence of the practice's physical infrastructure on patient safety (Mahmood et al., 2011). That one recent refurbishment left consultation rooms accessible only by a flight of stairs demonstrates again how the apparently simple aim of designing facilities to be functional and safe is complicated by changing standards, staffing and patient requirements (Hignett et al., 2013).

Practice list sizes in the UK continue to grow with some 'super-practices' registering 100,000 patients (Baird et al., 2018). This trend toward larger practices has increased disciplinary diversity potentially providing safer, more responsive care (NHS England, 2018). For example, the introduction of practice-affiliated pharmacists lauded by our participants has led to demonstrable improvements in care provision and patient safety (NHS Alliance and Royal Pharmaceutical Society, 2014).

Counter to this, participants from smaller practices felt their first-hand knowledge of individual patients supported patient safety. NHS England recently introduced primary care networks so smaller practices could benefit from economies of scale whilst remaining sensitive to the needs of local patients (NHS England, 2019). Intended to be limited to 50,000 patients, a third of such networks now exceed this figure, demonstrating again the financial attraction of consolidating resources (Bostock, 2020).

4.2.4. Community

We heard how the needs of chronically ill patients placed pressure on resources and inhibited the application of evidence-based medicine (McKenna et al., 2004). However, this pressure varied by location, and we know that low SES is associated with increased healthcare utilisation (Stringhini et al., 2017). Low SES is also linked with poor health literacy with negative implications for patient safety (Protheroe et al., 2017). Staff at a practice with large numbers of patients who spoke English as a second language described the pressure of preventing such patients falling between the continuing gaps between primary and secondary care (Tarrant et al., 2015) due to referral letters written without recognition of socio-cultural context (Academy of Medical Royal Colleges, 2018). The variation between CCGs that emerged has also been recognised as compounding geographical variation in the quality and safety of care (Roberts, 2016).

4.2.5. Policy

The public accountability that flows from tax-funded healthcare has led to increasing regulation and the establishment of monitoring bodies like the CQC (Care Quality Commission, 2018). However, the logic of escalation means as one set of indicators fail additional ones are introduced (Pollitt et al., 2010), and participants questioned their relevance to safe care. Such scepticism reflects recent findings that less than one third of primary care organisations credited improvements to CQC publications (Care Quality Commission, 2017), and we observed a

comparable lack of engagement with QOF which has also been similarly criticised (Forbes et al., 2017). It has been increasingly recognised that the ‘target culture’ permeating much of primary care has negatively impacted on organisational performance, workforce morale, and patient care (McCann et al., 2015), and is a contributory factor to the widely reported strain on the relationship between GPs and the UK Government (Worley, 2017).

4.3. Strengths and limitations

The scope of the topic guide, the number and range of staff interviewed, and the various sizes and socio-economic settings of practices make our investigation one of the largest and most thorough explorations of staff perceptions of patient safety conducted in UK primary care. Participants’ involvement in the broader PST project (Bell et al., 2016) may have increased their sensitivity to patient safety, but would only have supported their ability to identify and understand the impact of the factors that arose in our discussions (Bernard, 2017).

Though the SEF shares similarities with other socio-technical models (Carayon et al., 2014; Holden et al., 2013) that recognise the individual as one component embedded within a multi-factorial system (McLeroy et al., 1988), this is the first time it has been used to understand the behaviour of individual HCPs in primary care. The use of deductive coding in a content analysis can constrain interpretation of the data (Cho and Lee, 2014), but the comprehensive nature of the SEF meant we were able to locate all of the data within one of its levels. This does not mean that the range of influences that emerged are definitive, as they may be added to or amended over time in line with differing models of primary care delivery. Because our work was not predicated on a positivist approach, we chose not to count responses in any purposeful manner to avoid obscuring important nuances or connotations that support a CR approach (Hannah and Lautsch, 2010). Indeed, it has been recently acknowledged elsewhere that combining content analysis with a robust theoretical underpinning can enhance the practical utility of a CR interpretation (Leung and Chung, 2019).

4.4. Conclusions/implications for practice and policy

The SEF has proved an effective means of understanding the various dimensions of culture and situation that impact the decision-making of individual providers (Davidson et al., 2018; Melnyk, 2018). Although these are described discretely within the framework, these levels rarely act in isolation, with the nature and impact of their interaction contextually conditioned and constantly evolving. For example, at an Organisational level, participants noted the benefits of the appropriate design and finishes employed by their practice, yet the resources required to amend these are considerable. Therefore, the capability of an individual practice to make these changes is dependent upon the resources of their CCG at Community level, which in turn may be influenced by funding streams determined by the Department of Health at Policy level. In another example of how the levels of the SEF interconnect, one participant recounted how their community pharmacist had identified medication issues with an individual patient as described within the Organisational level. However, this was of notable value because the ‘team ethos’ of the practice, as described within the Interpersonal level, meant they were able to directly communicate their concerns to the practice nurse.

In an attempt to incorporate consideration of these dynamic factors in the design, implementation, and evaluation of patient safety interventions, we created a series of questions described within the five levels of the SEF; from engagement of staff at the Individual level to accounting for contradictory guidance at the Policy level (see Appendix I). By holistically considering the full range of influences, the SEF can support future attempts to improve patient safety initiatives by exerting leverage across as many levels of the framework as possible (Grzywacz and Fuqua, 2000).

Key message

- This study describes one of the most in-depth explorations of the influences on patient safety yet conducted in UK primary care.
- The socio-ecological framework has provided a novel and coherent perspective on how multiple contextual factors impact on providers charged with delivering safe care.
- The range of personal, organizational, and environmental factors identified will inform the design of future interventions and better support their implementation.

Credit author statement

Ian Litchfield; Methodology, Investigation, Writing –original draft, Writing – Review & Editing, Visualization. Katherine Perryman; Investigation, Writing-review and editing. Anthony Avery; Conceptualization, Supervision, Funding acquisition, Writing - Review & Editing. Stephen Campbell; Conceptualization, Supervision, Funding acquisition, Writing - Review & Editing. Paramjit Gill; Conceptualization, Supervision, Funding acquisition, Writing - Review & Editing. Sheila Greenfield. Conceptualization, Supervision Funding acquisition, Writing - Review & Editing, Verification.

Support

This work was supported by the National Institute for Health Research (NIHR) School for Primary Care Research.

Declaration of competing interest

None.

Acknowledgements

Thank you to Katherine Marsden Research Associate for conducting some of the interviews.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.113906>.

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