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RESEARCH ARTICLE

'I'd best take out life insurance, then.' Conceptualisations of risk and uncertainty in primary care consultations, and implications for shared decision-making

Olaug S. Lian[a], Sarah Nettleton[b], Huw Grange[a] and Christopher Dowrick[c]

[a]*Department of community medicine, UiT – The Arctic University of Norway, Tromsø, Norway;* [b]*Department of sociology, University of York, York, UK;* [c]*Department of Primary Care and Mental Health, University of Liverpool, Liverpool, UK*

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Abstract

The main objective of this study is to gain knowledge about interactional factors that support and obstruct mutual risk-assessments and shared decision-making (SDM) in clinical consultations. Through a narrative analysis of verbatim transcripts of 28 naturally occurring consultations performed in English National Health Service practices, we explore the ways in which patients and general practitioners conceptualise, construct and negotiate risks related to diagnostic tests and medical treatments. Consultations were sampled from a corpus of 212 consultation transcripts from the *One in a Million: Primary care consultations archive* on the basis that they contained the word 'risk(s)'. Most sampled cases relate to cardiovascular conditions and cancer. Drawing on a social constructionist perspective and the relational theory of risk, we found that while GPs talked about mathematical-probabilistic population risk, patients expressed their own *experiences* of possible future dangers, conceptualised through words like 'worried', 'scared' and 'concerned'. Risk objects, defined here as entities to which harmful consequences are conceptually attached, were constructed differently by patients and GPs, especially in relation to cardiovascular risks. Their different rationalities sometimes obstructed any form of mutual risk-assessments. The relational theory of risk proved to be a useful theoretical frame for exploring layers and configurations of risk constructions among patients and clinicians, and for capturing interactional factors that support and obstruct mutual risk-assessments and SDM. For patients to be able to engage in genuine dialogues and make informed decisions about their care, it is paramount for patients and doctors to co-construct patients' health-risks during clinical encounters.

Keywords: Risk construction; uncertainty; shared decision-making; clinical interaction; cardiovascular disease

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Corresponding author. Olaug S. Lian Email: olaug.lian@uit.no

1 Introduction

In this article, we explore how patients and general practitioners (GPs) conceptualise, construct and negotiate risk and uncertainty when interventions are to be mutually decided on during naturally occurring clinical consultations. Our main aim is to explore to what extent patients and GPs co-construct the health-risks patients might be facing while negotiating potential and actual uses of diagnostic tests and medical treatments, and to identify factors that support and obstruct mutual risk-assessments and shared decision-making (SDM). Empirically, our point of departure is 28 naturally occurring consultations, sourced from the *One in a Million* data archive (Barnes, 2017; Jepson et al., 2017). Consultations were sampled after identifying negotiations containing the word 'risk(s)' via a word-search in NVivo. Most identified cases concerned cardiovascular conditions and cancer. These cases will therefore be of particular interest, and four consultations receive special attention in the analysis we present later. Drawing on a social constructionist perspective on risk and Hilgartner's (1992) relational theory of risk, we explore the unfolding of risk-related decision-making processes through a narrative analysis of complete consultation transcripts.

2 Theoretical perspective and previous research

Risk science provides concepts and tools for exploring how people perceive, conceptualise and act upon situations involving risk (Aven & Thekdi, 2021). To capture interactional factors that support and obstruct mutual risk-assessments and shared decision-making (SDM) in clinical consultations we employ a social constructionist perspective on risk, and work on the premise that notions of 'risk' within the consultations are co-created.

2.1 Conceptualising risk

Risk involves a *potential* exposure to something in the future that is *undesirable* (Aven & Thekdi, 2021; Douglas, 2002). A key element here is uncertainty, and the *possibility* that something harmful might happen (Aven & Thekdi, 2021; Prior, 1995). Constructions of risk and uncertainty encompass experiences of wondering, being insecure or worrying about a hypothetical danger we might be exposed to (Lian et al., 2021). In this article, we apply a sociological framework and a social constructionist approach to explore how risk is constructed by different actors in a specific social practice: the clinical consultation. These micro-level encounters are embedded within a wider sociocultural context (Mackintosh & Armstrong, 2020), and should not be studied as though they occur in isolation. In line with this perspective, we explore conceptualisations of risk as culturally contingent and socially constructed (Alaszewski, 2010; Brown, 2021; Douglas, 2002; Lupton, 2013).

2.2 The relational theory of risk

Our main theoretical frame derives from the relational theory of risk (Hilgartner, 1992). This theory redirects our attention from the ontological nature of risk *per se* to risk as a social phenomenon, and replaces the question 'What is risk?' with 'How do people understand something as a risk?' (Boholm & Corvellec, 2011). Risk is conceptualised as involving three main elements: *1) an object deemed to pose a risk; 2) a valuable object at risk, and 3) the relationship formed by linking these two* (Hilgartner, 1992). Risk objects are the entities to which harmful consequences are conceptually attached (insofar as they are conceptualised as sources of danger).

These objects do not merely refer to something in the material sense, but to ‘any kind of physical, cultural, or social artefact that can be delineated and singled out’ (Boholm & Corvellec, 2011, p. 177). For people to define themselves as exposed to a risk, they need to (1) perceive themselves as vulnerable to a certain threat, and (2) ascribe value to whatever they find as endangered. If we assume that most people ascribe value to their life and health, the key element here is *perceiving yourself as vulnerable to an object you position as a risk*. This depends on a multitude of personal values, emotions and attitudes (Zinn, 2008). People’s actions are based on their own constructions of risk, so if we are to understand how people act upon risk, we must recognise their views. For the practice of shared decision-making in the consultation room, it means that doctors need to explore patients’ individual risk assessments.

2.3 Shared decision-making (SDM)

The ideal of shared decision-making (SDM) is that patients and clinicians work together in a collaborative process whereby decision-making power is shared, and patients’ values are respected (Edwards et al., 2005). Early models of SDM identified effective communication of risk as an important element of enabling patients to make informed choices about their care (Edwards et al., 2005). As the application of SDM has broadened beyond therapeutic actions, the role of risk communication in enabling patients to participate in decisions about preventive care has become a key area of interest. Use of SDM to facilitate decision-making about the cholesterol-lowering medication statins has attracted particular interest (Barrett et al., 2016; Kambhampati et al., 2016). Despite development of best practice guidelines for risk communication (Trevena, 2014), patient understanding of cardiovascular risk information remains limited (Gidlow et al., 2021). Patients seem to make minimal use of this information in reaching decisions about preventive action (Polak & Green, 2015), and they tend to overestimate both risks and benefits associated with treatments (Hoffmann et al., 2020). In the context of genetic screening for cancer, people assessed as being at ‘low risk’ of cancer have reported being more anxious than those at higher risk because they would no longer be subject to regular checks (Scott et al., 2005). For SDM to function effectively, multiple forms of risk need to be discussed; such as risk of disease and risk of side-effects from medical treatments.

Previous studies of risk communication in clinical practice have mainly been limited to qualitative data from retrospective interviews with GPs and patients (Gidlow et al., 2021). Among the few observational studies, Gidlow et al. (2021) found that GPs dominated risk discussions related to cardiovascular disease, that GPs often missed opportunities to check patient understanding, and that their communication often resulted in misunderstandings. Based on these findings, they call for more tailored and patient-centred health check consultations. To determine ways in which risk information enables patients to make informed choices about their care, we need more knowledge about what happens in the consultation room when negotiations of risk and uncertainty are conducted.

3 Methodology

Our study is based on data from the *One in a Million: Primary Care Consultations Archive* (Barnes, 2017; Jepson et al., 2017). This is an observational study containing film- and audio-recorded and verbatim transcribed naturally occurring GP consultations, collected between 2014 and 2015 in 12 National Health Service practices in England. The data also includes patient records; patient survey data; sociodemographic data of patients and GPs, and GP practice data. Of the 300 patients that gave informed written consent for their data to be accessed and reused by other researchers, subject to specific ethical approval, we received data for 212 consultations (all classified as cardiovascular, endocrine/metabolic, neurological, digestive, musculoskeletal, psychological, or general), divided on 12 different practices and 23 different GPs. All consultation transcripts were stored and thematically coded in NVivo (Lian et al., 2021).

3.1 Data material

Our study is based on verbatim transcripts of 28 complete consultations from the One in a Million dataset. To select consultations containing interactions conceptualised as risk-related, we conducted a word-search in NVivo (version 1.5.1) and identified the word ‘risk(s)’ in 43 of our 212 consultations. Of these 43 consultations, we excluded 15 consultations where the word ‘risk(s)’ was unrelated to negotiations about medical tests and treatments, and sampled the remaining 28 for further in-depth analysis (Figure 1). The consultations were performed by 15 different GPs, and the average consultation lasted about 14.5 minutes. The word ‘risk(s)’ appeared from 1 to 6 times (on average, 2.6 times) in each consultation. Among patients we have 14 women and 14 men aged 18–79 (on average, 51 years for women and 56 years for men). About two-thirds of the consultations (17 of 28) relate to cardiovascular and/or oncological conditions, that is, potentially life-threatening conditions. The remaining 11 entail a wide variety of risk-discussions related to minor surgical procedures, hormone treatment and addictive drugs. Our sample contains 78 per cent (72 of 92) of all mentions of the word ‘risk(s)’ identified in the 212 consultations. Patient records were used to obtain background information, such as test results.

3.2 Data analysis

During the first stage of our analysis, we identified all discussion containing the word ‘risk(s)’ and searched for patterns across all 28 consultations, before developing data-grounded themes based on main *intervention aspects* (Figure 2). We then classified dialogue extracts in relation to this scheme and explored the predominant themes (highlighted in Figure 2).

During the main stage of our analytical process, we narratively explored the unfolding of each of the 28 consultations, first individually and then collectively, while emphasising *what* was uttered (content), *how* it was uttered (form) and *by whom*. To make sense of the risk-related sequences, we related them to all remaining parts. In dialogical data, meanings emerge

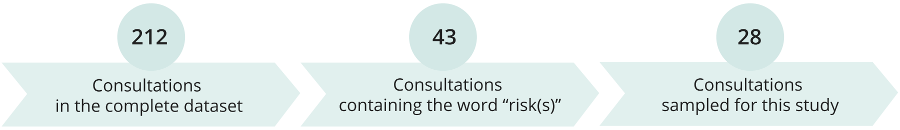

Figure 1. Sample selection.

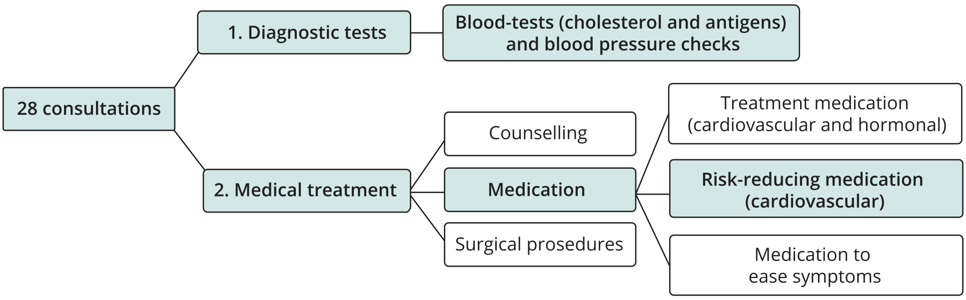

Figure 2. Discussions related to risk and uncertainty.

through reciprocal exchange. To preserve context and meaning, while also capturing the ongoing dynamics of the interactional flow, we mainly worked with dialogue sections. While interpreting their utterances, we do not search for intended meanings, but we reflect on their functions and implications (which is often indicated by the surrounding dialogue).

3.3 Ethics

The One in a Million study received ethics approval from South West – Central Bristol Research Ethics Committee (ref.: 14/SW/0112). Our study received ethics approvals from the National Health Service (Research Ethics Committee reference 18/WM/0008; Integrated Research Application System project ID 232,578), and Bristol Data Repository clearance from the Data Access Committee. All data were anonymised upon receipt, and there was no contact with study participants. The dataset was stored on a password-protected site at the University of York, UK, accessible to first and second author only.

4 Findings

A main pattern observed across all 28 consultations is that ‘risk(s)’ was a word mainly used by GPs (mentioned 67 times by GPs but only five times by patients). The risk objects – variously expressed as sources of risk (by GPs) and of danger (by patients) – related to two main aspects:

(1) *diagnostic tests* that might reveal disease that can be treated, but also potentially prompt a false sense of security or unnecessary worries (take it or not take it?), and

(2) *medical treatments* that may have both positive intended effects and negative side-effects (start, end or change?).

When outcomes of interventions are uncertain, which they usually are, possible negative outcomes related to intervening resemble those of *not* intervening (Table 1).

In what follows, we explore the ways in which patients and GPs constructed, conceptualised and negotiated risk and uncertainty in four consultations. These cases allowed us to explore in depth how risk was discussed in relation to both diagnostic tests (Cases 1 and 2) and medical treatments (Cases 3 and 4). Together, they captured the variety of negotiations apparent in our data. In transcript extracts, ‘[. . .]’ indicates ‘text omitted’ (for anonymisation or brevity).

Table 1. Tests and treatments: possible negative outcomes of intervening or not ($n = 28$).

	Intervening	Not intervening
Diagnostic tests	- Unnecessary worries about an illness that may not occur - False security - Complications	- Developing illness - Worsening of symptoms - Worry that illness may occur
Medical treatments	- Medication side-effects, including developing additional illnesses - Worries about medication side-effects	- Worsening of symptoms - Developing new illness - Worries about future illness

Case 1: 'I'm the sort of chap who would be worried about it, whatever'

The first case concerns a man in his early 70s who consulted a male GP about a prostate-related problem. The patient and the GP co-construct two distinct risk objects (defined as entities to which harmful consequences are conceptually attached): serious illness and a diagnostic test (PSA; a prostate-specific antigen test, which is a commonly used but uncertain indication of prostate cancer). The ways in which they conceptualise these risk objects differ, however: where the patient frames risk in terms of emotional response, the GP does so in terms of uncertainty:

GP: How can I help?

P: Yes, I haven't slept terribly well for a few years now. I've been getting up for a pee and I suspect that [lacuna in transcript] I pee more frequently.

GP: The commonest cause for this is the good old-fashioned swelling of the prostate. Rarer, and least likely, is obviously prostatic tumours and things. So, we want to exclude that, so I'd like to examine you if that's possible?

P: Yes.

The GP responds to the patient's concern in an upbeat tone ('good old-fashioned swelling of the prostate'), reassuring him with a generic utterance ('commonest') and a probability statement ('least likely') that the risk of a prostatic tumour is low, while also assuming knowledge on the part of the patient ('obviously'). After this initial talk, the GP examines the patient's prostate, and explains the results:

GP: So, as we suspected, the prostate is enlarged.

P: Yes.

GP: Actually, it's quite enlarged.

P: Mmmhmm.

GP: There's, sort of, small, medium and big, and that's quite big. I'm not surprised that you can't wee very well. As the prostate swells, the urethra – the tube that takes the urine – runs through it and is just being squeezed. It feels relatively soft, so it doesn't feel nasty.

P: Yes.

Through a collaborative doctor-patient 'we', the GP confirms what he assumes they both suspected; that the patient's prostate is enlarged. He places it at the upper end of a scale of small, medium, and big ('quite' here is an emphasiser, and in the patient record he wrote 'both lobes very enlarged'). After the patient has aligned to this description ('Yes'), the GP introduces the possibility of a PSA-test:

> GP: There is a blood test called the 'PSA' test, which stands for 'prostatic-specific antigen'. This test helps us confirm, most of the time – that it's benign. [...] There are pros and cons of doing it, but I think because the prostate is enlarged, it's probably worth doing a PSA test.
>
> P: Yes.
>
> GP: It can lead to problems because, obviously, if it comes back raised, then we have to go forward with a biopsy, which is a needle sample. If it comes back normal, it reassures us further that it's not enlarged through nasty cells. [...]
>
> P: The PSA, as I understand it, the results of those are ... It's not an exact science, really?
>
> GP: Yes.
>
> P: So, I think I'm the sort of chap who would be worried about it, whatever. I mean, if it has to be, I don't know how I'd respond in terms of going on further, but we'll have to deal with that at the time, I suppose.
>
> GP: Yes, absolutely. There's no reason to have to do this. It can lead to more problems than less problems because as you rightly say, sometimes the PSA can be raised and you can have nothing wrong with you. Sometimes, it can be not raised and you can still have something wrong with you, in terms of what we're looking for, which is an actual tumour of the prostate.

Because of the uncertainty of the test, it remains controversial whether a clinically localised enlarged prostate ought to be followed by a PSA-test or not. About three in four men with a raised PSA-level will not have cancer, and the PSA-test can miss about 15 per cent of cancers (NHS, 2021). Here, the GP sets out some of the 'pros and cons' of doing the test: on the one hand, 'confirmation' that there is nothing wrong if the patient's PSA-level is low; on the other, potentially unnecessary further intervention if the PSA-level is raised but the patient does not have cancer. He concludes that, on balance, the test is 'probably worth doing'. The patient understands the uncertainty here ('not an exact science'), and says something important about himself: he is 'the sort of chap who would be worried about it, whatever'. With this, he articulates his stance on the risks associated with taking and not taking the PSA-test in terms of worry: not taking the test would be a source of concern, and if the test comes back normal it might not reassure the patient. The GP acknowledges this information, and makes it clear that the choice lies with the patient:

> P: If the PSA does come out as positive, you still presumably don't necessarily need to go further, but it would be a logical step?
>
> GP: It's one of those awful things. If it came back pretty much normal, then it reassures me and it reassures you that we've got the diagnosis absolutely right. If it comes back as moderately or high, the moderate ones are the ones that are the most problematic. It probably means you're okay, but you end up having a biopsy because it's raised. If it's sky-high, in the hundreds, then we know you've got something pretty much wrong with you. So, it's the ones in the middle that are so problematic and what we do with it. I'm happy to take the risk – not risk – I'm happy to take the uncertainty of not doing the PSA as much as doing the PSA.
>
> P: Okay, well I'll give it a think about that.

Here, the GP elaborates on the uncertainty of the PSA-test by referring to the 'problematic' moderate PSA-levels that 'probably mean [. . .] you're okay, but you end up having a biopsy'. After using the word 'risk', however, the GP corrects himself, replacing 'risk' with 'uncertainty'. The GP's self-correction is interesting and open to multiple interpretations. We do not know why, but in effect it might indicate a shift of emphasis from potential harm to a lack of certainty (contrary to uncertainty, risk always involves something potentially undesirable), and from population-based risk to individual uncertainty (and thereby aligning to the patient's self-description as 'the sort of chap who would be worried'). The PSA-test, however, not only entails risks for the patient but also for the GP, who may face criticism if a patient who does have cancer does not take the test.

Case 2: 'I thought the worst'

The second case concerns a man in his early 50s who consults a male GP 'to get some advice' after an episode where he 'felt really rough'. The GP interprets the patient's worries about a past event as concern about the risk of a future event occurring. It is not clear that they are discussing the same risk object. As in Case 1, this case features diagnostic tests, but the tests themselves are not talked about as risk objects by the participants:

> P: I had a couple of days off, and was really busy doing stuff in the loft, gardening, various bits and pieces. At the end of the second day, I just felt really rough, so much so, shall we say, that actually, I was a little bit scared of the whole scenario, really. [. . .] I thought the worst, obviously, thinking, 'I don't know what's going on here, really.' I sat down and rested for a while, and in fairness, was perfectly alright. I went upstairs a little bit later on, and just through going upstairs, really just out of breath. Now, obviously, I've put some weight on since all that before, and I just think it's my general health, but I was a bit concerned over that. [. . .] So, I'm here, really, just to get some advice. I was a bit concern[ed] that it was a heart attack or something like that, frankly. Yes, so that's why I'm-
>
> GP: And-
>
> P: And sorry, my heart was racing, and my pulse was really racing as well.

The patient expresses a concern (that he has had a heart-attack), which the GP picks up on by listening to the patient's heart and measuring his blood-pressure. He explains the blood-pressure results, but not what the stethoscope revealed:

> GP: Good. It's 145 on 85, which is not too bad. I've got two possibilities running through my head. One is it could be more an anxiety episode. Why that's just suddenly occurred now, when you've obviously been through a lot more stress, is difficult to explain, but it's certainly possible.

Despite the reassuring tone ('not too bad') and the explanation, which points to an isolated 'episode' caused by anxiety, the GP recommends a range of blood-tests:

> GP: . . . all I would be recommending is that we might [take] some bloods, like an MOT [standard annual road vehicle test in the UK]. I shouldn't use the term MOT, but for example, checking cholesterol level, doing a diabetic check, maybe some simple blood counts, kidney, liver. That will give us a good idea of what your cardiovascular risk is, so the risk of a problem in the future to your heart or a stroke, and whether we need to do anything about it. [. . .]
>
> P: I'm happy to fit it in.

While describing what happened to him, the patient expresses his worries outright: he was ‘concerned’ (twice), ‘scared’ and ‘thought the worst’, and did not know what was ‘going on’. First and foremost, he seems to be concerned that he has had a heart attack, and hopes ‘to get some advice’. The GP responds by articulating the patient’s symptoms as a *future* risk – rather than addressing the actual symptoms the patient has described as experiencing in the past - and suggests a range of blood-tests. At first, he links the testing to a vehicle safety test (MOT), which is a metaphor used about health-checks by patients as well (Norddal et al., 2022). He explains that the purpose of these tests is to predict his risk of future cardiovascular incidents, and then decide whether ‘we need to do anything about it’ (a collaborative doctor-patient ‘we’ or a medical ‘we’). The GP does not ask whether the patient wants to know this risk or not, and it remains unclear how these tests could address the patient’s concerns about what previously caused him to feel ‘really rough’. Nor is there any discussion here of potential risks surrounding the tests themselves: the GP approaches the question of whether or not to establish the patient’s cardiovascular risk-status as non-negotiable, and simply informs the patient what to do (take blood-tests and wait for results before deciding on further actions).

Case 3: ‘I don’t know whether it’s the tablets doing it, or whatever’

The third case concerned a man in his early 50s who had previously suffered a heart attack. The GP is primarily concerned with the patient’s cardiovascular risk, but for the patient, the main risk object is the medication he is taking to prevent further cardiovascular events. The patient explains to the woman GP that he has cut down on his medication because he thinks it might contribute to erection problems:

> P: There is one thing I wanted to see you about, basically, I’m getting trouble now getting an erection and all that. I don’t know whether it’s the tablets doing it, or whatever. I don’t know. Or, whether my blood pressure is still high, I don’t know.

The GP then asks various follow-up questions:

> GP: Is this causing problems in your relationship?
>
> P: Yes, because we haven’t had sex since I came out of hospital, basically, because I’m just not getting a hard on, [lacuna in transcript]. No matter what, you play about and whatever, it just isn’t happening.
>
> GP: Had you had any worries about having sex after the operation?
>
> P: No, not really. [. . .]
>
> GP: Had that worried you, that you might get chest pains, again?
>
> P: No, no, I didn’t even think of that to be honest. [. . .]
>
> GP: We’ll come back to the thing about erections [lacuna in transcript]. Have you had any side effects with any of the tablets?
>
> P: No, no, I feel fine. Everything is good as far as I’m concerned. [. . .] obviously, I’m worried about . . .
>
> GP: The other stuff. [. . .]

The patient then moves their conversation to small talk, but the GP quickly gets them back on track by asking the patient to confirm his purpose today:

> GP: So, the question you started with, was whether it's possible to stop any of the tablets?
>
> P: Yes, I don't know if I've got [to take them anymore].
>
> GP: Mainly, we're interested in preventing that other heart attack. So, you're on a cholesterol tablet and you're on two blood pressure tablets, and you're on Aspirin. [. . .] We could increase the dose of the ramipril a little. Your blood pressure is okay, but in some ways, the lower the better.
>
> P: Mmm.
>
> GP: You're on quite a low dose, so I'm wondering whether we should increase that to 5, because you're on 2.5 at the moment. How do you feel about that?
>
> P: Yes, fine. [. . .]
>
> GP: Sorry, it is best to take the tablets.
>
> P: Yes, that's fine.
>
> GP: Keep going, long-term.
>
> P: Yes, that's fine. I just wondered if I had to take them … I knew, when I came up here, it was indefinitely, anyway. I just wanted to know about if any of the tablets were affecting me down there, like.

As in Case 2, the patient arrives hoping for some answers, and for greater certainty: 'what is/was happening when I have/had these symptoms?' The GP understands that the patient is indirectly asking whether his erectile problems could be caused by his medication. She quickly reframes the discussion, however, in terms of cardiovascular risks. Where the patient articulates risk in terms of uncertainty and personal experience, the GP relates individual risk to 'evidence' from research.

Patient and GP here seem to be concerned with different risk objects: while the patient's main concern is possible side-effects of his medication, the GP's main concern is that he 'need[s] to keep going' with the medication to prevent future cardiac events. This precludes proper discussions of its 'pros and cons' (stop, reduce, stay on current dose, or increase it). Although the patient consults the GP to get advice and help for erection problems, which he relates to his medication ('a whole bunch'), he ends up with an increased dose of it, which he finally agrees to by saying 'fine', 'fine' and 'fine'. The patient agrees, although he has not received any clarity as to whether his erection problems are likely to be medication related or not.

Case 4: 'I'd best take out life insurance, then'

The fourth case concerned a woman in her mid-70s who attended for a routine blood-pressure check. Based on results from a blood-test taken during a previous consultation, the woman GP moves their conversation to cholesterol. The GP informs the patient about her individual risk for a cardiovascular event in terms of population data, and suggests cholesterol-lowering medication:

> GP: The cholesterol we need to have a chat about. It looks like this is the first time you've had it checked. Is that right?
>
> P: Yes, never had any problems with the cholesterol [. . .]

GP: Right, so, what's the story with the cholesterol? Your cholesterol, the total level, is 5.2, which isn't particularly high. When you combine it with your age, your blood pressure and your general risks – so weight, ethnicity, where you live – your risk of heart attack and stroke, still comes out quite high. The machine has calculated it on a very clever programme and it's telling me that it's around 27 per cent. So that's not quite 1 in 3. So, over the next 10 years, you've got, almost, a 1 in 3 risk of having a heart attack or stroke. Now, we'd like to reduce that risk, and I think you probably would too. How are we going to reduce it? Controlling the blood pressure is the first thing, but a cholesterol tablet to drop the cholesterol a bit more would be the other.

P: I mean, me and husband, he's under you and we do have a healthy diet because of all his bits and pieces.

GP: A healthy diet helps, but it will make, maybe, 10 per cent difference to the cholesterol levels. I think we're not entirely sure whether it's the cholesterol level itself, or whether it's something that the cholesterol tablets are doing that makes the difference. There's no doubt that cholesterol tablets do reduce the risk of heart attacks and strokes.

P: Well, it's worth a try.

GP: Mmm. Unfortunately, we don't have a crystal ball. If we put a whole lot of people in a room, we're not going to be able to tell which one of those people will have the heart attack or stroke. We have to treat all of them.

P: I'd best take out life insurance, then.

After the patient has explained that she has 'never had any problems with the cholesterol', the GP places the patient in a metaphorical room with a group of faceless people and tells her she has an almost 1 in 3 chance of having a heart attack or stroke (actually, closer to 1 in 4). Because 'we don't have a crystal ball' to tell which one of them will experience a cardiovascular incident, 'we have to treat all of them' (no choice). 'The machine' – the main agent here – has calculated her risk 'on a very clever programme'. The GP, and presumably her colleagues ('we'), would like to reduce this risk, 'and I think you probably would too'. Through these assumptions, together with use of the 'one person in a crowded room' mode of expressing probability, she normalises preventive medication. The GP is 'not entirely sure' about the exact mechanisms here but claims that 'There's no doubt that cholesterol tablets do reduce the risk of heart attacks and strokes'. A healthy diet, which the patient seems to aim for, perhaps as an alternative to medication, is not enough because it will probably make, 'maybe, 10 per cent difference to the cholesterol levels'. The patient (possibly in jest) identifies herself as the one person in the room to have the heart attack or stroke ('I'd best take out life insurance, then'). The GP makes it clear that the decision rests with the patient:

GP: Some people are happy with just reducing the risk and say, 'Yes, I'll take a tablet.' Other people think, they'd rather not take tablets. So, the decision is yours.

P: I'll take the tablets. It's just the more tablets you take, the harder it is to get travel insurance.

As in the previous case, patient and GP seem to be concerned with different risk objects: while the GP focuses on the patient's cholesterol level and tries to persuade her to take statins to prevent future cardiovascular events, the patient indirectly expresses concern about taking medication, albeit in a very light-hearted manner (indirectly suggesting 'a healthy diet' as an alternative and referring to travel insurance obstacles). Although the GP presents the patient with a choice, there is no meaningful discussion about why some people would 'rather not take tablets'. The patient agrees to start taking statins, but the patient record reveals she stopped after four weeks ('backache & feet swollen after starting statin so stopped it again'), suggesting a more wide-ranging discussion of medication-related risks could have been helpful.

5 Discussion

Working with observation-based data gives us a unique opportunity to explore how patients and doctors conceptualise, construct and negotiate risk and uncertainty in naturally occurring social situations, rather than theorising it. However, our use of secondary observational data prevents us from asking participants to elaborate their utterances, and our only information about what happens outside the consultation room comes from patient records. Including only 28 cases prevents us from exploring differences between subgroups. Possible biases in the data relate to recruitment of GPs, who self-selected to take part in the study (Jepson et al., 2017), and whose participants might have been influenced by being conscious about being filmed. Sampling the 28 consultations based on a word-search for 'risk(s)', a word mainly used by GPs, means not including consultations with inexplicit talk about risk. Therefore, we cannot claim that our sample is representative of the complete dataset.

Bearing in mind these strengths and limitations, we draw on the relational theory of risk to explore how patients and doctors conceptualised, constructed and negotiated risk and uncertainty, and the ways in which their communication supported and obstructed mutual risk-assessments and shared decision-making.

5.1 Conceptualising risk

When GPs used the word 'risk(s)', they were often referring to probabilistic data on a population level. Patients, however, who rarely used the word 'risk(s)', conceptualised risk and uncertainty by expressing their own *experiences* of possible future dangers through words like 'worried', 'scared' and 'concerned' (Table 2). They also expressed worries and concerns more indirectly, for instance by expanding on symptoms (to which they indirectly seek a response from the GP), asking questions, and joking about life insurance. These findings are in line with previous research which has found that patients tended not to express worries outright (Lian et al., 2021). We must be careful in interpreting these subtle utterances, but there was a discernible pattern in our data, where patients talked about how they *experienced* possible dangers, with these dangers not detached from themselves. We interpret these conceptualisations as relating to their position as experiencing subjects (it was they who experienced the illness and who bore the consequences of actions taken), and as patients in a subordinate position vis-à-vis GPs in the medical system (Lian et al., 2022).

5.2 Configurations of risk objects

Based on co-constructed risk objects, defined as *entities to which harmful consequences are conceptually attached*, the patient and the GP in Case 1 collaborated to identify, weigh and negotiate possible consequences of taking and not taking the PSA-test. They agreed that both options potentially had both positive and negative consequences, but the uncertainty of the test made it impossible to predict which it would be. The patient chose not to take the test. In consultations related to cardiovascular

Table 2. Patient's expressions of worries and concerns ($n = 4$).

	Case 1	Case 2	Case 3	Case 4
Expressing concerns about	current symptoms and PSA-testing	previous symptoms	preventive cardiovascular medication	preventive cardiovascular medication
Patient's words	'suspect' 'worried'	'scared' 'concerned' 'I thought the worst' 'thinking, "I don't know what's going on"'	'worried'	'I'd best take out life insurance then'

risks, however, patients and GPs tended to talk about different risk objects. This was most notable in Case 3 and 4, where the GPs defined the patients' *level of cholesterol* as the main risk object (insofar as it was a risk factor for cardiovascular incidents). Patients, on the other hand, defined cholesterol-lowering *medication* as the main risk object, which they expressed through worries about medication side-effects. This finding is in line with previous research demonstrating a lack of coherent perspectives between patient and physician within the field of cardiovascular disease prevention (Byrne et al., 2019; Jauho, 2022).

Communicating clinical risks to patients is an essential part of SDM (Durand et al., 2020), and SDM relies on a common understanding of potential risks and benefits (Hoffmann et al., 2020). When patients and GPs in our data referred to different risk objects, this precluded any meaningful discussion about 'pros and cons', it obstructed mutual risk-assessments, and it made it difficult for patients to make informed decisions.

5.3 The technological imperative and the objectified patient

In all 28 consultations, discussions about further interventions were mainly GP-led, which is in line with one of our previous studies from this dataset (Lian et al., 2022). However, as our in-depth cases highlight, the ways in which these negotiations were conducted were diverse. When the purpose was to detect cancer, a thorough negotiation of advantages and disadvantages of a diagnostic tests was conducted. While talking about future cardiovascular risk, the interactional dynamic was very different: technological tests designed to reveal patients' risk-status were not discussed, and the GPs did not ask about patients views on these matters. 'Pros and cons' related to potential versus actual use were considered by patients, but not by GPs. The same omission of discussion was apparent regarding prophylactic medication, which the GPs often argued for in a 'lecture mode' whereby they simply informed patients about what to do, typically through an authoritative medical 'we'. To substantiate their conclusions, they used risk as a tool of legitimation (Brown, 2014). These findings are supported by a previous study showing that in consultations related to cardiovascular conditions, GPs dominate risk discussions and often refrain from exploring patients' understandings (Gidlow et al., 2021).

When GPs refrain from inviting patients to discuss tests and treatments related to cardiovascular risk, they succumb to a technological imperative that alters human responsibility. As with all kinds of technology, medical technology is constitutive of and strongly linked to difficult questions of value. Admitting technological value-ladenness 'explains how technology increases our responsibility' (Hofmann, 2002, p. 157). Refraining from inviting patients to discuss future actions that may have major consequences for their lives builds an objectified relation between those who engage in the interaction that conceals any trace of its essence or 'grundwesen' (Lukács, 1923/1975, p. 97): the relation between humans. And 'in the guise of a science of physical things' (Taussig, 1980, p. 3), the patient is afforded the character of an object at risk, that is an 'Gegenständlichkeitsform' (Lukács, 1923/1975, p. 97).

5.4 Probability: taming chance

A typical way of dealing with risk and uncertainty in contemporary western societies, including the epidemiological approach to health, is to eliminate or reduce the influence of chance, faith, and randomness by taking control over potential future risks. Since the 'birthtime' of probability in the 1660s (Garber & Zabell, 1979; Hacking, 1990; 2006; Prior, 1995), understandings of risk and 'the taming of chance' (Hacking, 1990) have become inextricably linked to probabilistic knowledge (Matthews, 2020). Probability theory is a mathematical theory used to conduct numerical probability calculations of how likely an event is to occur, and to quantify the probability of various possible outcomes, in order to control a main source of uncertainty, the play of chance (Matthews, 2020). The requirement to shift between the aggregate and the individual to quantify probabilities, what Heyman et al. (2013, p. 99) calls 'the ecological prevention paradox', comes up against several limitations. Most importantly, this approach to prediction 'requires the assumption to be made that each member of a constructed category or sub-category "carries" its overall proportion of adverse events' (Heyman et al., 2013, p. 97).

In a general practice setting, this limitation arises when communication about risk is framed in the language of probability (Edwards & Prior, 1997, p. 739). The ultimate source of this challenge is that probability-calculations conducted on aggregated statistics does not provide good predictions in specific cases (Hayman et al., 2013). For a clinician who meets a patient in a consultation room, discrepancies between population-level regularities and individual-level idiosyncrasies imply that the relationship between risk and outcome is probable but not certain (Jauho, 2022). Placing the patient in a metaphorical room with a group of people, as in Case 4, does not necessarily address what is likely to be the patient's own main concern: will I be among the three who will *not* experience a cardiovascular incidence in the future, or will I be the one who will?

6 Conclusion

The findings of our study lead us to four main conclusions:

(1) Negotiating risk and uncertainty is a two-way process. In our consultations, we see how patients and GPs conceptualise and construct risk and uncertainty differently, and from different perspectives, when interventions are to be mutually decided on: while GPs talk about future mathematical-probabilistic risk on a population level, patients use words like 'worried', 'scared' and 'concerned' to express their own experiences of vulnerability in the present. There are, then, two different rationalities or logics here: the future-oriented probabilistic risk-rationality of biomedicine, and patients' experiences of being exposed to dangers, rooted in the present. Ignoring patients' experiential perspective obstructs mutual risk-assessments.

(2) GPs provide information to patients in ways that reflects their dominant institutional position in the medical system. Their arguments are rooted in a biomedical perspective on disease, and a rational model of risk-communication that assumes people are rational actors who utilise risk information to reduce the probability of undesirable consequences. Within this model, risk is seen as ‘something objective, measurable and located outside the embodied human experience’ (Kriger, 2021, p. 143). In a clinical setting, this model has several shortcomings related to ‘its mode of objectifying social relations’ (Taussig, 1980, p. 3): it does not account for the difference between doctors’ and patients’ risk-assessments, the experiential dimension of health and illness, and the role of culture in shaping people’s risk constructions. Different patients might arrive at different decisions based on the same body of scientific knowledge, but when GPs simply inform patients what to do, without inviting discussion, they talk as if tests and treatments ought to be used because they exist. That is just how it is: ‘We have to treat all of them’ (Case 4), the ‘we’ being the de-personalised ‘we’ of the medical system. The use of medical technology is strongly linked to value-laden questions (Hofmann, 2002). By not questioning its use, or involving patients in discussions about ‘pros and cons’, these normative issues remain unaddressed, and mutual risk-assessments become obstructed.

(3) In the presented consultations, several layers and configurations of risks are negotiated. In Case 1, a thorough discussion about the ‘pros and cons’ of testing for cancer supports mutual risk assessments and SDM. While dealing cardiovascular risk, however, patients and GPs seem to talk about different risk objects. This is most pronounced in Case 3: while the main risk object for the GPs is the patient’s level of cholesterol, the main risk object for the patient is medication used to reduce it. This lack of common ground obstructs mutual risk-assessments and shared decision-making.

(4) The relational theory of risk provides us with a useful theoretical frame for exploring different layers and configurations of risk constructions among patients and clinicians in clinical settings, and to capture interactional aspects that support and obstruct mutual risk-assessments and SDM. Our analysis shows that for patients to be able to engage in genuine dialogues and make informed decisions about their care, it is paramount for patients and doctors to co-construct patients’ health-risks during clinical encounters.

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ORCID

Olaug S. Lian http://orcid.org/0000-0002-5752-1486

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