

This item is the archived peer-reviewed author-version of:

How patients in general practice voice and value their gut feelings about health : a qualitative interview study

Reference:

Stolper Eric, Schuck Ulricke M., Hoekman Antoinet, Shvarts Elena, van Bokhoven M.A. Loes, Dinant Geert J., Van Royen Paul, van de Wiel Margje W.J., Van Royen Paul.- How patients in general practice voice and value their gut feelings about health : a qualitative interview study
The British journal of general practice - ISSN 0960-1643 - 73:734(2023), p. e677-e686
Full text (Publisher's DOI): <https://doi.org/10.3399/BJGP.2022.0427>
To cite this reference: <https://hdl.handle.net/10067/1993870151162165141>

1 How do patients in general practice voice their gut feelings and value
2 them?

3 Prof. C.F. (Erik) Stolper, GP^{1,2}, U(Ir)ike). M. Schuck, MD¹, A(nton) Hoekman, MD³, E(lena) Shvarts,
4 MD², M.A. (Loes) van Bokhoven, GP¹, Prof. G(eert). J. Dinant, GP¹, Prof. P(aul) Van Royen, GP²,
5 M(arge) J. W.J. van de Wiel, senior researcher³.

6

7 1. Erik Stolper CAPHRI School for Public Health and Primary Care, University of Maastricht,

8 Maastricht, The Netherlands. (orcid.org/0000-0001-8854-3269) cf.stolper@maastrichtuniversity.nl

9 2. Faculty of Medicine and Health Sciences, Department of Family Medicine and Population Health,

10 University of Antwerp, Antwerp, Belgium.

11 3. Department of Work and Social Psychology, Faculty of Psychology and Neuroscience, Maastricht

12 University, Maastricht, The Netherlands.

13

1 **Abstract**

2 **Background.** General practitioners (GP) consider their gut feelings a valuable tool in clinical
3 reasoning. The literature offers strong indications that patients' gut feelings may also be a
4 useful contribution to that process. To improve the primary care professionals' recognition
5 of a patient's gut feeling and insight into their background, it is useful to describe patients'
6 gut feelings more precisely. Additionally, these descriptions will enable us to thoroughly
7 examine the validity of patients' gut feelings and their contribution to professionals' clinical
8 reasoning.

9 **Aim.** To gather the expressions that patients or their relatives use to share their gut feelings
10 with primary care professionals and what they convey and imply.

11 **Design and Setting.** Qualitative research. Dutch and Belgian patients (n=47) visiting an out-
12 of-hours GP service or a GP's office.

13 **Method.** Face-to-face semi-structured interviews. Descriptive content analysis in an
14 iterative process. Data sufficiency achieved.

15 **Results.** Patients or their relatives expressed their gut feelings by using words relating to
16 trusting or not trusting the situation, or to changes in normal patterns. Their gut feelings are
17 most often regarded a sense of alarm. In general, patients with a sense of alarm were
18 convinced that something was wrong and had often learned to trust their gut feeling, in
19 particular mothers of sick children. A gut feeling was mostly the reason to contact a primary
20 care professional.

21 **Conclusion.** Our results may improve the professionals' recognition of patients' gut feelings
22 and enable further research into their validity.

23

24 **Keywords.** Intuition of patients; Patients' language; Mothers' instinct; Primary health care.

25

26 **How this fits in:** We know that primary care professionals acknowledge the usefulness of
27 patients' gut feelings for their clinical reasoning. However, we do not precisely know the
28 wordings and expressions patients use to voice their gut feelings and how they share them
29 with professionals. The results we found may improve the professionals' recognition of
30 patients' gut feelings and their insight into their background and enable further research
31 into their validity.

32

1 Introduction

2 General practitioners (GPs) consider their gut feelings regarding a patient's health situation
3 a valuable tool in clinical reasoning, particularly in situations of diagnostic uncertainty. (1) A
4 sense of alarm activates the diagnostic process by stimulating a GP to formulate and weigh
5 up working hypotheses that might involve a serious outcome. (2) A sense of reassurance
6 means that a GP feels secure about the further management and course of a patient's
7 problem, even though he/she may not yet be certain about the diagnosis: everything fits in.
8 (2) GPs' gut feelings were proven to be measurable using a questionnaire. (3-6)

9
10 It is evident that patients also have gut feelings concerning their health, as the cognitive
11 decision-making process based on knowledge and experience is similar for physicians and
12 patients.(7) However, it would be a mistake to apply the definitions of GPs' gut feelings to
13 those of patients. Patients have different, less widely developed and often less accurate
14 knowledge about health and diseases than physicians. On the other hand, patients have
15 experiential knowledge about their own health and body, which may signal any changes.
16 Although they may struggle to verbalize these signals, they use this knowledge in their
17 decision to consult their GP. (8) In situations where medical evidence is lacking, incomplete
18 or inconclusive, this knowledge might support physicians' clinical reasoning, especially in
19 complex cases.(8, 9) Even when a patient's intuition is mistaken, exploring their health
20 beliefs and how these relate to their decision-making process might increase physicians'
21 insights and influence their management. (8)

22
23 Dutch and Belgian primary care professionals acknowledge their patients' gut feelings and
24 regularly use them in their communication with patients and in their clinical reasoning. (10)
25 They are able to mention some wordings and expressions that patients use to voice their
26 gut feelings. The professionals weigh the value of the patients' gut feelings against their
27 own judgement, which may result in reconsidering their diagnostic hypotheses and decision
28 making. Additionally, medical disciplinary tribunals in the Netherlands consider patients' gut
29 feelings about their health to be a valuable part of a doctor's diagnostics, which should
30 make them review their clinical reasoning. (11)

31
32 Almost all studies in the literature confirm the value of patients' gut feelings. Callers to an
33 out-of-hours (OOH) GP service in Denmark proved to be able to quantify their degree of
34 worry. (12) This degree was higher when the cause of the illness was unclear, and the
35 consequences were uncertain. (13) A qualitative study showed that patients' gut feeling
36 about having cancer could be an important reason for further diagnostics. (14) Parents'
37 feeling that 'this illness is different from previous illnesses' had a high positive predictive
38 value (Likelihood Ratio + 14,4) for serious infections among children in family practice and
39 influenced GPs' gut feelings and decision making. (15, 16) In family practice, changes in the
40 behaviour of their febrile child were a major reason for parents to seek care. (17) Parents
41 visiting the emergency department, or a paediatric ward mentioned that the normal

1 behaviour and physical features of their child represented a frame of reference when
2 judging disease severity. (18) Abnormalities might act as a kind of alarm, for instance a
3 feeling that there was something wrong with their child based on parental instinct. (18) A
4 study in a tertiary hospital, however, could not confirm the positive predictive value of the
5 parents' concern. (19)

6
7 We concluded that patients' gut feelings about their health might be valuable for medical
8 professionals' clinical reasoning.(8) To improve the professionals' recognition of a patient's
9 gut feeling and insight into its background, it is useful to describe these gut feelings more
10 precisely. Additionally, these descriptions will enable examination of the validity of patients'
11 gut feelings, and how they may contribute to primary care professionals' clinical reasoning.
12 (8). The objective of this study was to gather the wordings and phrases that patients or their
13 relatives use to communicate their gut feelings to primary care professionals, and what they
14 convey and imply. In addition, we wanted to know whether, in the patients' perception, the
15 professionals understand their gut feelings and take them seriously. For the long term, we
16 may be able to compose a short questionnaire measuring patients' gut feelings.

17 **Methods**

18 **Participants**

19 We interviewed 39 Dutch and 8 Belgian patients, visiting an OOH GP service (n=29) or their
20 GP during office hours (n=18) and living in urban or rural areas. In the Netherlands and in
21 Belgium, the national language is Dutch. In almost all cases they were interviewed before
22 seeing their physician. Every participant signed an informed consent form.

23 **Data collection**

24 After informed consent had been obtained from the patients, the interviews were held by
25 one or two of the authors Stolper, Schuck, Hoekman, Schvarts, or Van Royen. The interviews
26 were done face-to-face, using semi-structured interview guides for adults and for parents of
27 ill children, and were audio recorded (n=47). (20) The interviews focussed on the perceived
28 health situation of the patients we interviewed, as well as the perceptions of their partners,
29 if present, or their parents in the case of children. We also examined participants'
30 underlying beliefs and feelings, and how these feelings were verbalized. The interviews
31 lasted an average of 16 minutes (range 4-35 minutes).

32 **Procedure**

33 We started our study in 2017 by interviewing Dutch patients visiting an OOH GP service.
34 Well-instructed triage nurses selected patients who rejected a self-care advice or expressed
35 a gut feeling when calling the OOH desk. This selection procedure yielded 8 patients in 24
36 hrs. We continued by randomly asking patients to participate when they checked in at the
37 OOH desk. Most of them (n=17) accepted our invitation. We followed the same random
38 procedure when selecting and interviewing 4 Belgian patients who visited an OOH GP
39 service. In 2020, we interviewed 14 Dutch and 4 Belgian patients visiting their GP during

1 office hours. We also included relevant information from the interviews about experienced
2 gut feelings in the past (See Tables 1 and 2).

3 Analysis

4 We coded all verbatim texts using a descriptive content analysis approach. (20, 21) We
5 composed a coding book, using an iterative process starting with open coding and then
6 searching for the main emergent themes addressed in the interviews. The first three
7 authors coded the data and reached consensus during the process by double coding and by
8 discussing all codes and disagreements with the last two authors. The data were sufficiently
9 rich to answer all research questions, therefore data saturation was reached. (22) As we did
10 not find differences in how the Dutch and the Belgian patients expressed their gut feelings,
11 we decided not to include more Belgian patients.

12 Results

13 In general, it was not always easy for patients or their relatives to talk about feelings of
14 worry. A patient might initially indicate not to be worried about the symptoms, and then
15 later in the interview spontaneously admit being concerned. The content analysis resulted
16 in the themes described below, illustrated by quotes. The quotes are provided with an
17 interview number, as indicated in Table 1 or 2. As the results did not differ between patients
18 visiting an OOH GP service or during GPs' office hours, we report them together.

19

20 Distrust and pattern changes

21 Adult patients and their relatives

22 Patients or their relatives who expressed their gut feeling, used words relating to trusting or
23 not trusting the situation or to any changes from normal, familiar patterns.

24 *I don't know what's the matter with me, but something's not right. (4) That something's*
25 *really going on, is not right, something's not right. (29) It's different from the usual. (43) I*
26 *think it's strange. (31) I'm worried (26), I'm concerned. (27)*

27 Patients may experience a gut feeling in the body. *It's a feeling in my guts. (29)*

28 There were also patients expressing a sense of reassurance. *I'm feeling fine. (20)*

29 Nevertheless, these patients could show a kind of doubt. *It's nothing very serious,*
30 *fortunately ... or I hope so anyway. (20)*

31 Parents of sick children

32 Parents also expressed their gut feeling using words relating to distrust and/or to any
33 changes from normal, familiar behaviour patterns of their sick children. They used words
34 such as *It feels wrong...it's just not going well at all...I'm really worried...I can feel when it's*
35 *okay or not...this is not normal...I'm unhappy about it.* (many participants). Parents mostly
36 based their gut feeling on specific knowledge about their child. *It was not him, not like his*
37 *usual self. We thought it was odd, him being like that. This was not right for him. We can*
38 *read him very well. (3) I didn't trust it, it didn't feel right. It was my child, but then again not*
39 *my child. I don't know how to explain it. His eyes were unusual. His eyes were glazed. It was*

1 *as if he looked right through you, and whatever you said to him he didn't seem to get.*
2 *Though his eating, drinking and playing were normal. (13) When phrasing their gut feeling,*
3 *parents did not often mention somatic symptoms such as high fever or cough.*
4 *Some parents found it difficult to explain where a gut feeling came from, while some*
5 *referred to it as a maternal instinct, a matter of knowing for certain without knowing why. I*
6 *was really very worried...when I looked into the cradle and thought yes, there really is*
7 *something wrong with you...I don't know where that came from...something's really wrong.*
8 *(24) I think it's a mother's feeling...that as a mother you learn how to notice how the child*
9 *responds...you know how to judge that. (13) A maternal instinct, that's the word... you just*
10 *know something is wrong. (47) In a few cases, a father instinct was mentioned. A gut feeling*
11 *could be felt in the body. An uneasy feeling...in your body, in your throat, something like,*
12 *tension...a sixth sense. (21)*

13

14 **Confidence in one's own gut feeling**

15 *Adult patients and their relatives*

16 *Most participants with a gut feeling were convinced that there was something wrong, and*
17 *they often trusted their feeling. I know very well if there's something really wrong with me.*
18 *(3) Look, there's only one person who knows my body best, and that's me...I'm the expert on*
19 *my own body. (47)*

20 *Some participants felt that they, or their physicians, had ignored their gut feeling with*
21 *serious consequences. These experiences strengthened the confidence in their intuitive*
22 *assessments. Some participants mistrusted their gut feeling because of negative*
23 *experiences in the past. I'm not going to just go by my gut feeling alone. (29) I've too often*
24 *had it that I worried about all kinds of stuff [in my partner] and it was just nothing. I can get*
25 *a feeling, but I try to base it on something. And if I can't, I'll ignore it. (33)*

26 *Parents of sick children*

27 *In general, parents, specifically mothers, trusted their gut feelings or had learned to trust*
28 *them. When they were little, [I didn't] always [trust those feelings], but now I do...I think you*
29 *have to learn that, to evaluate them...especially with your first child. (13) I've learned that*
30 *your feeling rarely lets you down. (9) Past experiences of wrongly ignoring a sense of alarm*
31 *by themselves or their physician, enhanced the trust in their gut feeling. Since in the past*
32 *I've sometimes kept it to myself, with serious consequences...that [confidence] has grown*
33 *over the years; just daring to say things. (32) If I don't trust it, I need to go on banging my fist*
34 *on the table anyway. (2)*

35 *One participant did not fully trust her gut feeling. I'm often needlessly worried as there's*
36 *nothing wrong. (15) One mother mentioned that she was a very rational individual but still*
37 *trusted her gut feeling. It [a mother's feeling] didn't let me down...It's not that if you're*
38 *rational it means you don't have a mother's intuition. (46)*

39

1 Anxiety and uncertainty

2 Adult patients and their relatives

3 When participants were unable to explain their symptoms, their anxiety about the future
4 and the sense of losing control over their lives increased, as well as their uncertainty about
5 how to deal with the symptoms. This happened, for instance, when the complaints (or their
6 number) or the course of the illness did not fit in with the explanation or diagnosis given by
7 a primary care professional, or after finding alarming information on the internet. *My
8 feeling was actually one of uncertainty, especially as you don't know exactly where you're
9 heading, what's going to happen to you...really very uncertain. (27)* Uncertainty was less
10 well tolerated when it concerned symptoms in vital body areas such as the chest or the
11 head. *You can just about guess, based on your intuition, what the problem is and where it's
12 located. If the problem is here (points at leg), you then say, well, it'll probably be gone
13 tomorrow or the day after. But if the problem is somewhere around here (points at chest), for
14 instance, then you might say it's time for rapid action. (11)*

15 A partner explained that she was better able to judge the patient's situation just because of
16 the distance. *If you're looking at the patient, you're not preoccupied with the actual pain
17 and stress, and you're better able to observe them and say, like, I know what you're
18 normally like. I've known you long enough, and now there's something different about you.
19 (29)* Another partner mentioned that she knew herself better *If it's about myself I tend to
20 think Oh it will pass, or well, I'd better get this looked at. You know yourself better, you
21 yourself feel, you feel what you feel...I can't feel what he [the partner] feels. (10)*

22 Parents of sick children

23 Parents of sick children may experience mixed feelings of anxiety, uncertainty, sympathy,
24 responsibility or powerlessness. *So I was right to be worried. I don't know where it came
25 from...something's really wrong. (24)* *It's more the feeling that he [my son] needs to be able
26 to trust that if something's wrong, that I'll deal with it, that I'll take care of him. (1)* *A kind of
27 powerlessness. There's nothing you can do, and he's just lying there. (23)*

28 Some parents did not see a difference between their gut feelings about themselves and
29 those about their children. *I can read both myself and both of my children reasonably well.
30 (3)* Other parents emphasized the differences. *Those are two different things. Not that I'm
31 less valuable, but the feeling is different. (13)* They took a gut feeling about their child more
32 seriously or mentioned that it more quickly led to some kind of action. *To me, it's a different
33 feeling. I think the feeling towards them is stronger than towards myself. (22)* *When it's
34 about my children, I take action more quickly, as I know they're a bit more vulnerable. (17)*
35 One mother said that the responsibility for her child outweighed the responsibility for her
36 partner. *I'm responsible for them. My husband is a grown man. (32)*

37

38 Inducing action

39 Adult patients and their relatives

40 A gut feeling was often the reason for patients to contact their GP, to clarify their health
41 situation, or to be reassured. *Just to know where I'm at, to be sure whether it's something or*

1 *nothing. (39) I first listen to the doctor, and then I draw my own conclusion. (27) If I [the*
2 *partner] were you, I'd go see the doctor, as you're not your usual self. (46)*
3 *Some patients felt a sense of urgency and forced their GP to act. I'll then take action, like*
4 *[my partner] is not okay. I can be really forceful then. (10) Other patients ignored their*
5 *worries as they were not able to cope with them, emotionally or due to lack of time. I'm not*
6 *keen on tackling the next [problem]. So I prefer to pretend that it [the feeling] isn't there.*
7 *(11)*

8 *Parents of sick children*

9 *Parents' gut feelings mostly led them to search for information on the internet or to contact*
10 *their GP for advice or a consultation If I get the intuition, or at least the idea that it feels*
11 *wrong, I pick up the phone immediately. (21) If I'm really worried as I think my child's ill, I'll*
12 *take the child to our family doctor. (26) One mother with a gut feeling did not accept the*
13 *explanation that the GP on duty had given to her partner about their ill child and phoned*
14 *the triage nurse again. I rang them again as I wasn't happy about the way it was handled. I*
15 *wanted to see some action. (32)*

16

17 *Sharing gut feelings with a professional*

18 *After we had closed the interview and explained the underlying aim of our study in the*
19 *debriefing, participants often said that they appreciated the opportunity to tell the story of*
20 *their current health, often linking it to experiences in the past. During a normal consultation*
21 *you don't often get asked about the full picture, say about the journey you're on, with your*
22 *body and your illness. (9)*

23

24 *With nurses*

25 *Patients were less inclined to share their gut feelings with triage or practice nurses than*
26 *with their GP. Some patients had not expressed their feelings of worry or had downplayed*
27 *them, while others had voiced their gut feelings clearly, and sometimes discussed them in a*
28 *shared decision-making process. I tried to describe a bit what the situation was like and*
29 *what I had observed, how I was reading the situation, how he [my child] responded to*
30 *certain things, so I think the receptionist [triage nurse] could evaluate whether it was better*
31 *to get over there. (15) When I'm really worried, I'll then say well I'm not easy about it. In this*
32 *case it was more, like, there's something wrong and it might be a good idea to have it looked*
33 *at. (21)*

34 *With GPs*

35 *Most participants said that they would share their gut feelings with their GP or had shared*
36 *them in the past, using the expressions reported above. Yes, I would say that...I would be*
37 *honest about it, very direct, about what I feel, like: I'm really worried...it's not okay at all.*
38 *(36)*

39 *Participants expected the primary care professionals to take their gut feeling seriously by*
40 *listening, examining, and offering clear explanations. My GP trusted my feelings. And that*

1 *felt just fine. (13) She [the GP] said ‘Sometimes you just have to fight like a lioness for your*
2 *child.’ She said that literally. (32) It’s good if at any rate the GP says, like, I can’t find*
3 *anything worrying now, but if you see things again, try to record it or phone the moment*
4 *something happens. (24)*

5 Some Belgian participants were more reticent about communicating their gut feelings to
6 their GP, as they tended to respect their GP’s expertise, and did not want to bother them.
7 *Well, you know, you’re sitting in front of an expert, a doctor, a professional, and that makes*
8 *it a bit scary to say that [something is not correct]. (29) This kind of ‘That’s what I’ve got, or I*
9 *fear this and I think that’...I can imagine that some doctors get a bit annoyed about that.*
10 *(46)*

12 Discussion

13 Summary

14 Patients or their relatives used specific phrases to express a gut feeling, indicating that they
15 trust or not trust the situation or perceive changes in normal, familiar patterns. Their gut
16 feeling mostly regarded a sense of alarm. Participants with a sense of alarm were convinced
17 that there was something wrong, and they had often learned to trust this gut feeling,
18 particularly mothers of sick children. They took gut feelings about their child very seriously
19 and mentioned that they acted upon them more swiftly than upon gut feelings regarding
20 their own health. When patients or their relatives could not explain the symptoms, their
21 uncertainty and anxiety increased, and they felt they were losing control. In general, a gut
22 feeling was a reason to contact their GP to clarify the health situation, or to be reassured.
23 Patients were less inclined to share their gut feelings with triage or practice nurses than
24 with their GP.

25 Strengths and limitations

26 To date, this is the first study exploring what wordings patients and their relatives use to
27 voice their gut feelings, and how they share them with primary care professionals. Our
28 study included patients from the Netherlands and Belgium. The way patients voiced their
29 gut feelings did not differ between the countries. It is unlikely that patients in other
30 countries have a different concept of gut feelings,. We expect they will use related wordings
31 in the idiom of their language but may differ in the ways of sharing their gut feelings with
32 primary care professionals.

33 We included fewer Belgian patients. The interviews of the Belgian patients contained
34 virtually no new information in light of the research questions, compared to the interviews
35 of the Dutch patients. This finding is in line with previous research results. (10) For this
36 reason, we decided to stop the inclusion of Belgian patients.

37 Most members of the research team are GPs, which might have caused a limited
38 perspective on the topic. For this reason, the input of the cognitive psychologist (MWJvdW)
39 in our team was valuable.

1 Comparison with existing literature

2 In a study about how patients perceived the role of GPs' gut feelings in clinical decision-
3 making, some patients described their own gut feeling as 'something is wrong'. (23) They
4 explained that their gut feeling was based on the knowledge of their body and what was
5 normal for them. This gut feeling led to action in the form of seeking medical help. If there
6 was mutual trust, patients mentioned their gut feeling in the consultation. These findings
7 are in line with the results of our study. Patients' impressions of the way GPs used their own
8 gut feelings in clinical decision-making were similar to those reported by GPs. (23)
9 Our study found that some Belgian patients seemed to be more reticent about informing
10 their GP of their gut feelings than Dutch patients. This might be explained by cultural
11 differences as indications for similar differences were found in an earlier study. (10)

12
13 Our study and a previous one (10) found no misunderstandings between GPs and patients
14 about the notion of gut feelings. GPs indicate that they easily recognize patients' gut
15 feelings and consider them a useful contribution to their clinical reasoning and a better
16 understanding of the patient's problem. (10) The process of developing gut feelings does
17 not differ between GPs and patients, but the underlying knowledge and expertise do. GPs'
18 gut feelings are based on medical knowledge and specific expertise, patients' gut feelings on
19 experiential knowledge about their own health and body, and may signal any changes.(1,
20 24) GPs' and patients' gut feelings are both drivers of action, e.g. formulating and weighing
21 up hypotheses with a serious outcome and calling their GP or the OOH GP service,
22 respectively.

23
24 The 5-item Degree of Worry- scale (DOW) for patients used in research in Denmark
25 measures a mix of worry and gut feelings. (12, 13). The first 3 items ask about worry and
26 concern, whereas the last 2 items describe gut feelings using wordings like 'a sense of
27 urgency', 'a feeling of distress', 'the certainty that something was wrong' and 'a feeling of
28 threat'. In our view, however, worry and gut feelings are different notions. In situations with
29 a clear cause, such as after a serious accident, there will be a high degree of worry or
30 concern about the health consequences, but this will usually not raise a gut feeling.
31 Whereas in uncertain situations of illness with, in patients' view, unclear causes and
32 consequences, patients might say, 'there is something wrong with me' or 'it's different from
33 normal', expressing their intuitive sense of alarm, which may then lead to worry or concern.
34 Worry or concern is not based on an automatic, intuitive knowing, as is in a sense of alarm,
35 but can be traced back to reasonable arguments.

36 A GPs' sense of alarm means that the physician perceives an uneasy, intuitive feeling as
37 he/she is concerned about a possible adverse outcome. (2) It is a sense of 'there's
38 something wrong here', although specific indications are not yet found, and this gut feeling
39 makes the GP worried about a patient's health situation. There is a need to initiate further
40 diagnostics and maybe also immediate management to prevent serious health problems.
41 However, a GP might worry about the course of the patient's illness, e.g., in the case of a

1 patient known with a serious heart failure, but still experience a sense of reassurance in the
2 background. The physician knows how to manage the situation, for example by prescribing
3 effective medicines. The DOW scale mixes up two different notions: worry/concern and gut
4 feelings.(12, 13) When composing a gut feelings questionnaire for patients, we need to take
5 into account the difference between worry or concern and gut feelings. In our gut feelings
6 questionnaire for GPs, (3) we do not use the word worry in the items apart from one item,
7 in which we describe the gut feeling as ‘something does not add up’.

8 **Implications for research and practice**

9 Knowledge about the wordings and phrases that patients or their relatives or parents use to
10 share their gut feelings with primary care professionals must be a vital part of professionals’
11 training. This will help professionals to recognize patients’ gut feelings and to understand
12 how they come about. This study provided reliable data to compose a short questionnaire
13 to assess patients’ gut feelings, especially the more frequently mentioned sense of alarm.
14 Such a questionnaire will enable us to examine the validity of patients’ gut feelings and their
15 influence on the clinical reasoning of primary care professionals.

16

17

18

19

20 Funding: none

21 Ethical approval: The Medical Ethics assessment committee (METC) of Isala hospital at
22 Zwolle (The Netherlands) designated this study as exempt from review (170204).

23 Competing interests: The authors declare that they do not have a conflict of interest.

24 Acknowledgments: We are very grateful to all participating patients.

25

26

27

28

29

1 **Table 1. Characteristics of and information provided by interviewed Dutch and Belgian**
 2 **patients visiting an out-of-hours GP service**

3

Interview number	Duration of interview (min)	Adult(s)	Parent(s)	Current information*	Retrospective information	Country	Before/after consulting GP	Invited by
1.	7		+	+		Netherlands	After	Triage nurse
2.	11		+	+	+ (about adult)	Netherlands	After	GP
3.	10		+	+	+ (about adult)	Netherlands	Before	Triage nurse
4.	14	+		+	+ (about child)	Netherlands	Before	Triage nurse
5.	11	+		+		Netherlands	Before	Triage nurse
6.	6	+		+		Netherlands	Before	Triage nurse
7.	10	+		+		Netherlands	After	GP
8.	16		+	+		Netherlands	Before	Triage nurse
9.	13	+		+		Netherlands	Before	At random
10.	14	+		+		Netherlands	Before	At random
11.	19	+		+	+ (about adult)	Netherlands	Before	At random
12.	16	+		+	+ (about adult)	Netherlands	Before	At random
13.	26		+	+	+ (about child)	Netherlands	Before	At random
14.	14	+		+		Netherlands	Before	At random
15.	11		+	+		Netherlands	Before	At random
16.	10	+		+		Netherlands	Before	At random
17.	10		+	+	+ (about adult)	Netherlands	Before	At random
18.	9	+		+		Netherlands	Before	At random
19.	9	+		+		Netherlands	Before	At random
20.	12	+		+	+ (about adult)	Netherlands	Before	At random
21.	14	+		+	+ (about child)	Netherlands	Before	At random
22.	17		+	+	+ (about child)	Netherlands	Before	At random
23.	15		+	+	+ (about child)	Netherlands	Before	At random
24.	25	+		+	+ (about child)	Netherlands	Before	At random

25.	4	+		+		Netherlands	Before	At random
26.	15	+		+		Belgium	Before	At random
27.	29	+		+	+	Belgium	After	At random
28.	34	+		+	+	Belgium	Before	At random
29.	18	+		+		Belgium	After	At random

1 *Current information means information from that moment, e.g., the reason for the encounter

2

3

4 **Table 2. Characteristics of and information provided by interviewed Dutch and Belgian**
5 **patients visiting their GP during office hours**

Interview number	Duration of interview (min)	Adult(s)	Parent(s)	Current information*	Retrospective. Information	Location	Before/after consulting GP	Invited by
30.	10		+	+	+ (about child)	Netherlands	Before	Practice nurse
31.	16	+		+	+ (about partner)	Netherlands	Before	Practice nurse
32.	18	+		+		Netherlands	Before	Practice nurse
33.	17	+		+	+ (about partner)	Netherlands	Before	Practice nurse
34.	12	+		+	+ (about partner)	Netherlands	Before	Practice nurse
35.	14		+	+	+ (about child)	Netherlands	Before	Practice nurse
36.	12		+	+	+ (about child)	Netherlands	Before	Practice nurse
37.	17	+		+		Netherlands	Before	Practice nurse
38.	19	+		+		Netherlands	Before	Practice nurse
39.	17	+		+		Netherlands	Before	Practice nurse
40.	15	+		+		Netherlands	Before	Practice nurse
41.	21	+		+	+ (about adult)	Netherlands	Before	Practice nurse
42.	10	+		+		Netherlands	Before	Practice nurse
43.	11		+	+	+ (about child)	Netherlands	Before	Practice nurse
44.	19	+		+	+ (about child)	Belgium	Before	Reception staff
45.	20	+				Belgium	Before	Reception staff

45.	35	+		+		Belgium	Before	Reception staff
47.	30	+		+	+(about child)	Belgium	After	Reception staff

1 *Current information means information from that moment, e.g., the reason for the encounter

2

3

4

5

6

7

8 1. Stolper CF, Van de Wiel MWJ, Van Royen P, Van Bokhoven MA, Van der Weijden T,
9 Dinant GJ. Gut feelings as a third track in general practitioners' diagnostic reasoning. J Gen
10 Intern Med. 2011;26(2):197-203.

11 2. Stolper CF, Van Royen P, Van Bokhoven MA, Houben PHH, Van de Wiel M, Van der
12 Weijden T, et al. Consensus on gut feelings in general practice. BMC Family Practice 2009,
13 10:66. 2009.

14 3. Stolper CF, Van de Wiel MWJ, De Vet HCW, Rutten ALB, Van Royen P, Van Bokhoven
15 MA, et al. Family physicians' diagnostic gut feelings are measurable: validation of a
16 questionnaire. BMC Family Practice. 2013;14(1).

17 4. Barais M, van de Wiel MWJ, Groell N, Dany A, Montier T, Van Royen P, et al. Gut
18 Feelings Questionnaire in daily practice: a feasibility study using a mixed-methods approach
19 in three European countries. BMJ Open. 2018;8(11):e023488.

20 5. Barais M, Fossard E, Dany A, Montier T, Stolper E, Van Royen P. Accuracy of the
21 general practitioner's sense of alarm when confronted with dyspnoea and/or chest pain: a
22 prospective observational study. BMJ Open. 2020;10(2):e034348.

23 6. Oliva B, March S, Gadea C, Stolper E, Esteva M. Gut feelings in the diagnostic process
24 of Spanish GPs: a focus group study. BMJ Open. 2016;6(12):e012847.

25 7. Kahneman D. A perspective on judgment and choice: mapping bounded rationality.
26 Am Psychol. 2003;58(9):697-720.

27 8. Buetow SA, Mintoft B. When Should Patient Intuition be Taken Seriously? J Gen
28 Intern Med. 2011;26(4):433-6.

29 9. Stolper E, Van Royen P, Jack E, Uleman J, Olde Rikkert M. Embracing complexity with
30 systems thinking in general practitioners' clinical reasoning helps handling uncertainty.
31 Journal of evaluation in clinical practice. 2021;27(5):1175-81.

32 10. Stolper CF, van de Wiel MWJ, van Bokhoven MA, Dinant GJ, Van Royen P. Patients'
33 gut feelings seem useful in primary care professionals' decision making. BMC Prim Care.
34 2022;23(1):178.

35 11. Schuck UM, Van de Wiel MWJ, Dinant GJ, Stolper CF. Horen artsen intuïtie van
36 patienten serieus te nemen? Medische tuchtcolleges over het niet-pluisgevoel. [Medical
37 disciplinary boards on gut feelings of patients] NTvG. 2020;164(D4884):7.

- 1 12. Gamst-Jensen H, Huibers L, Pedersen K, Christensen EF, Ersboll AK, Lippert FK, et al.
2 Self-rated worry in acute care telephone triage: a mixed-methods study. *Br J Gen Pract.*
3 2018;68(668):e197-e203.
- 4 13. Thilsted SL, Egerod I, Lippert FK, Gamst-Jensen H. Relation between illness
5 representation and self-reported degree-of-worry in patients calling out-of-hours services: a
6 mixed-methods study in Copenhagen, Denmark. *BMJ Open.* 2018;8(9):e020401.
- 7 14. Parsonage RK, Hiscock J, Law RJ, Neal RD. Patient perspectives on delays in diagnosis
8 and treatment of cancer: a qualitative analysis of free-text data. *Br J Gen Pract.*
9 2017;67(654):e49-e56.
- 10 15. Van den Bruel A, Thompson M, Buntinx F, Mant D. Clinicians' gut feeling about
11 serious infections in children: observational study. *BMJ.* 2012;345:e6144.
- 12 16. Van den Bruel A, Aertgeerts B, Bruyninckx R, Aerts M, Buntinx F. Signs and symptoms
13 for diagnosis of serious infections in children: a prospective study in primary care. *Br J Gen*
14 *Pract.* 2007;57(540):538-46.
- 15 17. de Bont EG, Loonen N, Hendrix DA, Lepot JM, Dinant GJ, Cals JW. Childhood fever: a
16 qualitative study on parents' expectations and experiences during general practice out-of-
17 hours care consultations. *BMC Fam Pract.* 2015;16:131.
- 18 18. Kuijpers DL, Peeters D, Boom NC, van de Maat J, Oostenbrink R, Driessen GJA.
19 Parental assessment of disease severity in febrile children under 5 years of age: a qualitative
20 study. *BMJ Open.* 2021;11(3):e042609.
- 21 19. Urbane UN, Gaidule-Logina D, Gardovska D, Pavare J. Value of parental concern and
22 clinician's gut feeling in recognition of serious bacterial infections: a prospective
23 observational study. *BMC Pediatr.* 2019;19(1):219.
- 24 20. Van de Wiel MWJ. Examining expertise using interviews and verbal protocols.
25 *Frontline Learning Research.* 2017;5(3):29.
- 26 21. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis:
27 Implications for conducting a qualitative descriptive study. *Nurs Health Sci.* 2013;15(3):398-
28 405.
- 29 22. Moser A, Korstjens I. Series: Practical guidance to qualitative research. Part 3:
30 Sampling, data collection and analysis. *Eur J Gen Pract.* 2018;24(1):9-18.
- 31 23. Smith CF, Kristensen BM, Andersen RS, Ziebland S, Nicholson BD. Building the case
32 for the use of gut feelings in cancer referrals: perspectives of patients referred to a non-
33 specific symptoms pathway. *Br J Gen Pract.* 2021.
- 34 24. Leventhal H, Phillips LA, Burns E. The Common-Sense Model of Self-Regulation
35 (CSM): a dynamic framework for understanding illness self-management. *J Behav Med.*
36 2016;39(6):935-46.

37
38