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Determining implementation issues of open notes in primary care: a focus group study

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Abstract

Background In several countries, patients have online access to medical records (open notes) contributing to patient engagement and healthcare outcomes. However, usage is still low. Healthcare professionals' viewpoints on open notes are under-represented in existing reviews. And a systematic framework to understand the implementation is lacking. Using the 'capability approach', we evaluated the value of open notes by examining influencing factors and capabilities (opportunities and challenges) of patients and staff in general practices.

Method Qualitative research was conducted in 10 Dutch general practices (19 healthcare professionals and 29 patients) that were included through purposive sampling aiming at a diversity of practices and patients. Three focus groups were held with primary care staff and 10 with patients, led by an experienced facilitator using a topic guide. Content analysis was used for the transcripts of the focus groups; coded in ATLAS.ti in three rounds by two researchers independently. The results were discussed with the research team to identify factors and capabilities that could affect the usability of open notes.

Results Personal, social, and environmental factors appeared to influence the use of open notes, such as digital and health literacy, social support from and within the practice, and legislation and regulation. Patients and healthcare professionals agreed on most of these factors. From the capabilities, four implementation themes were identified. First, ambiguity about ownership of medical records and concerns about data integrity should be addressed. Second, the change in practice organization and the care process caused by open notes need practical support. Third, fear of the unknown and unintended consequences of open notes must be considered. Fourth, the introduced change to the healthcare professional-patient relationship requires additional skills. These themes applied to both patients and healthcare professionals, but the differences became clear in the details.

Conclusion The study provides insight into how patients and healthcare professionals experience open notes. Besides the practical barriers and facilitators, patients and healthcare professionals addressed four implementation themes that should guide the further implementation of open notes to improve patient engagement and health outcomes.

Keywords Primary care, Open notes, Patient engagement, Implementation, Capability approach, Focus group

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Introduction

Patients in several countries have online access to their medical records, known as open notes. This access may include test results, medication lists, referral information, and notes written by healthcare professionals [1]. Since July 2020, general practitioners (GPs) in The Netherlands have been legally obliged to offer patients online access to their medical records [2]. Patient portals were developed to provide online access and the national OPEN program supported the introduction of open notes into general practice by offering online education to GPs, particularly on the technical and privacy aspects of open notes [3]. After completing this training, GPs received a one-off payment of €2.97 per registered patient who had access to medical records. GPs could contact their regional organization if they encountered any problems with the introduction of open notes; additional staff was made available. The regional organization also provided practices with quarterly figures per practice on the use of open notes by their patients. Review studies, predominantly from the USA, have shown that online access to medical records can improve patient engagement and healthcare outcomes [4–6]. However, the reported usability of open notes approximately is 15-30% [7, 8]. These percentages hardly differed between the included studies, showing stable data. This knowledge has led to research into factors influencing the usability of open notes, which shows that mainly technical features of patient portals, patients' digital and health literacy, and attitudes influence the use of open notes [4–12]. These reviews further indicate that the research has primarily focused on the patient's perspective and that a theoretical framework to interpret the behaviour is lacking. Both observations prompted us to conduct the current study.

A theoretical framework can help understand the drivers for open notes, enabling the development of effective implementation strategies [13]. Several frameworks are available [14] to address implementation issues introducing a new intervention. In this study, we used the 'capability approach' because it has proven its value in evaluating complex interventions, e.g. antimicrobial resistance or prenatal screening, by taking a broad perspective [15, 16]. The capability approach allows us to focus on barriers and enablers, such as digital skills, and on the specific value of open notes for its users and their capability to deal with this application in practice. To investigate the appropriateness of the capability approach, the known aspects (review studies) that influence open notes have been presented in terms of the capability approach [17]. The findings showed that the capability approach can be used as a framework to leverage implementation issues of open notes. The capability approach was introduced by the Nobel laureate economist Amartya Sen and further developed in collaboration with the philosopher Martha Nussbaum [18, 19]. Sen argued that to understand why individuals differ in converting resources, such as open notes, into valuable activities, we must assess individuals' capabilities that contribute to aspects people value in life. Therefore, we need to gain insight into the aspects that both patients and healthcare professionals value when using open notes. Robeyns presented the core concepts of the capability approach in a figure [20]. We added to this figure some examples of the usability of open notes from the patient's perspective [17], see Fig. 1. Open notes, the resource, allow patients to achieve patient engagement and better healthcare outcomes [4–6]. The actual choice to use open notes depends on conversion factors and the capabilities of the users.

Conversion factors enable the use of open notes and can be personal, social, or environmental. For example, having digital skills is a personal factor, receiving technical support from the GP is a social factor, and having internet access is an environmental factor. Capabilities are at the core of the 'capability approach', which are defined as the 'real opportunity' to pursue valued

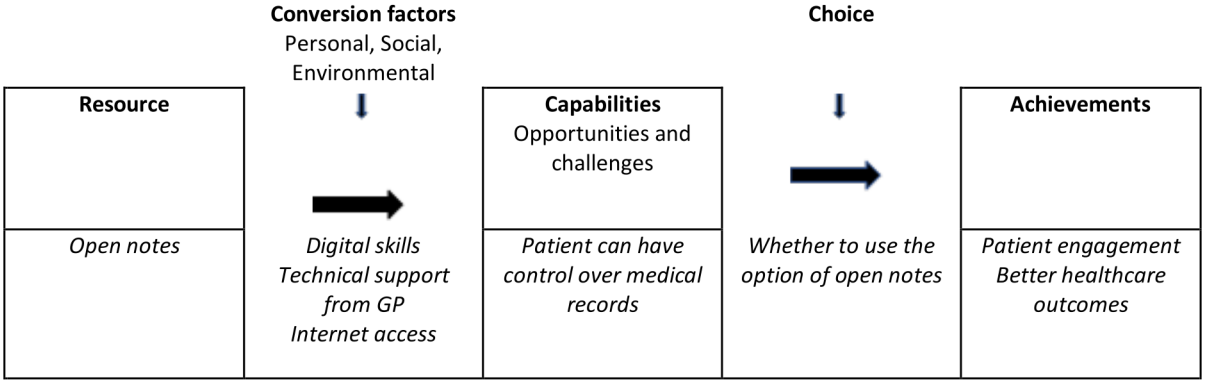

Fig. 1 The capability approach applied to the use of open notes from the patient's perspective

achievements. Nussbaum postulated 10 capabilities: life, health, integrity, senses, imagination, thought, emotions, practical reason, affiliation, other species, play, and control [19]. Not all 10 capabilities apply necessarily to the usability of open notes. In Fig. 1, we present the capability of control. If a patient values having control over his or her medical record, this will positively influence the choice to use open notes. Nussbaum emphasized that the conversion factors and the capabilities should be specified for each assessed resource under study [19].

This study aims for a structured overview of open note implementation issues based on conversion factors and capabilities from the perspective of patients and healthcare professionals, particularly primary care staff in general practice. From previous research, we have already learned that users can sometimes describe capabilities as opportunities and sometimes as challenges [17]. Using bottom-up insights, open notes can be implemented to better engage patients and improve healthcare outcomes.

Methods

Study design

Focus groups, a type of qualitative research, were conducted because they rely on group dynamics and interaction, leading to a more in-depth exploration and clarification of participants' views [21]. Separate focus groups were organized for the primary care staff in general practice - practice assistants, practice nurses, GPs, and practice managers - and patients, as different perspectives are more likely to emerge through interaction and discussion with peers [22]. The Consolidated Criteria for Qualitative Health Research (COREQ) was used for reporting [23]. The research has been performed in accordance with the relevant guidelines and regulations as stated in the Declaration of Helsinki. Ethical approval for the study was given by the Radboud University Medical Center Ethical Review Board [reference number: 2020–7075]. Informed consent was obtained from all participants.

Participants

Primary care staff (PC staff)

14 practices were contacted to achieve recruitment of 10 general practices. A purposive sample frame was employed to ensure diversity in practice size, type, urbanization level, and patient portal. The practices were sampled from the authors' policy and research network in the eastern part of The Netherlands. This way of sampling made it possible to make a rough estimate of the extent to which the practices already used open notes (searching for diversity). The practices were contacted via email, followed by a telephone call. GPs were requested to invite a practice assistant, a practice nurse, and, if available, their practice manager. The focus groups were conducted online because of COVID-19 with a maximum of 10 participants each. Nineteen PC staff members participated in three focus groups. The participants were practice assistants who performed receptionist tasks and simple delegated and protocolled medical procedures ($n=6$, all female), practice nurses ($n=2$, all female), general practitioners ($n=9$, three male), and managers ($n=2$, all female). All GPs had completed the online education program of the national OPEN program prior to the focus groups.

Patients

General practices were asked to provide contact details for 3–5 patients (aged ≥ 18 years), varying in age, gender, education level, ethnic background, and chronic condition. The researcher contacted the potential participants and provided additional information regarding the purpose of the study and the nature of the focus group. If a patient agreed to participate, written informed consent was obtained. Focus group interviews were held face-to-face in the practice, online, or by telephone based on patient preference, with a maximum of 5 participants per focus group. All patients contacted, except for one because of a medical emergency, participated in the study ($n=29$). A demographic survey conducted at the beginning of the focus group showed that the participants -15 of whom were women- varied in age between 21 and 83 (mean age of 53 years), education (17 highly educated versus 12 moderately or low educated). Four participants had a migration background, 10 participants had a chronic condition, and the patients varied in their digital skills, with an average score of 4.6 on the five-point rating scale.

Setting

The study was conducted in the Netherlands, where 97.5% of citizens are registered with a general practice (listing status). The number of general practices was in 2021 [24] 4,860 -of which 60.7% were group practices- with a total 11,583 GP (6.6 per 10,000 inhabitants) of which 60.1% were female. In 2021, 81.1% of general practices employed a practice nurse, practice assistants work in almost every practice, and more and more practices have a practice manager. All practices work with electronic medical records; and general practitioners are the gatekeepers to hospital care.

Topic guide for the focus groups

The topic guide for the focus groups was the same for PC staff and patients. Since it is difficult to ask people directly about conversion factors and capabilities [25], we opted to have an open discussion about the usability of open notes. After explaining the background of open notes, the discussion started by exploring initial thoughts

on open notes. We then discussed its meaning, opportunities, how to realize these opportunities, and factors that may hinder or contribute to the use of open notes. The discussion concluded with an open question for additional comments. Appendix 1 includes the verbatim questions. For patients, each session began with a short instructional video on open notes, created by a patient portal provider. This video was already presented to GPs during their training by the national OPEN program. The focus groups lasted 90–120 min.

Data collection

In March and April 2021, three focus groups with the PC staff were facilitated by JB or MD, who are both experienced in chairing focus groups with PC staff on healthcare improvement (practice management, guidelines, quality indicators). The patient focus groups were held in the same period and guided by SAY and MD, who have experience in interviewing patients and patient groups from general practices. Written informed consent has been given by PC staff and patients. Both were aware that participation was voluntary, and that they could withdraw at any time during the study. Each focus group was transcribed verbatim. Participants received the transcript with the opportunity to make corrections. No corrections or refinements were made. Standard procedures concerning confidentiality, anonymity, and the secure storage of data were maintained throughout the study.

Data analysis and reporting

The transcripts of the focus group discussions were coded using ATLAS.ti, version 8.4.25 for Windows. A conventional content analysis was completed by the research team [26]. The focus groups with the PC staff and the patients were analysed by SAY and MD as a process of immersion [27]. Each focus group was discussed and compared by SAY, MD, and JB during their weekly meeting. After the final scheduled focus group, it was concluded that it was unlikely to collect new insights from further focus groups (data saturation). The researchers (SAY and MD) independently coded the transcripts (double coded). After two interviews, codes were compared and discussed until consensus was reached. Subsequently, a new coding scheme was developed for further use. This scheme was updated after each interview. If new codes emerged, all interviews were reviewed in relation to the new codes. The definitive codes were assigned after discussing them with the multidisciplinary research team (primary care, MD; sociology, SAY; ethics, GO; and psychology, JB) until agreement was reached. A deductive approach was used to organize the inductively generated codes to the three types of conversion factors (personal, social, and environmental factors) and the 10 types of capabilities (opportunities and challenges). To gain a better insight into the opportunities and challenges, they were grouped inductively by the research team into four themes. The results are reported in terms of conversion factors and capabilities (opportunities and challenges) based on the codes of the focus group transcripts, supported by quotes.

Results

Conversion factors

PC staff and patients mentioned several conversion factors that could influence the opportunities and challenges of open notes. These factors included personal, social, and environmental aspects. Table 1 presents an overview that shows a significant overlap between the factors noted by PC staff and patients. The discussion on these factors in the focus groups will be further detailed below.

The focus group started with inquiries regarding the purpose of open notes. PC staff and patients expressed a strong desire for practical examples to illustrate what could be accomplished with open notes. This suggested an initial lack of urgency to begin utilizing open notes. The level of familiarity with the portal, whether online or through an app, varied and influenced the level of enthusiasm for using open notes. Uncertainty about what patients can see hindered PC staff from encouraging patients to use open notes.

> *PC staff 2: It's challenging because we don't know exactly what the patient sees behind the interface.*

Table 1 Conversion factors affecting the use of open notes

	Both PC staff and patient perspective	PC staff perspective only	Patient perspective only
Personal	• Sense of urgency • Familiarity with portal, online or via app • Enthusiasm • Digital skills		• Health literacy*
Social	• Support by PC staff	• Patients' needs and skills* • Professional guidelines	
Environmental	• User-friendliness of portal or app • Regional and national support • Legislation and regulation	• Financial compensation	

*Partially comparable issue from a different perspective

Both PC staff and patients stated digital skills influenced their use of open notes. Additionally, PC staff raised concerns about the digital skills of their patients, indicating that open notes are not accessible to all patients. Within this context, patients emphasized the importance of understandable language and the ability to interpret the results of medical examinations, both of which are related to health literacy.

> *Patient 4: I mean I'm not a doctor. If there are all kinds of difficult terms there, then you have no idea what it means.*

Understandable language was also discussed in the focus groups, with the PC staff categorized as a social factor in Table 1. They noted that their use of open notes would depend on the needs and skills of the patients.

> *PC staff 1: It depends on your patient population. I don't think they're going to read back our advice. Some patients, but not the people I have in front of me. No.*

So, health literacy was coded as a personal conversion factor from the patient's perspective, but a social factor from the PC staff perspective because low literacy made the patient socially dependent on the PC staff (social aspect).

PC staff expressed that support from their colleagues (PC staff) stimulates them to use open notes, as did the professional guidelines from the Dutch College of General Practitioners.

> *PC staff 2: It fits in with reaching autonomy for patients, which of course has many advantages.*

Patients stressed the importance of support from the PC staff in using open notes from promoting its existence to assisting with authentication procedures. They also expressed the expectation that the general practice would take the lead in introducing patient-friendly (understandable) medical records.

Furthermore, PC staff and patients discussed the lack of user-friendliness of the portal or app, making it difficult for patients to access medical information and advice.

> *Patient 2: Every time you have to click on a separate line before you can read the result. That is just very confusing. It is impossible to read. You cannot easily read what the doctor advises.*

PC staff and patients deliberated further on the role of regional and national support. PC staff suspected that insufficient thought had been given to implementing open notes prior to the national introduction. Some portals weren't even ready when launching open notes. PC staff participants also pointed out that the mandatory introduction of open notes (legislation and regulation) was too strict for general practices. In contrast, patients noted that the legislation supported the introduction of open notes. In addition, the PC staff acknowledged the value of the financial compensation.

Opportunities and challenges

Table 2 presents the opportunities and challenges for PC staff and patients separately, grouped into the four themes that the research team identified from the discussions in the focus groups.

Ownership and data integrity

Data integrity of the medical records was a major concern for the PC staff in discussing the usability of open notes. Medical records should remain accurate and complete and not be (mis) used or seen by third parties. They feared that completeness would be compromised as patients forced PC staff members to remove certain information. They mentioned that in difficult family situations, such as child and elder abuse, it may be undesirable for parents or relatives to have access to these medical records.

> *PC staff 2: Yes, the patient has access but also informal caregivers or parents. They do it with good intentions, but sometimes also with less good intentions.*

PC staff further discussed that current medical records are not designed for use by both PC staff and patients. This debate touched on a related topic, namely the ownership of medical records. PC staff felt responsible for the content of the medical records. Open notes make it more explicit that patients have the right to rectification, supplementation, and erasure, which can have consequences for the quality of care delivered. This ties in with the discussion of data integrity by the patients. They discussed the future possibility of making notes in the medical records themselves and wondered what notes they could add.

> *Patient 3: I do think that careful consideration should be given to what a patient is allowed to report in medical records because a patient can put anything in it. However, is it still clear what medical data is and what you consider important to record?*

PC staff discussed patient access to the medical records as a potential threat to their professional practice. There

Table 2 Open notes' implementation themes based on capabilities (opportunities and challenges) of PC staff and patients

Implementation theme	Capabilities [19]*	PC staff	Patients
Ownership and data integrity	Integrity	• Erodes trust in medical records to be complete and reliable • Possibility of improper use by third parties	• Raises questions about what to be noted in my medical records
	Life/ Professional practice	• Limits the ability to practise as a GP because of legal consequences	• *Nothing mentioned*
Practice organization and care process	Practical reasoning	• PC staff should promote open notes and explain the use of a portal or app • Enables to respond to patient requests for transparency • Contributes to keeping the medical records up to date	• Offers the opportunity to check medical records
	Healthy life	• *Nothing mentioned*	• Contributes to living a healthy life
	Play	• Does not reduce workload or contribute to job satisfaction for GPs or practice nurses, but it does for practice assistants • Requires changing in workflow	• Simplifies handling information about your health
Worries and thoughts	Emotion	• Makes me concerned about what the patient is reading	• The information makes me worried or anxious • Provides insufficient certainty about data security and privacy aspects
	Senses, imagination, and thought	• Limits my use of medical language (necessary for transfer) and the writing of the next steps (continuity of care) in the medical records	• Ability to view own medical records • Ability to read back what has been discussed and reflect on agreements made
Healthcare professional-patient relationship	Affiliation	• Supports an effective relationship with patients • Influences mutual collegial solidarity in practice	• Supports getting an effective relationship with the PC staff
	Control	• Reduces control	• Allows control of the content of the medical records • Supports autonomy of his/her own health situation

*No issues were raised for the tenth capability 'Other species'

was fear that patients would take them to court, claiming that the medical records were not up to date or accurate. General practitioners felt weak in a defence. What if the patients are likely to change the medical records?

> *PC staff 3: However, even if you later want to summon a doctor and the medical records belong only to the patient, who is going to change everything, and the doctor cannot keep it anymore, or the doctor is not the holder of that medical record, how can you defend yourself?*

Practice organization and care process

Changes in the practice organization and the care process were felt as requirements for the successful implementation of open notes. PC staff expected patients to ask many questions about the technical aspects of using the portal or app, which would affect time and practice organization. It was doubted whether this was a task for the PC staff. Some patients suggested helping the PC staff by instructing other patients.

PC staff were aware of the social demand for transparency and wanted to respond to it because they believed transparency is professional behaviour. A practical reason for joining the open note movement was that patients could provide feedback on the content of their medical records, including inaccuracies. Both PC staff and patients noted patients could contribute to keeping their medical records current, complete, and accurate. This opportunity aligned well with patients' preferences. Patients emphasized that open notes provided an opportunity to review their medical records and that having an overview could improve healthcare outcomes.

> *Patient 1: I have an overview of everything related to blood tests, and in a separate column, I can read what is allowed {so much of this and not that}. What can I do? I can adjust my diet and lifestyle; that is important to me.*

PC staff had differing opinions about the impact of open notes on job satisfaction. GPs and practice nurses reported increased workloads from open notes. Especially in the beginning, the usability of open notes would take more time. However, a practice assistant mentioned that open notes might lessen her workload. The number of phone calls with patients will probably decrease, especially if GPs would include their advice in the medical records. The latter may require changes to the workflow.

> *PC staff 13: For example, patients can easily access their laboratory results. If the GP immediately adds advice, it will save us a lot of phone calls.*

Patients appreciated the convenience and time savings of having direct access to their medical records.

Worries and thoughts

PC staff were concerned that patients might become worried or anxious when reading professional notes. They questioned whether the information could cause unnecessary distress because patients might not interpret it correctly.

> *PC staff 1: I spoke to a patient who says, 'I looked at it last night, and I see something is red. I couldn't sleep all night.' While we reassure patients not to worry about the results, the inability to interpret them can lead to anxiety. How can we protect patients from this?*

So, patients expressed feelings of anxiety and fear regarding open notes. They also discussed concerns about the privacy and security aspects of the data system (patient portal).

PC staff discussed another point, e.g. the potential limitations in their ability to transfer notes and comments related to possible next steps in medical records. They often make notes on preliminary thoughts or diagnostics that are crucial for themselves or their colleagues. They believed these notes are essential for the continuity of care. Currently, patients do not have electronic access to this part of the medical records. However, PC staff were unsure if this information would become visible to patients shortly.

> *PC staff 1: I feel hindered. Can I fully communicate what I want to say with a colleague? Can I write any next steps I have already considered?*

Overall, both PC staff and patients discussed the fear of the unknown and the unintended consequences of open notes.

Healthcare professional-patient relationship

PC staff and patients discussed several potential changes in the healthcare professional-patient relationship often related to the themes described above. PC staff mentioned positive experiences with well-informed patients engaging in shared decision-making. However, they noted that there is a risk to the relationship if nuances from the consultation are not visible in the medical record. Patients had differing opinions on whether open notes could enhance the relationship between healthcare professionals and patients. Some felt that open notes would not affect the relationship, while others believed it could help them become equal partners.

> *Patient 5: You have a partner who helps you maintain your health, and I think that is how you should view it, but you also have to share the same information.*

A widely discussed topic that affected the relationship between healthcare professionals and patients was control. Patients stated open notes allowed them to make more informed choices about their health, supporting their autonomy.

> *Patient 2: Yes, I think you are in control. So, if your question is, does that lead to more autonomy? Yes, I think so. More understanding about what is happening in the medical area of your life.*

However, PC staff were concerned about the loss of control. PC staff felt responsible because they manage the record and make notes in it. However, patients discussed that the medical record is their file, after all, it is about them.

> *PC-staff 1: Some patients say: 'The notes are mine', but I have the feeling that I'm the writer and it is about the patient.*

Discussion

Main findings

This is the first study in the Netherlands on open notes in general practice. Our systematic analysis of the experiences based on the capability approach identified several aspects for further development of an implementation strategy for open notes. PC staff and patients often agreed on the conversion factors mentioned, such as the need for digital skills. We found also that a conversion factor such as health literacy can be classified as personal from the patient's perspective and as social from the PC staff's perspective. Although most conversion factors have been described previously [17], some additional conversion factors have been found, especially from the perspective of healthcare professionals, such as desired support from professional guidelines. If these conversion factors are present, they can support the realization of the opportunities and challenges that open notes offer, otherwise they form barriers. Nine out of the ten stated capabilities played a role in the usability of open notes. PC staff and patients presented different detailed opportunities and challenges, highlighting the need gathering information from both perspectives. Clustering the opportunities and challenges into four themes can support guidance in developing practical tools to improve the implementation of open notes.

Using the capability approach

This is the first time that the 'capability approach' is reported as a tool to gain a comprehensive overview of aspects that may influence the usability of open notes. The systematic analysis of conversion factors and capabilities led to a comprehensive identification of the aspects that affect the usability of open notes for PC staff and patients. This knowledge can help to provide specific tools for drawing up a well-defined implementation plan. The capability approach is previously used in healthcare research to assess capabilities for economic evaluations [28]. In these studies, the capacities are operationalized to develop short questionnaires in which one item represents one capability, using a limited set of the 10 capacities described by Nussbaum. This provides too limited a picture to substantiate an implementation plan. Our study adds to a series of studies that have used the 'capability approach' to evaluate complex health care interventions [15, 16, 29, 30] by developing a broader understanding of a specific practice, taking into account its multidimensional nature.

Implications for policy and practice

In order to implement open notes, it is important to understand the perspectives of both PC staff and patients, as these perspectives differ and the influencing aspects can interact. By breaking down the conversion factors into personal, social, and environmental issues, more detailed information is gained about what support can be successful for whom. For example, patients reported being able to help fellow patients with open notes, and PC staff requested a revision of the national guideline 'Appropriate medical record keeping' [31] to address patient use. Both PC staff and patients emphasized the impact of financial support for individual practices and regional primary care organisations on the usability of open notes. These findings suggest that the success of open notes implementation is contingent upon the input of patients and PC staff at a personal and social level, as well as the support provided by their environment. Special attention should be paid to the fact that the barriers and facilitators may be unevenly distributed across patients [32, 33] and it is likely that this also applies to general practices. This means that tailored support for the use of open notes should be offered in consultation with the patient, with some patients preferring a verbal dialogue [34].

Besides the conversion factors, the opportunities and challenges should be addressed while introducing open notes. The clustering of opportunities and challenges identified four implementation themes. The first theme concerns 'medical record ownership and data integrity', an issue described in other studies [1, 35]. Introducing open notes raises questions about who owns the medical records and who has rights for access and writing. These questions were influenced by a lack of familiarity with current legislation and regulations on medical record-keeping, as well as concerns about negative outcomes such as incomplete records and legal consequences. Information and additional measures appear to be required. The second theme focuses on the impact of open notes on the 'practice organisation and care process'. The findings show that by open notes, patients and healthcare professionals can contribute to comprehensive and precise health data. Patients indicated further that open notes could contribute to living a healthy life. PC staff saw a challenge in adapting the work processes, e.g. reporting understandable patient-orientated language and explaining upcoming laboratory results. All these remarks show that a different work style is necessary, which places more stress on the workload. In our study, this challenge regarding workload was raised by GPs and practice nurses; practice assistants thought open notes would reduce their workload. New tools, such as ICT-integrated, pre-defined, understandable text to explain test results, can support PC staff in practice organization and reduce workload. In certain research, workload concerns were voiced by patients [1, 34, 36], indicating the need for additional tools. Third, the impact of 'worries and thoughts' such as an emotional patient response to reading medical information should be addressed in introducing open notes and concerns about data security and privacy aspects. These aspects, which are mentioned in other studies [1, 17, 32, 34, 37], and also the fear of the unknown, should be openly discussed, otherwise they may hinder the implementation of open notes. Fourth, the 'relationship between healthcare professional and patient' is affected by the use of open notes. Patient engagement is strongly advocated in healthcare and supportive tools have been developed [38]. Open notes are one of these tools, but patient engagement is also about developing different roles for patients and PC staff. Our discussions about the usability of open notes show that patients and PC staff are still looking for ways to fulfil their new role in healthcare, aimed at patient engagement. To promote patient engagement with open notes, it is necessary to implement initiatives that teach skills related to the new roles in the PC staff-patient relationship.

Overall, PC staff and patients noticed that healthcare would shift because of open notes. Several aspects have been discussed related to the early stages of implementation (exploration and preparation) [39]. By gaining more experience and discussing this with PC staff, patients, and policymakers, other implementation issues may turn up. Attention should be paid to the unintended consequences of open notes [37]. Finally, we recommend developing a tailor-made implementation program, as

both PC staff and patients have unique experiences and skills.

Strengths and limitations

The qualitative nature of this research, along with the use of the capability approach, uncovered a wide range of aspects related to open notes from the perspective of patients and PC staff. The participation of a diverse group of PC staff - practice assistants, practice nurses, GPs and practice managers - and patients adds to the strengths of our study. However, the varied experience and skills with an online meeting of PC staff was a limitation of the study. Some individuals had difficulty accessing the online meeting, there were instances of multiple people sharing one screen, and participants were sometimes partially visible to others and the facilitator. As a result, some views may have been missing. Another point is that 9 out of 10 practices were mainly in the early stages of implementation (exploration and preparation) [39], potentially leading to an underrepresentation of factors that are more significant in later stages of the implementation. However, given the alignment between our findings and recent literature [32, 34–36], we believe that the absence of relevant topics has been minimal. It is worth noting this study was conducted in the Netherlands, so our findings may be specific to that country. Although a comparison of our findings with existing literature [32, 34–36] does not support this assumption.

Conclusion

This is the first study in the Netherlands that offers detailed insight into the experiences of general practice and their patients in using open notes. The identified conversion factors and capabilities provide input for the development of a systematic and sustainable implementation strategy of open notes to increase patient engagement and improve health outcomes.

Appendix 1: questions focus group for PC staff and patients

We conducted semi-structured focus groups based on the following questions:

1. After introducing the project and the participants, we ask, 'What first thoughts come to mind when you think of open notes?'
2. 'What is the meaning of open notes to you?'
3. 'How can you realize the opportunities? Do you need any support? Which?'
4. 'What factors hinder or enable the use of open notes?'
5. 'Are there any downsides to using open notes? And what about risks?'

To conclude the discussion, we ask, 'Are there any topics not discussed that you consider important?' Finally, we acknowledged the participants for their input.

NB. The focus group was about the experiences with open notes. The short video animation (44 s) to introduce open notes did not relate to the above questions (https://open-eerstelijn.nl/wp-content/uploads/2020/03/open-animatie.mp4).

Abbreviations

COREQ Consolidated criteria for qualitative health research
GPs General Practitioner(s)
PC staff Primary Care staff in general practices, i.e. practice assistants, practice nurses, GPs, and practice managers

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Author contributions

MD, GO, JB: developed the project. MD, JB: designed the study. SAY, MD, JB: practically conducted the focus groups. All authors: interpreted the data. MD, JB: prepared the text. SAY, GO: critically reviewed the manuscript. All authors: agreed to submit the manuscript.

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Data availability

The datasets generated and analyzed during the current study are not publicly available as the informed consent applied only for the use by the research team. If desired, the data can be viewed and reviewed together with the corresponding author.

Declarations

Ethics approval and consent to participate

The research has been performed in accordance with the relevant guidelines and regulations as stated in the Declaration of Helsinki. Ethical approval for the study was given by the Radboud University Medical Center Ethical Review Board [reference number: 2020–7075]. Informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors have no conflicts of interest to declare.

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References

1. Blease C, Torous J, Dong Z, Davidge G, DesRoches C, Kharko A, Turner A, Jones R, Hägglund M, McMillan B. Patient online record access in english primary care: qualitative survey study of general practitioners' views. J Med Internet Res. 2022;25:e43496.
2. Supplementary provisions for. the processing of personal data in healthcare (Wabvpz), Article 15a; https://wetten.overheid.nl/BWBR0023864/2020-07-01#Hoofdstuk3a
3. Dutch. national OPEN program for general practices; https://open-eerstelijn.nl/
4. Alturkistani A, Qavi A, Anyanwu PE, Greenfield G, Greaves F, Costelloe C. Patient portal functionalities and patient outcomes among patients with diabetes: systematic review. J Med Internet Res. 2020;22(9):e18976.

5. Kruse CS, Argueta DA, Lopez L, Nair A. Patient and provider attitudes toward the use of patient portals for the management of chronic disease: a systematic review. J Med Internet Res. 2015;17(20):e40.
6. Kruse CS, Bolton K, Freriks G. The effect of patient portals on quality outcomes and its implications to meaningful use: a systematic review. J Med Internet Res. 2015;17(2):e44.
7. Fraccaro V, Balatsoukas B, Peek VV. Patient portal adoption rates: a systematic literature review and meta-analysis. Stud Health Technol Inf. 2017;245:79–83.
8. Lyles CR, Nelson EC, Frampton S, Dykes PC, Cemballi AG, Sarkar U. Using electronic health record portals to improve patient engagement: research priorities and best practices. Ann Intern Med. 2020;172(11):S123–129.
9. Irizarry T, DeVito Dabbs A, Curran CR. Patient portals and patient engagement: a state of the science review. J Med Internet Res. 2015;17:e148.
10. Grossman LV, Masterson Creber RM, Benda NC, Wright D, Vawdrey DK, Ancker JS. Interventions to increase patient portal use in vulnerable populations: a systematic review. J Am Med Inf Assoc. 2019;26:855–70.
11. Zhao JY, Song B, Anand E, Schwartz D, Panesar M, Jackson GP, Elin PL. Barriers, facilitators, and solutions to optimal patient portal and personal health record use: a systematic review of the literature. AMIA Annu Symp Proc. 2017;1913–1922.
12. Ammenwerth E, Hoerbst A, Lannig S, Mueller G, Siebert U, Schnell-Inderst P. Effects of adult patient portals on patient empowerment and health-related outcomes: a systematic review. Stud Health Technol Inf. 2019;264:1106–10.
13. Wensing M, Bosch M, Grol R. Developing and selecting interventions for translating knowledge to action. CMAJ. 2010;182(2):E85–88.
14. Esmail R, Hanson H, Holroyd-Leduc J, Brown S, Strifler L, Straus SE, Nivem DJ, Clement FM. A scoping review of full-spectrum knowledge translation theories, models, and frameworks. Implement Sci. 2020;15:11.
15. Rump B, Timen A, Verweij M, Hulscher M. Experiences of carriers of multidrug organisms: a systematic review. CMI. 2019;25:274–9.
16. Stapleton G, Dondorp W, Schröder-Bäck P, de Weert G. A capabilities approach to prenatal screening for fetal abnormalities. Health Care Anal. 2019;2:309–21.
17. Alkir-Yurt S, Dees M, Olthuis G, Braspenning J. The meaning of patient portals in primary care according to the capability approach; a scoping review. Health Policy Technol. 2023;12(4):100790.
18. Sen A. Human rights and capabilities. J Hum Dev Capabil. 2005;6(2):151–6
19. Nussbaum M. Women and human development: the capabilities approach. New York: Cambridge University Press; 2001.
20. Robeyns I. The capability approach: a theoretical survey. J Hum Dev Capabil. 2005;6(1):93–117.
21. Pope C, Ziebland S, Mays N. Qualitative research in health care. Analysing qualitative data. BMJ. 2000;320(7227):114–6.
22. Levitan LC, Verhulst B. Conformity in groups: the effects of others' views on expressed attitudes and attitude change. Polit Behav. 2016;38(2):277–315.
23. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health. 2007;19(6):349–57.
24. www.nivel.nl/nl/panels-en-registraties/nivel-zorgregistraties-eerste-lijn [NIVEL primary care registers].
25. Al-Janabi H, Keeley T, Paul Mitchell P, Coast J. Can capabilities be self-reported? A think aloud study. Soc Sci Med. 2013;87:116–22.
26. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res. 2005;15(9):1277–88.
27. Morse JM, Field PA. Qualitative research methods for health professionals. SAGE; 1995.
28. Mitchell PM, Roberts TE, Barton PM, Coast J. Assessing sufficient capability: A new approach to economic evaluation. Soc Sci Med. 2015;139:71–9.
29. Visser SS, Haisma H. Fulfilling food practices: applying the capability approach to ethnographic research in the Northern Netherlands. Soc Sci Med. 2021;272:113701.
30. Bayefsky MJ, Caplan A. Treating infertility as a missing capability, not a disease: a capability approach. J Med Ethics. 2024;109877.
31. Dutch. NHG-guideline Adequate record keeping with EHR. www.nhg.org/praktijkvoering/informatisering/richtlijn-adequate-dossiervorming-epd/
32. Bernaerdt J, Moerenhout T, Devisch I. Vulnerable patients' attitudes towards sharing medical data and granular control in patient portal systems: an interview study. J Eval Clin Pract. 2021;27(2):429–37.
33. Thielmann RRLC, Hoving C, Cals JWL, Crutzen R. The effects of online access to general practice medical records perceived by patients: longitudinal survey study. J Med Internet Res. 2023;25:e47659.
34. Valeur HS, Lie AK, Moen K. Patient rationales against the use of patient-accessible electronic health records: qualitative study. J Med Internet Res. 2021;23(5):e24090.
35. Lounsbury O, Roberts L, Goodman JR, Batey P, Naar L, Flott KM, Lawrence-Jones A, Ghafur S, Darzi A, Neves AL. Opening a 'can of worms' to explore the public's hopes and fears about health care data sharing: qualitative study. J Med Internet Res. 2021;23(2):e22744.
36. Nøst TH, Faxvaag A, Steinsbekk A. Participants' views and experiences from setting up a shared patient portal for primary and specialist health services- a qualitative study. BMC Health Serv Res. 2021;21(1):171.
37. Turner A, Morris R, McDonagh L, Hamilton F, Blake S, Farr M, Stevenson F, Banks J, Atherton H, Rakhra D, Lasseter G, Feder G, Ziebland S, Hyde E, Powell J, Horwood J. Unintended consequences of patient online access to health records: a qualitative study in UK primary care. Br J Gen Pract. 2022;73(726):E67–74.
38. Wolters R, Mokadem I, Wensing M, Braspenning J. Supporting care engagement in primary care; the development of a maturity matrix. PLoS ONE. 2023;18(1):e0279542.
39. Alley ZM, Chapman JE, Schaper H, Saldana L. The relative value of pre-implementation stages for successful implementation of evidence-informed programs. Implement Sci. 2023;18:30.

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