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How do patients and general practitioners in Denmark perceive the communicative advantages and disadvantages of access via email consultations? A media-theoretical qualitative study

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3 **TITLE PAGE**
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5 **How do patients and general practitioners in Denmark perceive the communicative**
6 **advantages and disadvantages of access via email consultations? A media-theoretical**
7 **qualitative study**
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ABSTRACT

Objective: Email consultations (e-consultations) have become part of everyday doctor-patient communication in many countries. The objective of this study is to investigate how patients and general practitioners (GPs) perceive the communicative advantages and disadvantages of access via e-consultations drawing on a media-theoretical perspective.

Design: We analysed qualitative interview data from general practices in Denmark to identify salient themes.

Participants: Our data set consists of semi-structured interviews with 30 patients and 23 GPs. The data were collected from February 2016 to September 2019.

Results: Affordances that emerged include: 1) lower contact threshold, 2) accessing a new interaction space and 3) access to access. From the patients' perspective, e-consultations provided more convenient contact with their GP. From the GPs' perspective, e-consultations facilitated contact with patients whom they otherwise rarely saw, but also resulted in overuse and inappropriate use. Patients and GPs considered e-consultations as inviting new interactions, facilitating new kinds of affective communication. Both patients and GPs experienced e-consultations as a way of achieving untriaged access to face-to-face consultations.

Conclusion: Drawing on a media perspective, this study adds knowledge of how the affordances of the medium of e-consultations are perceived by GPs and patients. Understanding users' views on e-consultations' communicative advantages and disadvantages is useful for their further development and for training medical students and other health professionals, and can thus optimize their potential.

Keywords

E-consultation, access, communicative advantages and disadvantages, affordances, Denmark, email, general practice, computer-mediated communication

Article Summary

Strengths and limitations of this study

- The theoretical framework that draws on affordance theory is useful for other studies exploring emerging communicative practices that use new media in healthcare settings.
- The use of interviews to investigate perspectives on e-consultations and a large data set is valuable.
- In addition, it is a strength that the perspectives of both GPs and patients are represented.
- The majority of patients interviewed were born in 1954 or earlier (65+ years) as they participate in email consultations with the highest frequency in Denmark.

INTRODUCTION

Email consultations (e-consultations) are online consultations that allow general practitioners (GPs) and patients to communicate via e-mail without requiring their physical and/or temporal co-presence¹⁻⁴. E-consultations, which are intended to supplement rather than replace the dyadic encounter in the clinical setting, take place through closed messaging systems that encrypt the exchanges and integrate them into patients' medical records. Uptake of this relatively new form of consultation is contingent on aspects such as political will, technical infrastructures, and the motivation and resources of GPs and patients^{4,5}. The use of e-consultations by patients varies considerably among general practices when it comes to frequency and purpose⁶.

A literature review on patients' perspectives on e-consultations⁷ found that patients identified greater access to their GPs as one of e-consultations' main advantages. Patient access to healthcare is highly topical as aging populations mean that healthcare systems often strain to meet the growing demand for healthcare. GPs in the Danish context, which is our present concern, are required to see increasing numbers of patients⁸, and Danish patients often struggle to see their GPs at the clinic due to GPs' heavily booked schedules⁹. A sense of inaccessibility may be exacerbated by spatial and physical aspects of the clinical setting, as access is mediated by the gatekeeping role of secretaries, waiting rooms and the temporal framing of the consultation, including GPs' own (need for) time management¹⁰⁻¹². Commonly reported advantages for GPs include reduced phone load and increased efficiency in administration¹³.

In 2009, a collective agreement made it mandatory for all Danish GPs to offer e-consultations to "increase efficiency and quality through the digitisation of health care"¹⁴. E-consultations were introduced as a cost-effective, convenient means of providing access to GPs, primarily for

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3 communication of test results and quick questions. In Denmark, e-consultation use has increased
4 steadily since its introduction. A recent study found that Denmark had the highest numbers of
5 doctor-patient emails sent/received in Europe ⁵, making it a forerunner in the adoption of e-
6 consultations and thus an important case to investigate. By 2018, the number of e-consultations
7 in Denmark had risen from 1.3 million in 2008 to 7.1 million per year, corresponding to 19% of
8 all GP consultations ¹⁵.
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15 Currently, six different software systems (websites and apps) are used in Danish GP clinics to
16 manage e-consultations. Clinics decide on which system to use, the amount of text that patients
17 can produce and whether pictures can be uploaded. The potential for greater access to GPs is
18 underlined on the websites of Danish GP practices; patients are, for example, told that they can
19 use e-consultations to contact their GP “24/7” and “day and night”, emphasizing the possibility
20 of round-the-clock, direct, and patient-instigated access to GPs.
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28 Against this backdrop, we address the following research question: *How do patients and GPs in*
29 *the Danish setting perceive the communicative advantages and disadvantages of the access that*
30 *the medium of e-consultation provides?* We explore both patients’ and GPs’ perspectives in order
31 to achieve a fuller understanding of the implications of e-consultations for doctor-patient
32 communication, and address the research question using qualitative interview data.
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37 The theoretical frame that guides our analysis derives from medium theory ¹⁶. We interpret e-
38 consultations as involving a communication *medium* that facilitates access between patients and
39 GPs. Communication and media scholars refer to a medium’s “affordances”, meaning the
40 different ways in which users employ a medium ^{17 18} and how a medium’s possibilities are
41 perceived by its users ¹⁹. The concept of affordance helps us identify the limitations and strengths
42 of the medium’s materiality ²⁰, also referred to as its *action potentials* ²¹. Action potentials
43 should not be studied purely objectively in terms of technical aspects or purely subjectively in
44 terms of users’ perspectives; instead, they are best considered as an interplay between humans
45 and technology ²² that enhance our understanding of how technology is applied and perceived ²³⁻
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27. More specifically, one recognised technical affordance of e-mails is asynchronous production
^{22 28}, i.e. the possibility of planning, producing, sending and reading digital messages without the
presence of the other participant(s) in the communication. Using e-mail can be perceived

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3 differently depending on factors such as user expectations and context. In order to understand
4 how the affordances of asynchronous production shape the interplay between technology and
5 users, interview data are thus highly appropriate.
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10 11 **METHOD**

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13 This paper draws from a larger qualitative study of e-consultations in general practice.
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16 **Data collection**

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18 Our data set consists of semi-structured interviews with 30 patients and 23 GPs. The data were
19 collected from February 2016 to September 2019. See Table 1 for an overview of the interview
20 participants.
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| Interviews | Number of participants | Gender | | Age span |
|----------------------------|------------------------|-----------|-----------|----------|
| | | Female | Male | |
| Patients | 30 | 18 | 12 | 40-91 |
| GPs | 23 | 12 | 11 | 37-70 |
| Participants, total | 53 | 30 | 23 | |

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38 **Table 1: Overview of interviews**

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41 30 patients (18 women and 12 men), aged between 40-91 years, were interviewed individually or
42 as a couple. All patients were recruited via their GPs through an open call communicated by
43 word of mouth in our professional network within the Region of Southern Denmark, one of
44 Denmark's five geographically defined regions. The interviews were conducted face-to-face in a
45 setting of the patients' own choosing such as their homes (23), a senior activity house (5) and a
46 public library (2).
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52 When selecting GPs for the individual interviews, the aim was to achieve variation with respect
53 to the GPs' age, gender, practice type, geographical location and years of practice as a GP. The
54 GPs lived and worked within four of Denmark's five regions: the Region of Southern Denmark
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3 (17), the Central Denmark Region (4), the North Denmark Region (1), and the Capital Region of
4 Denmark (1). The interviews with the GPs were conducted either face-to-face (15) or by
5 telephone (8).
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9 All interviews were conducted by AG and EAH. Semi-structured interview guides included
10 open-ended questions such as “What are the communicative advantages of the e-consultation, in
11 your opinion?”, “What are the communication challenges?” and “In what ways, if any, do e-
12 consultations impact on your relationship with patients/your GP, in your opinion?” Recruitment
13 of interviewees continued until sufficient information power (also often referred to as
14 “saturation”) regarding the subject at hand was achieved ²⁹.
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19 20 **Data analysis**

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22 The interviews were transcribed verbatim and coded using the software program NVivo 12. The
23 first and second authors, AG and EAH, coded the transcripts in two phases: an initial open
24 coding and a subsequent closed thematic coding using a node structure that reflected identified
25 themes and subthemes and allowed for expansion and reduction along the way. This process led
26 to the identification of the following subthemes: lower contact threshold, asynchronicity,
27 emotions, perception by GP, and perception by patient. The analytical process was inspired by
28 Kozinets’ netnographic approach ³⁰ and included coding, note-taking, abstracting/comparing,
29 checking and refining. All authors compared and discussed the identified themes, relating them
30 to the original transcripts and aligning them where necessary. This analytical work was carried
31 out in a dialectic (abductive) process where we went inductively from the empirical examples in
32 the interviews to the theoretical concepts, and deductively from the theoretical concepts to the
33 empirical examples from the interviews.
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43 44 **Patient and public involvement**

45 There was no direct involvement of patients or the public in the design of the present study.
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50 51 **RESULTS**

52 53 **Affordances of e-consultation as a communication medium**

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3 Focusing on e-consultations as a communication medium, we found that the most prominent
4 affordances derived from a thematic analysis were: 1) lower contact threshold, 2) accessing a
5 new interaction space and 3) access to access. From the perspective of the patients and GPs,
6 these three affordances of e-consultations involved communicative advantages and
7 disadvantages relating to doctor-patient communication. In the following, we present the three
8 affordances as perceived by patients and GPs, respectively.
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14 **Lower contact threshold**

16 Patient perspective

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19 With respect to lower contact threshold, the technical affordance ‘asynchronicity’ (cf. section 1.
20 Introduction) was key. Many patients stated that they were happy not to have to attend the clinic
21 in person as they found that e-consultations were more convenient than going to see the doctor.
22 The patients emphasized that they did not want to be any bother, and that e-consultations felt less
23 disruptive than face-to-face consultations. For example, one patient said, “I don’t want to be any
24 trouble because it’s probably nothing”, and another, when asked why she preferred e-
25 consultations stated: “Because [that way] you are not any trouble. They answer when they have
26 time”.
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33 Patients appreciated close contact with their GP which they considered to be facilitated by e-
34 consultations. At the same time, they knew that GPs are busy as they have many other patients to
35 take care of. As one patient stated, “I also think that by using e-consultations, it must take some
36 of the pressure off [the doctor] in [face-to-face] consultations”. Several patients considered their
37 GP’s workflow and mentioned that if they sent an e-consultation message in the morning, the GP
38 would answer in the afternoon or the next morning, at the latest. Thus, patients perceived e-
39 consultations as less disturbing for GPs, which made it easier for them to communicate with their
40 GP without feeling stressed or under time pressure.
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49 GP perspective

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51 The technical asynchronicity affordance was thematized recurrently by the GPs as one of the
52 great advantages of e-consultations for both patients and GPs: “The advantage is that people can
53 write whenever they want, at night, in the evening, when they are off work and have the time,
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3 and the advantage for me as a doctor is that I can look at their inquiries when I have the time”.
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5 Many GPs associated the introduction of e-consultations in general practice with a “lower
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7 contact threshold”, where quick, convenient access was made possible for patients who
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9 otherwise might have had difficulties attending the clinic, for example, due to late working
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11 hours, long travel distances or mental health issues. One GP described how e-consultations had
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13 facilitated increased contact and relationship-building with vulnerable patients, e.g. those
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15 suffering from Asperger’s syndrome or autism, who might be reluctant to see their GP in the
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17 clinic due to their life circumstances.

18 Downsides of a “lower contact threshold” were also mentioned by some GPs. Easy, untriaged
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20 access to GPs in some clinics had led to overuse of e-consultations, with some patients burdening
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22 GPs with high volumes of e-mail correspondence. As one GP put it:

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24 As 8,000 patients have round-the-clock access to us, we receive an enormous number of
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26 e-mails. For some reason, there are some doctors whom patients feel a strong affinity for,
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28 and those doctors receive many more e-mails than the others. The emails are not
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30 distributed [between us] because they are not triaged. This kind of untriaged access
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32 overloads some.

33 Furthermore, given the direct access facilitated by e-consultations and the fact that GPs are
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35 obliged to respond to every e-consultation, some GPs narrated that some patients, who seemed
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37 unsure of where else to turn, used e-consultations to address issues that extended beyond the
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39 scope of general practice:

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41 Now you can write to your doctor 24/7, and they have to answer. I mean, many things
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43 end up here where I just think, “This has absolutely nothing to do with medical practice”.
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45 But you can see that they don’t know where to ask their question, and you spend time on
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47 it anyway.
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50 **A new interaction space is accessible**

51 Patient perspective

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55 The non-physical shared contact space of e-consultations broke the traditional association
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3 between social presence and physical proximity, creating a new form of mutual presence or co-
4 access. For patients, e-consultations were perceived as facilitating new conversations with their
5 GP, which gave them a sense of equanimity. Most patients found that they could ask their GP
6 about anything in e-consultations including their worries and concerns. When asked if e-
7 consultations would weaken their relationship with the GP because of its more formal framing
8 and written form, one patient stated:
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14 Not at all, quite the opposite. [...] If you have it in writing, you can read it, and you can
15 read it again, because you might have forgotten details. So, for me, it is an advantage [...]
16 Because when talking, there might be something you can't remember because there are
17 so many things [said], but that doesn't happen when you have it in writing.
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23 The written form meant that the patient could access and re-access the interaction space without
24 the GP being present at the same time. For patients, this created a safe feeling, and it was highly
25 valued by the patient that they could access a space that permanently documented their
26 communication with their GP.
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32 Some patients emphasised that the access to their GPs facilitated by e-consultations promoted a
33 straightforward form of communication:
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36 Of course, we are emotional beings, but if we strip it [communication] of emotional talk,
37 it is very concrete. Does my knee hurt or not? Can I stretch my leg or not? I mean, that is
38 the way my brain works.
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43 Others, on the other hand, liked writing personal and emotional messages to their GP, and found
44 it easy to raise challenging topics by e-mail. E-consultations facilitated a new way of gathering
45 one's thoughts, as this patient explained:
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48 I thought that it must be possible to gather my thoughts in a different way [...]. When it
49 became possible to write to them, I wrote, "Sleeping is not going well. I don't feel like
50 taking the sleeping pills you gave me because I don't want to deal with the side effects.
51 Are there other options?", and then I get a response. And it is always quick, and it is
52 concrete. It is VERY concrete, and I am forced to think in a very concrete way.
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GP perspective

Regarding the co-access facilitated by e-consultations, many GPs stated that they appreciated e-consultation communication because of its brevity and precision. Compared to telephone consultations, e-consultations were perceived as compelling patients as well as GPs to communicate effectively: “What I really like about email is that it forces both parties to be brief and a little more precise”. Moreover, e-consultations were perceived by GPs as providing patients with the opportunity to reflect on their communication, resulting in more considered and constructive communication: “I think the strength of email is that when they ask me something, they have thought about what they want to ask about”.

E-consultations were also experienced by GPs as facilitating access to new forms of affective communication. For example, if patients were dissatisfied with their care, GPs deemed e-consultations to be a good medium for patients’ expression of critique:

If they are unsatisfied about something, they are afraid to say upfront... I have found that a couple of times you receive an email where they write and tell you what they are unsatisfied with. Then they have given it a lot of thought. [...] So, it is really good for that purpose, and it opens up possibilities.

Furthermore, GPs had found that e-consultations could facilitate emotional disclosure to a greater extent than face-to-face consultation. Patients were able to write to their GP in the moment of affect (e.g. anxiety, stress, anger and happiness), in the knowledge that the GP would respond at some point. Several examples were provided by the GPs of how their patients shared their feelings with them, e.g. if they were feeling miserable or better in the direct aftermath of a treatment or social gathering.

Access to access

Patient perspective

Compared to telephone and face-to-face consultations, patients found e-consultations to be easier, more direct and most importantly, untriaged. The patients did not meet a “gatekeeping

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3 function” in the guise of a medical secretary or a nurse, nor did they experience delays in getting
4 their message across. In that sense, e-consultations were perceived as a means of dealing with a
5 situation directly. If a problem could not be solved via an e-consultation, e-consultations could
6 expedite the booking of a clinical appointment. One patient described the improved access to
7 their GP as follows: “Because I mean, you can't – after all, you don't come directly in contact
8 with the doctor, it's through the nurses up there, right? [...] If I have to go to the doctor, I write.”
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12 Moreover, the patients stated that if GPs deemed the content of a patient's e-consultation
13 message to be unclear or in other ways too complicated to answer directly, he/she typically
14 recommended a physical consultation. Sometimes, GPs booked an appointment time and
15 included information about it in the e-consultation response. In that way, patients perceived that
16 they got access to access (face-to-face consultation) more quickly than if they phoned. One
17 patient explained as follows:
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27 I just wrote to him, and I got an appointment. And it was easier to get an appointment
28 directly with him than it is if you book online because then it is several months away. I
29 got an appointment the next day every time.
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34 Another patient emphasized the usefulness of getting their GP's initial assessment of a situation
35 via e-consultations:
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39 And that is also okay, because then they can judge “There must be something, let's get
40 her down here and look at it”. If they had judged “That is nothing”, then they would just
41 write “You don't have to worry about that”.
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46 Thus, after the e-consultation, the patient knew if the GP considered a physical consultation to be
47 necessary.
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51 GP perspective

52 Reflecting patients' experiences of how e-consultations facilitated quick access to access, the
53 GPs discussed how patients used e-consultations as a way of bypassing waiting lists: “Because
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3 sometimes, it is because they want to squeeze themselves in because they can't get an
4 appointment.”
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7 Furthermore, GPs described how e-consultations were used by some patients to “test the water”,
8 checking with their GP whether their health problem elicited a “wait and see” or “book an
9 appointment immediately” response:
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13 Sometimes, someone asks about a certain issue, “Do I need an appointment?” And it can
14 be anything from giving them advice and saying, “You can just wait and see” or “You
15 need an acute appointment for that – you should call and get one today”.
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19 According to some GPs, these kinds of e-consultations could be redundant or wasteful as they
20 would very often elicit responses of the type: “We need to see you, you have to come in”,
21 meaning “What you are presenting, we can't deal with via email”; one GP estimated that they
22 redirected “one third” of their e-consultations to face-to-face consultations. However, in other
23 cases, e-consultations could increase effectiveness: “There are definitely some where we say,
24 “You don't need to come in, you will get a prescription”. Like, threadworms, I don't need to see
25 that.”
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34 **DISCUSSION AND CONCLUSION**

35 **Discussion**

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37 In this article, we explored a large qualitative data set of interviews to investigate GPs' and
38 patients' perspectives on the communicative advantages and disadvantages of e-consultations as
39 a medium for accessing each other. We drew on a media-theoretical framework, focusing on the
40 concept of affordances, as we wanted to shed light on what the *medium* meant for perceived
41 communicative advantages and disadvantages of this still relatively new form of patient-doctor
42 consultation. Three affordances were evident in the subsets of data on doctors' and patients'
43 perspectives: e-consultations were associated with a *lower contact threshold*, the availability of a
44 *new interaction space*, and *access to access*. These affordances are important as they say
45 something about the primary characteristics of e-consultations as interpreted by their users.
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47 These affordances may also be relevant for other forms of e-mediated communication in
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3 healthcare such as doctor-patient online forums; however, further studies would be required to
4 explore this.
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8 Many of our findings on GPs' and patients' perspectives on e-consultation communication
9 resonate with those of previous studies. Patients in our study appreciated the lower contact
10 threshold to their GPs. Similarly, in previous research, patients liked being able to contact their
11 GPs from the convenience of their own homes at times that suited them^{2 31}.
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16 Similar to other studies³²⁻³⁴, patients in our study welcomed having time in e-consultations to
17 reflect over their accounts of their health concerns. In our data, patients' and GPs' appreciation
18 of the brief, matter-of-fact communication of e-consultations reflects the leanness associated
19 with the medium of e-mail³⁵. However, we also found that e-consultations make it easier for
20 patients to write than talk about sensitive or emotional topics, suggest their own hypotheses for
21 discussion, and ask questions, which resonates with previous findings^{31 36-39}. Moreover, in
22 previous research, doctors have reported that when used appropriately for relatively
23 straightforward tasks (e.g. prescription refills and information sharing regarding medication or
24 treatments), e-consultations can impact the doctor-patient relationship positively and improve
25 continuity of care^{40 41}. Patients in our study anticipated that the time used on e-consultations may
26 mean more time for consultations in the clinic.
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38 Doctors have voiced their concerns about the potentially negative effects of e-consultations on
39 workload, compensation and litigation^{7 42} and that e-consultations grant patients untriaged
40 access⁴¹. We found similar results in our data related to GPs' concerns about access to access,
41 whereas patients were pleased about untriaged access to their GPs.
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47 What our article offers with respect to previous studies is a framework for interpreting doctors'
48 and patients' perspectives that links to the medium of e-consultations. The findings presented in
49 this article are therefore not "just" advantages and disadvantages of e-consultations; rather, they
50 represent advantages and disadvantages of perceived affordances of the medium of e-
51 consultations, i.e. e-mail. The lack of a concerted medium-based focus in previous research on e-
52 consultations misses the critical aspect of e-consultations as occurring in a different medium to
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3 the clinical dyad. As we have shown in our article, e-consultations permit access that is de-
4 coupled from time and space which significantly impacts the communication that is possible
5 between patients and doctors.
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10 A strength of our study is the theoretical framework that draws on affordance theory coupled
11 with a qualitative approach that involves deductive and inductive approaches; we suggest that
12 this could be useful for other studies exploring emerging communicative practices that use new
13 media in healthcare settings. Besides our theoretical approach, other strengths of this study
14 include the use of interviews to investigate perspectives on e-consultations and a large data set.
15 In addition, we see it as very valuable that the perspectives of both GPs and patients are
16 included.
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24 A limitation of the study is that the majority of patients represented were born in 1954 or earlier
25 (> 65 years) which might influence the results. Moreover, there is a need for further studies in
26 different countries as our findings are likely to be inflected by the local Danish context (e.g. the
27 triage system may operate differently). Finally, we also need to highlight the likelihood that as
28 our patient interviewees were those who chose to use e-consultations, they may be quite
29 technology-savvy and thus not be representative of the general population.
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37 **Conclusion**

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39 This study adds knowledge of how the affordances of the medium of e-consultation may impact
40 access in doctor-patient communication. Communication may not only be more frequent (lower
41 contact threshold), it may also give rise to very different communicative practices as witnessed
42 by the affordances of the availability of a new interaction space. Moreover, e-consultations
43 facilitate access to access as patients have a new means of gaining face-to-face access to their
44 GPs. E-consultations thus do not simply extend existing forms of contact and consultation (face-
45 to-face and telephone); they produce a new communication space with its own affordances
46 which result in new practices. With increasing use of e-consultations, it is important to be alert to
47 the possibility that e-consultations may involve new roles for patients and GPs, and that there
48 may be challenges involved in transferring some GP-patient communication to the written
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3 medium. To keep pace with such developments, we argue, like Schiller⁴³, that the knowledge
4 and skill sets that could help manage the communicative demands of e-consultations should be
5 reflected in doctors' education. Also, at policy level, there should be greater awareness that e-
6 consultations may add extra tasks to GPs, as although e-consultations have been promoted to
7 improve effectiveness in healthcare systems, they may increase work strain on GPs.
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17 also like to thank student assistant Karoline Søberg for all her administrative help.
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20

21 **Contributors**

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24 All authors were involved in the conception and design of the study. The interviews were
25 conducted by AG and EAH. All authors were involved in the analysis and interpretation of data
26 for the study as well as the drafting and revision of the article.
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30

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39 **Competing Interests**

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41 None declared.
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44 **Patient consent for publication**

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46 Not required.
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48

49 **Ethics approval**

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51 The study was approved by the institutional review board of the University of Southern
52 Denmark, the Research and Innovation Organization (RIO) (Journal no. 10457) and was
53 conducted in accordance with the GDPR and Declaration of Helsinki⁴⁴.
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Data sharing statement

We do not have ethics approval to share raw data from our interviews.

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| Interviews | Number of participants | Gender | | Age span |
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| | | Female | Male | |
| Patients | 30 | 18 | 12 | 40-91 |
| GPs | 23 | 12 | 11 | 37-70 |
| Participants, total | 53 | 30 | 23 | |

Table 1: Overview of interviews

Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

| | | Page |
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| | Reporting Item | Number |
| Title | <p>#1 Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended</p> | 1 |

Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

Introduction

Problem formulation [#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

Purpose or research question [#4](#) Purpose of the study and specific objectives or questions

Methods

Qualitative approach and research paradigm [#5](#) Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability.

As appropriate the rationale for several items might be discussed together.

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| 6 | Researcher | #6 | Researchers' characteristics that may influence the |
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| 8 | characteristics and | | research, including personal attributes, qualifications / |
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| 10 | reflexivity | | experience, relationship with participants, assumptions |
| 11 | | | and / or presuppositions; potential or actual interaction |
| 12 | | | between researchers' characteristics and the research |
| 13 | | | questions, approach, methods, results and / or |
| 14 | | | transferability |
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| 22 | Context | #7 | Setting / site and salient contextual factors; rationale |
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| 25 | Sampling strategy | #8 | How and why research participants, documents, or |
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| 27 | | | events were selected; criteria for deciding when no |
| 28 | | | further sampling was necessary (e.g. sampling |
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| 35 | Ethical issues pertaining | #9 | Documentation of approval by an appropriate ethics |
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| 37 | to human subjects | | review board and participant consent, or explanation |
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| 45 | Data collection methods | #10 | Types of data collected; details of data collection |
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| 47 | | | procedures including (as appropriate) start and stop |
| 48 | | | dates of data collection and analysis, iterative process, |
| 49 | | | triangulation of sources / methods, and modification of |
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| 1 | Data collection | #11 | Description of instruments (e.g. interview guides, | 4-5 |
| 2 | | | questionnaires) and devices (e.g. audio recorders) | |
| 3 | instruments and | | used for data collection; if / how the instruments(s) | |
| 4 | | | changed over the course of the study | |
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| 11 | Units of study | #12 | Number and relevant characteristics of participants, | 5 |
| 12 | | | documents, or events included in the study; level of | |
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| 19 | Data processing | #13 | Methods for processing data prior to and during | 5 |
| 20 | | | analysis, including transcription, data entry, data | |
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| 22 | | | data coding, and anonymisation / deidentification of | |
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| 31 | Data analysis | #14 | Process by which inferences, themes, etc. were | 6 |
| 32 | | | identified and developed, including the researchers | |
| 33 | | | involved in data analysis; usually references a specific | |
| 34 | | | paradigm or approach; rationale | |
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| 41 | Techniques to enhance | #15 | Techniques to enhance trustworthiness and credibility | - |
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| 43 | trustworthiness | | triangulation); rationale | |
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| 48 | Results/findings | | | |
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| 51 | Syntheses and | #16 | Main findings (e.g. interpretations, inferences, and | 6- |
| 52 | | | themes); might include development of a theory or | |
| 53 | interpretation | | model, or integration with prior research or theory | |
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| 1 | Links to empirical data | #17 | Evidence (e.g. quotes, field notes, text excerpts, | 6- |
| 2 | | | photographs) to substantiate analytic findings | |
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| 6 | Discussion | | | |
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| 10 | Intergration with prior | #18 | Short summary of main findings; explanation of how | 12 |
| 11 | work, implications, | | findings and conclusions connect to, support, elaborate | |
| 12 | | | on, or challenge conclusions of earlier scholarship; | |
| 13 | transferability and | | discussion of scope of application / generalizability; | |
| 14 | | | identification of unique contributions(s) to scholarship | |
| 15 | contribution(s) to the field | | in a discipline or field | |
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| 24 | Limitations | #19 | Trustworthiness and limitations of findings | 14 |
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| 27 | Other | | | |
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| 30 | Conflicts of interest | #20 | Potential sources of influence of perceived influence on | 15 |
| 31 | | | study conduct and conclusions; how these were | |
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| 38 | Funding | #21 | Sources of funding and other support; role of funders in | 15 |
| 39 | | | data collection, interpretation and reporting | |
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BMJ Open

How do patients and general practitioners in Denmark perceive the communicative advantages and disadvantages of access via email consultations? A media-theoretical qualitative study

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|---------------------------------|---|
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| Keywords: | QUALITATIVE RESEARCH, PRIMARY CARE, Telemedicine < BIOTECHNOLOGY & BIOINFORMATICS |
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3 **TITLE PAGE**
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5 **How do patients and general practitioners in Denmark perceive the communicative**
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10
11 Anette Grønning¹, Elisabeth Assing Hvidt^{1,2}, Matilde Nisbeth Brøgger³ & Antoinette Fage-
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ABSTRACT

Objective: Email consultations have become part of everyday doctor-patient communication in many countries. The objective of this study is to investigate how patients and general practitioners (GPs) perceive the communicative advantages and disadvantages of access via email consultation drawing on a media-theoretical perspective.

Design: We analysed qualitative interview data from general practices in Denmark to identify salient themes.

Participants: Our data set consists of semi-structured interviews with 30 patients and 23 GPs. The data were collected from February 2016 to September 2019.

Results: The following themes emerged: 1) lower contact threshold, 2) accessing a new interaction space and 3) access to access. From the patients' perspective, email consultations provided more convenient contact with their GP. From the GPs' perspective, email consultations facilitated contact with patients whom they otherwise rarely saw, but also resulted in overuse and inappropriate use. Patients and GPs considered email consultations as inviting new interactions, facilitating also communication about emotional and sensitive issues. Both patients and GPs experienced email consultations as a way in which patients could achieve easier access to face-to-face consultations (access to access).

Conclusion: Drawing on a media perspective, this study adds knowledge of how the potentials of the medium of email consultations are perceived by GPs and patients. Email consultations do not simply extend existing forms of contact and consultation (face-to-face and telephone); they produce a new communication space with its own possibilities which result in new practices. With increasing use of email consultations, there may be challenges involved in transferring GP-patient communication to the written medium.

Keywords

Email consultation, access, communicative advantages and disadvantages, affordances, Denmark, email, general practice, computer-mediated communication

Article Summary

Strengths and limitations of this study

- The theoretical framework that draws on affordance theory is useful for other studies exploring emerging communicative practices that use new media in healthcare settings.
- The use of interviews to investigate perspectives on email consultations and the large data set are strengths of the study.
- In addition, it is a strength that the perspectives of both GPs and patients are represented.
- A potential limitation is that the majority of patients interviewed were born in 1954 or earlier (65+ years), but they were included as they participate in email consultations with the highest frequency in Denmark.

INTRODUCTION

Email consultations are online consultations that allow general practitioners (GPs) and patients to communicate via e-mail without requiring their physical and/or temporal co-presence¹⁻⁴. Email consultations, which are intended to supplement rather than replace the dyadic encounter in the clinical setting, take place through closed messaging systems that encrypt the exchanges and integrate them into patients' medical records. Uptake of this relatively new form of consultation is contingent on aspects such as political will, technical infrastructures, and the motivation and resources of GPs and patients^{4 5}. The use of email consultations by patients varies considerably among general practices when it comes to frequency and purpose⁶.

A literature review on patients' perspectives on email consultations⁷ found that patients identified greater access to their GPs as one of email consultations' main advantages. Patient access to healthcare is highly topical as aging populations mean that healthcare systems often strain to meet the growing demand for healthcare⁸. GPs in the Danish context, which is our present concern, are required to see increasing numbers of patients⁹, and Danish patients often struggle to see their GPs at the clinic due to GPs' heavily booked schedules¹⁰. A sense of inaccessibility may be exacerbated by spatial and physical aspects of the clinical setting, as access is mediated by the gatekeeping role of secretaries, having to wait in a waiting room and the length of the consultation, including GPs' own (need for) time management¹¹⁻¹³. Commonly reported advantages for GPs include reduced phone load and increased efficiency in administration¹⁴.

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3 In Denmark, general practice serves as a first-contact access point to the fully tax-financed
4 Danish healthcare system that offers almost all services free of charge to citizens. In 2009, a
5 collective agreement made it mandatory for all Danish GPs to offer email consultations to
6 “increase efficiency and quality through the digitisation of health care”¹⁵. Email consultations
7 were introduced as a cost-effective, convenient means of providing access to GPs, primarily for
8 communication of test results and short questions that could be answered briefly and resolved
9 without the patient being present. In Denmark, email consultation use has increased steadily
10 since its introduction. A recent study found that Denmark had the highest numbers of doctor-
11 patient emails sent/received in Europe⁵, making it a forerunner in the adoption of email
12 consultations and thus an important case to investigate. By 2019, the number of email
13 consultations in Denmark had risen from 1.3 million in 2008 to 7.2 million per year,
14 corresponding to just under 21% of all GP consultations¹⁶.

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26 Currently, six different software systems (websites and apps) are used in Danish GP clinics to
27 manage email consultations. Clinics decide on which system to use, the amount of text that
28 patients can produce and whether pictures can be uploaded. The potential for patients having
29 greater access to GPs is underlined on the websites of Danish GP practices; patients are, for
30 example, told that they can use email consultations to contact their GP “24/7” and “day and
31 night”, emphasizing the possibility of round-the-clock, direct, and patient-instigated access to
32 GPs.
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41 Against this backdrop, we address the following research question: *How do patients and GPs in*
42 *the Danish setting perceive the communicative advantages and disadvantages of the access that*
43 *the medium of email consultation provides?* We explore both patients’ and GPs’ perspectives in
44 order to achieve a fuller understanding of the implications of email consultations for doctor-
45 patient communication, and address the research question using qualitative interview data.
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51 The theoretical frame that guides our analysis derives from medium theory, a perspective that
52 focuses on the potential impact of media *per se* beyond the content content that they convey¹⁷.
53 We interpret email consultations as involving a communication *medium* that facilitates access
54 between patients and GPs. Communication and media scholars refer to a medium’s
55 “affordances”, meaning the different ways in which users employ a medium^{18 19} and how a
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medium's possibilities are perceived by its users²⁰. The concept of affordance helps us identify the limitations and strengths of the medium's materiality, i.e. physical properties that have consequences for how the medium is used (including what we conceive of a medium)²¹, also referred to as its affordances or *action potentials*²². Action potentials point both to the environment and to the observer and should not be studied purely objectively in terms of technical aspects or purely subjectively in terms of users' perspectives; instead, they are best considered as an interplay between humans and technology²³ that enhance our understanding of how technology is applied and perceived²⁴⁻²⁸. More specifically, one recognised action potential of e-mails is asynchronous production^{23 29}, i.e. the possibility of planning, producing, sending and reading digital messages without the presence of the other participant(s) in the communication. Using e-mail can be perceived differently depending on factors such as user expectations and context. In order to understand how the affordances of asynchronous production shape the interplay between technology and users, interview data are thus highly appropriate.

METHOD

This paper draws from a larger qualitative study of email consultations in general practice. The project includes five subprojects that each address key aspects of email consultations: technology, content and relations. The larger project involves a focused empirical analysis of email consultations and perceptions of such consultations from different theoretical perspectives.

Data collection

The data set we analyse in this article consists of semi-structured interviews with 30 patients and 23 GPs. The data were collected from February 2016 to September 2019. See Table 1 for an overview of the interview participants.

| Interviews | Number of participants | Gender | | Age span |
|------------|------------------------|--------|------|----------|
| | | Female | Male | |
| Patients | 30 | 18 | 12 | 40-91 |

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|----------------------------|-----------|-----------|-----------|-------|
| | | | | |
| GPs | 23 | 12 | 11 | 37-70 |
| Participants, total | 53 | 30 | 23 | |

Table 1: Overview of interviews

30 patients (18 women and 12 men), aged between 40-91 years, were interviewed individually or as a couple. All patients were recruited via their GPs through an open call communicated by word of mouth in our professional network within the Region of Southern Denmark, one of Denmark's five geographically defined regions. The interviews were conducted face-to-face in a setting of the patients' own choosing such as their homes (23), a senior activity house (5) and a public library (2).

When selecting GPs for the individual interviews, the aim was to achieve variation with respect to the GPs' age, gender, practice type, geographical location and years of practice as a GP. The GPs lived and worked within four of Denmark's five regions: the Region of Southern Denmark (17), the Central Denmark Region (4), the North Denmark Region (1), and the Capital Region of Denmark (1), thus including both urban and rural areas. The interviews with the GPs were conducted either face-to-face (15) or by telephone (8) and lasted between 10:53 and 78:23 minutes.

All interviews were conducted by AG and EAH. Semi-structured interview guides included open-ended questions such as "What are the communicative advantages of the email consultation, in your opinion?", "What are the communication challenges?" and "In what ways, if any, do email consultations impact on your relationship with patients/your GP, in your opinion?" Recruitment of interviewees continued until sufficient information power (also often referred to as "saturation") regarding the subject at hand was achieved³⁰.

Data analysis

The interviews were transcribed verbatim and coded using the software program NVivo 12. The first and second authors, AG and EAH, coded the transcripts in two phases: an initial open coding and a subsequent closed thematic coding using a node structure that reflected identified themes and subthemes and allowed for expansion and reduction along the way. The analytical

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3 process was inspired by Kozinets' netnographic approach³¹ and included coding, note-taking,
4 abstracting/comparing, checking and refining. All authors compared and discussed the identified
5 themes, relating them to the original transcripts and aligning them where necessary. This
6 analytical work was carried out in a dialectic (abductive) process where we went inductively
7 from the empirical examples in the interviews to the theoretical concepts, and deductively from
8 the theoretical concepts to the empirical examples from the interviews.
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14 **Patient and public involvement**

15 There was no direct involvement of patients or the public in the design of the present study.
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20 **RESULTS**

23 **Affordances of email consultation as a communication medium**

24 Focusing on email consultations as a communication medium, we found that the most prominent
25 affordances derived from the thematic analysis were: 1) lower contact threshold, 2) accessing a
26 new interaction space and 3) access to access (quicker access to face-to-face consultations).
27 From the perspective of the patients and GPs, these three affordances of email consultations
28 involved communicative advantages and disadvantages relating to doctor-patient
29 communication. In the following, we present the three affordances as perceived by patients and
30 GPs, respectively.
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38 **Lower contact threshold**

39 **Patient perspective**

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41 With respect to lower contact threshold, the technical affordance 'asynchronicity' (cf. section 1,
42 Introduction) was key. Many patients stated that they were happy not to have to attend the clinic
43 in person as they found that email consultations were more convenient than going to see the
44 doctor. The patients emphasized that they did not want to be any bother, and that email
45 consultations felt less disruptive than face-to-face consultations. For example, one patient said, "I
46 don't want to be any trouble because it's probably nothing", and another, when asked why she
47 preferred email consultations stated: "Because [that way] you are not any trouble. They answer
48 when they have time".
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3 Patients appreciated close contact with their GP which they considered to be facilitated by email
4 consultations. At the same time, they knew that GPs are busy as they have many other patients to
5 take care of. As one patient stated, “I also think that by using email consultations, it must take
6 some of the pressure off [the doctor] in [face-to-face] consultations”. Several patients considered
7 their GP’s workflow and mentioned that if they sent an email consultation message in the
8 morning, the GP would answer in the afternoon or the next morning, at the latest. Thus, patients
9 perceived email consultations as less disturbing for GPs, which made it easier for them to
10 communicate with their GP without feeling stressed or under time pressure.
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19 GP perspective

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21 The affordance of technical asynchronicity was thematized recurrently by the GPs as one of the
22 great advantages of email consultations for both patients and GPs: “The advantage is that people
23 can write whenever they want, at night, in the evening, when they are off work and have the
24 time, and the advantage for me as a doctor is that I can look at their inquiries when I have the
25 time”. Many GPs associated the introduction of email consultations in general practice with a
26 “lower contact threshold”, where quick, convenient access was made possible for patients who
27 otherwise might have had difficulties attending the clinic, for example, due to late working
28 hours, long travel distances or mental health issues. One GP described how email consultations
29 had facilitated increased contact and relationship-building with vulnerable patients, e.g. those
30 suffering from Asperger’s syndrome or autism, who might be reluctant to see their GP in the
31 clinic due to their life circumstances.
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41 Downsides of a “lower contact threshold” were also mentioned by some GPs. Easy, untriaged
42 access to GPs in some clinics had led to overuse of email consultations, with some patients
43 burdening GPs with high volumes of e-mail correspondence. As one GP put it:
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47 As 8,000 patients have round-the-clock access to us, we receive an enormous number of
48 e-mails. For some reason, there are some doctors whom patients feel a strong affinity for,
49 and those doctors receive many more e-mails than the others. The emails are not
50 distributed [between us] because they are not triaged. This kind of untriaged access
51 overloads some.
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3 Furthermore, given the direct access facilitated by email consultations and the fact that GPs are
4 obliged to respond to every email consultation, some GPs narrated that some patients, who
5 seemed unsure of where else to turn, used email consultations to address issues that extended
6 beyond the scope of general practice:
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11 Now you can write to your doctor 24/7, and they have to answer. I mean, many things
12 end up here where I just think, “This has absolutely nothing to do with medical practice”.
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14 But you can see that they don’t know where to ask their question, and you spend time on
15 it anyway.
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20 21 **A new interaction space is accessible**

22 23 Patient perspective

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25 The non-physical shared contact space of email consultations broke the traditional association
26 between social presence and physical proximity, creating a new form of mutual presence or co-
27 access. For patients, email consultations were perceived as facilitating new conversations with
28 their GP, which gave them peace of mind. Most patients found that they could ask their GP about
29 anything in email consultations including their worries and concerns. When asked if email
30 consultations would weaken their relationship with the GP because of its more formal framing
31 and written form, one patient stated:
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38 Not at all, quite the opposite. [...] If you have it in writing, you can read it, and you can
39 read it again, because you might have forgotten details. So, for me, it is an advantage [...]
40 Because when talking, there might be something you can’t remember because there are
41 so many things [said], but that doesn’t happen when you have it in writing.
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47 The written form meant that patients could access and re-access the interaction space without the
48 GP being present at the same time. For patients, this created a safe feeling, and it was highly
49 valued by patients that they could access a space that permanently documented their
50 communication with their GP.
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56 Some patients emphasised that the access to their GPs facilitated by email consultations
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3 promoted a clear and straightforward form of communication:
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5 Of course, we are emotional beings, but if we strip it [communication] of emotional talk,
6 it is very concrete. Does my knee hurt or not? Can I stretch my leg or not? I mean, that is
7 the way my brain works.
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12 Others, on the other hand, liked writing personal and emotional messages to their GP, and found
13 it easy to raise challenging topics by e-mail. Email consultations facilitated a new way of
14 gathering one's thoughts, as this patient explained:
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17 I thought that it must be possible to gather my thoughts in a different way [...]. When it
18 became possible to write to them, I wrote, "Sleeping is not going well. I don't feel like
19 taking the sleeping pills you gave me because I don't want to deal with the side effects.
20 Are there other options?", and then I get a response. And it is always quick, and it is
21 concrete. It is very concrete, and I am forced to think in a very concrete way.
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28 GP perspective

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30 Regarding the co-access facilitated by email consultations, many GPs stated that they
31 appreciated email consultation communication because of its brevity and precision. Compared to
32 telephone consultations, email consultations were perceived as compelling patients as well as
33 GPs to communicate effectively: "What I really like about email is that it forces both parties to
34 be brief and a little more precise". Moreover, email consultations were perceived by GPs as
35 providing patients with the opportunity to reflect on their communication, resulting in more
36 considered and constructive communication: "I think the strength of email is that when they ask
37 me something, they have thought about what they want to ask about".
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45 Email consultations were also experienced by GPs as facilitating access to new forms of
46 affective communication. For example, if patients were dissatisfied with their care, GPs deemed
47 email consultations to be a good medium for patients' expression of critique:
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51 If they are unsatisfied about something, they are afraid to say upfront... I have found that
52 a couple of times you receive an email where they write and tell you what they are
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3 unsatisfied with. That way, they have given it a lot of thought. [...] So, it is really good
4 for that purpose, and it opens up possibilities.
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7 Furthermore, GPs found that email consultations could facilitate emotional disclosure to a
8 greater extent than face-to-face consultations. Patients were able to write to their GP in the
9 moment of affect (e.g. anxiety, stress, anger and happiness), in the knowledge that the GP would
10 respond at some point. Several examples were provided by the GPs of how their patients shared
11 their feelings with them, e.g. if they were feeling miserable or better in the direct aftermath of a
12 treatment or social gathering.
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21 **Access to access**

23 Patient perspective

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25 Compared to telephone and face-to-face consultations, patients found email consultations to be
26 easier, more direct and most importantly, untriaged. The patients did not meet a “gatekeeping
27 function” in the guise of a medical secretary or a nurse, nor did they experience delays in getting
28 their message across. In that sense, email consultations were perceived as a means of dealing
29 with a situation directly. If a problem could not be solved via an email consultation, email
30 consultations could expedite the booking of a clinical appointment. One patient described the
31 improved access to their GP as follows: “Because I mean, you can't – after all, you don't come
32 directly in contact with the doctor, it's through the nurses up there, right? [...] If I have to go to
33 the doctor, I write.”
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43 Moreover, the patients stated that if GPs deemed the content of a patient's email consultation
44 message to be unclear or in other ways too complicated to answer directly, he/she typically
45 recommended a physical consultation. Sometimes, GPs booked an appointment time and
46 included information about it in the email consultation response. In that way, patients perceived
47 that they got access to access (face-to-face consultation) more quickly than if they phoned. One
48 patient explained as follows:
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54 I just wrote to him, and I got an appointment. And it was easier to get an appointment
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3 directly with him than it is if you book online because then it is several months away. I
4 got an appointment the next day every time.
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8 Another patient emphasized the usefulness of getting their GP's initial assessment of a situation
9 via email consultations:
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13 And that is also okay, because then they can judge "There must be something, let's get
14 her down here and look at it". If they had judged "That is nothing", then they would just
15 write "You don't have to worry about that".
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20 Thus, after the email consultation, the patient knew if the GP considered a physical consultation
21 to be necessary.
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24 25 GP perspective

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27 Reflecting patients' experiences of how email consultations facilitated quick access to access, the
28 GPs discussed how patients used email consultations as a way of bypassing waiting lists:
29 "Because sometimes, it is because they want to squeeze themselves in because they can't get an
30 appointment."
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35 Furthermore, GPs described how email consultations were used by some patients to "test the
36 water", checking with their GP whether their health problem elicited a "wait and see" or "book
37 an appointment immediately" response:
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41 Sometimes, someone asks about a certain issue, "Do I need an appointment?" And it can
42 be anything from giving them advice and saying, "You can just wait and see" or "You
43 need an acute appointment for that – you should call and get one today".
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47 According to some GPs, these kinds of email consultations could be redundant or wasteful as
48 they would very often elicit responses of the type: "We need to see you, you have to come in",
49 meaning "What you are presenting, we can't deal with via email"; one GP estimated that they
50 redirected "one third" of their email consultations to face-to-face consultations. However, in
51 other cases, email consultations could increase effectiveness: "There are definitely some where
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3 we say, “You don’t need to come in, you will get a prescription”. Like, threadworms, I don’t
4 need to see that.”
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8 9 **DISCUSSION AND CONCLUSION**

10 11 **Discussion**

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13 In this article, we explored a large qualitative data set of interviews to investigate GPs’ and
14 patients’ perspectives on the communicative advantages and disadvantages of email
15 consultations as a medium for accessing each other. We drew on a media-theoretical framework,
16 focusing on the concept of affordances, as we wanted to shed light on what the *medium* meant
17 for perceived communicative advantages and disadvantages of this still relatively new form of
18 patient-doctor consultation. Three affordances were evident in the subsets of data on doctors’ and
19 patients’ perspectives: email consultations were associated with a *lower contact threshold*, the
20 availability of a *new interaction space*, and *access to access*. These affordances are important as
21 they say something about the primary characteristics of email consultations as interpreted by
22 their users. They may also be relevant for other forms of e-mediated communication in
23 healthcare such as doctor-patient online forums; however, further studies would be required to
24 explore this. As pointed out by Mold et al. (2019) in their review of 57 electronic consultation
25 studies in primary care, remote care includes many other forms of communication than email
26 (e.g. telephone, video, text messaging, web-based portals etc.) and research in this area
27 recognizes this heterogeneity⁸.
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41 Many of our findings on GPs’ and patients’ perspectives on email consultation communication
42 resonate with those of previous studies. Patients in our study appreciated the lower contact
43 threshold to their GPs. Similarly, in previous research, patients liked being able to contact their
44 GPs from the convenience of their own homes at times that suited them^{2 32}.
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50 Similar to other studies³³⁻³⁵, patients in our study welcomed having time in email consultations to
51 reflect over their accounts of their health concerns. In our data, patients’ and GPs’ appreciation
52 of the brief, matter-of-fact communication of email consultations reflects the leanness associated
53 with the medium of e-mail³⁶. However, we also found that email consultations make it easier for
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3 patients to write than talk about sensitive or emotional topics, suggest their own hypotheses for
4 discussion, and ask questions, which resonates with previous findings^{32 37-41}. Moreover, in
5 previous research, doctors have reported that when used appropriately for relatively
6 straightforward tasks (e.g. prescription refills and information sharing regarding medication or
7 treatments), email consultations can impact the doctor-patient relationship positively and
8 improve continuity of care^{42 43}. Patients in our study anticipated that the time used on email
9 consultations might mean more time for consultations in the clinic.
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17 Doctors have voiced their concerns about the potentially negative effects of email consultations
18 on workload, compensation and litigation^{7 44} and that email consultations grant patients untriaged
19 access⁴³. We found similar results in our data related to GPs' concerns about access to access,
20 whereas patients were pleased about untriaged access to their GPs.
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26 What our article offers with respect to previous studies is a framework for interpreting doctors'
27 and patients' perspectives that links to the medium of email consultations. The findings
28 presented in this article are therefore not "just" advantages and disadvantages of email
29 consultations; rather, they represent advantages and disadvantages of perceived affordances of
30 the medium of email consultations, i.e. e-mail. The lack of a concerted medium-based focus in
31 previous research on email consultations misses the critical aspect of email consultations as
32 occurring in a different medium to the clinical dyad. As we have shown in our article, email
33 consultations permit access that is de-coupled from time and space which significantly impacts
34 the communication that is possible between patients and doctors.
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43 A strength of our study is the theoretical framework that draws on affordance theory coupled
44 with a qualitative approach that involves deductive and inductive approaches; we suggest that
45 this could be useful for other studies exploring emerging communicative practices that use new
46 media in healthcare settings. Besides our theoretical approach, other strengths of this study
47 include the use of interviews to investigate perspectives on email consultations and a large data
48 set. In addition, we see it as very valuable that the perspectives of both GPs and patients are
49 included in our study of the affordances of the medium of email consultations.
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3 A potential limitation of the study is that the majority of patients represented were born in 1954
4 or earlier (> 65 years) which might influence the results. Thus, our findings might not be
5 generalizable to all age groups. Moreover, there is a need for further studies in different countries
6 as our findings are likely to be inflected by the local Danish context (e.g. the triage system may
7 operate differently). Finally, we also need to highlight the likelihood that as our patient
8 interviewees were those who chose to use email consultations, they may be quite technology-
9 savvy and thus not be representative of the general population.
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18 **Conclusion**

20 This study adds knowledge of how the affordances of the medium of email consultation may
21 impact access in doctor-patient communication. Communication may not only be more frequent
22 (lower contact threshold), it may also give rise to very different communicative practices as
23 witnessed by the affordances of the availability of a new interaction space. Moreover, email
24 consultations facilitate access to access as patients have a new means of gaining face-to-face
25 access to their GPs. Email consultations thus do not simply extend existing forms of contact and
26 consultation (face-to-face and telephone); they produce a new communication space with its own
27 affordances which result in new practices. With increasing use of email consultations, it is
28 important to be alert to the possibility that email consultations may involve new roles for patients
29 and GPs, and that there may be challenges involved in transferring some GP-patient
30 communication to the written medium. To keep pace with such developments, we argue, like
31 Schiller⁴⁵, that the knowledge and skill sets that could help manage the communicative demands
32 of email consultations should be reflected in doctors' education. Also, at policy level, there
33 should be greater awareness that email consultations may add extra tasks to GPs, as although
34 email consultations have been promoted to improve effectiveness in healthcare systems, they
35 may increase work strain on GPs.
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53 also like to thank student assistant Karoline Søberg for all her administrative help.
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Contributors

All authors (AG, EAH, MNB, AFB) have substantially contributed to the formulation of the research question and design of the study. All interviews were conducted by AG and EAH. The first and second authors, AG and EAH, coded the transcripts in two phases (open and thematic). All authors compared and discussed the identified themes, relating them to the original transcripts and aligning them where necessary. All authors have contributed to the process of writing the article, including proof-reading.

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Competing Interests

None declared.

Patient consent for publication

Not required.

Ethics approval

All participants gave written consent and were informed that participation in the study was voluntary. The study was approved by the institutional review board of the University of Southern Denmark, the Research and Innovation Organization (RIO) (Journal no. 10457) and was conducted in accordance with the General Data Protection Regulation (GDPR) and the Declaration of Helsinki.

Data sharing statement

We do not have ethics approval to share raw data from our interviews.

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Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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| Title | Reporting Item | Page Number |
|-------|--|-------------|
| | <p>#1 Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended</p> | 1 |

Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

Introduction

Problem formulation [#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

Purpose or research question [#4](#) Purpose of the study and specific objectives or questions

Methods

Qualitative approach and research paradigm [#5](#) Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability.

As appropriate the rationale for several items might be discussed together.

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1 Links to empirical data [#17](#) Evidence (e.g. quotes, field notes, text excerpts, 6-
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6 Discussion

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10 Intergration with prior [#18](#) Short summary of main findings; explanation of how 12
11 work, implications, findings and conclusions connect to, support, elaborate
12 transferability and on, or challenge conclusions of earlier scholarship;
13 contribution(s) to the field discussion of scope of application / generalizability;
14 identification of unique contributions(s) to scholarship
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24 Limitations [#19](#) Trustworthiness and limitations of findings 14
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27 Other

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30 Conflicts of interest [#20](#) Potential sources of influence of perceived influence on 15
31 study conduct and conclusions; how these were
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38 Funding [#21](#) Sources of funding and other support; role of funders in 15
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43 None The SRQR checklist is distributed with permission of Wolters Kluwer © 2014 by the Association
44 of American Medical Colleges. This checklist can be completed online using

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46 <https://www.goodreports.org/>, a tool made by the [EQUATOR Network](#) in collaboration with

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BMJ Open

How do patients and general practitioners in Denmark perceive the communicative advantages and disadvantages of access via email consultations? A media-theoretical qualitative study

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3 **TITLE PAGE**
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5 **How do patients and general practitioners in Denmark perceive the communicative**
6 **advantages and disadvantages of access via email consultations? A media-theoretical**
7 **qualitative study**
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11 Anette Grønning¹, Elisabeth Assing Hvidt^{1,2}, Matilde Nisbeth Brøgger³ & Antoinette Fage-
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ABSTRACT

Objective: Email consultations have become part of everyday doctor-patient communication in many countries. The objective of this study is to investigate how patients and general practitioners (GPs) perceive the communicative advantages and disadvantages of access via email consultation drawing on a media-theoretical perspective.

Design: We analysed qualitative interview data from general practices in Denmark to identify salient themes.

Participants: Our data set consists of semi-structured interviews with 30 patients and 23 GPs. The data were collected from February 2016 to September 2019.

Results: The following themes emerged: 1) lower contact threshold, 2) accessing a new interaction space and 3) access to access. From the patients' perspective, email consultations provided more convenient contact with their GP. From the GPs' perspective, email consultations facilitated contact with patients whom they otherwise rarely saw, but also resulted in overuse and inappropriate use. Patients and GPs considered email consultations as inviting new interactions, facilitating also communication about emotional and sensitive issues. Both patients and GPs experienced email consultations as a way in which patients could achieve easier access to face-to-face consultations (access to access).

Conclusion: Drawing on a media perspective, this study adds knowledge of how the potentials of the medium of email consultations are perceived by GPs and patients. Email consultations do not simply extend existing forms of contact and consultation (face-to-face and telephone); they produce a new communication space with its own possibilities which result in new practices. With increasing use of email consultations, there may be challenges involved in transferring GP-patient communication to the written medium.

Keywords

Email consultation, access, communicative advantages and disadvantages, affordances, Denmark, email, general practice, computer-mediated communication

Article Summary

Strengths and limitations of this study

- The theoretical framework that draws on affordance theory is useful for other studies exploring emerging communicative practices that use new media in healthcare settings.
- The use of interviews to investigate perspectives on email consultations and the large data set are strengths of the study.
- In addition, it is a strength that the perspectives of both GPs and patients are represented.
- A potential limitation is that the majority of patients interviewed were born in 1954 or earlier (65+ years), but they were included as they participate in email consultations with the highest frequency in Denmark.

INTRODUCTION

Email consultations are online consultations that allow general practitioners (GPs) and patients to communicate via e-mail without requiring their physical and/or temporal co-presence¹⁻⁴. Email consultations, which are intended to supplement rather than replace the dyadic encounter in the clinical setting, take place through closed messaging systems that encrypt the exchanges and integrate them into patients' medical records. Uptake of this relatively new form of consultation is contingent on aspects such as political will, technical infrastructures, and the motivation and resources of GPs and patients^{4 5}. The use of email consultations by patients varies considerably among general practices when it comes to frequency and purpose⁶.

A literature review on patients' perspectives on email consultations⁷ found that patients identified greater access to their GPs as one of email consultations' main advantages. Patient access to healthcare is highly topical as aging populations mean that healthcare systems often strain to meet the growing demand for healthcare⁸. GPs in the Danish context, which is our present concern, are required to see increasing numbers of patients⁹, and Danish patients often struggle to see their GPs at the clinic due to GPs' heavily booked schedules¹⁰. A sense of inaccessibility may be exacerbated by spatial and physical aspects of the clinical setting, as access is mediated by the gatekeeping role of secretaries, having to wait in a waiting room and the length of the consultation, including GPs' own (need for) time management¹¹⁻¹³. Commonly reported advantages for GPs include reduced phone load and increased efficiency in administration¹⁴.

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3 In Denmark, general practice serves as a first-contact access point to the fully tax-financed
4 Danish healthcare system that offers almost all services free of charge to citizens. In 2009, a
5 collective agreement made it mandatory for all Danish GPs to offer email consultations to
6 “increase efficiency and quality through the digitisation of health care”¹⁵. Email consultations
7 were introduced as a cost-effective, convenient means of providing access to GPs, primarily for
8 communication of test results and short questions that could be answered briefly and resolved
9 without the patient being present. In Denmark, email consultation use has increased steadily
10 since its introduction. A recent study found that Denmark had the highest numbers of doctor-
11 patient emails sent/received in Europe⁵, making it a forerunner in the adoption of email
12 consultations and thus an important case to investigate. By 2019, the number of email
13 consultations in Denmark had risen from 1.3 million in 2008 to 7.2 million per year,
14 corresponding to just under 21% of all GP consultations¹⁶.

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26 Currently, six different software systems (websites and apps) are used in Danish GP clinics to
27 manage email consultations. Clinics decide on which system to use, the amount of text that
28 patients can produce and whether pictures can be uploaded. The potential for patients having
29 greater access to GPs is underlined on the websites of Danish GP practices; patients are, for
30 example, told that they can use email consultations to contact their GP “24/7” and “day and
31 night”, emphasizing the possibility of round-the-clock, direct, and patient-instigated access to
32 GPs.
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Against this backdrop, we address the following research question: *How do patients and GPs in the Danish setting perceive the communicative advantages and disadvantages of the access that the medium of email consultation provides?* We explore both patients’ and GPs’ perspectives in order to achieve a fuller understanding of the implications of email consultations for doctor-patient communication, and address the research question using qualitative interview data.

The theoretical frame that guides our analysis derives from medium theory, a perspective that focuses on the potential impact of media *per se* beyond the content that they convey¹⁷. We interpret email consultations as involving a communication *medium* that facilitates access between patients and GPs. Communication and media scholars refer to a medium’s “affordances”, meaning the different ways in which users employ a medium^{18 19} and how a

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3 medium's possibilities are perceived by its users²⁰. The concept of affordance helps us identify
4 the limitations and strengths of the medium's materiality, i.e. physical properties that have
5 consequences for how the medium is used (including what we conceive of a medium)²¹, also
6 referred to as its affordances or *action potentials*²². Action potentials point both to the
7 environment and to the observer and should not be studied purely objectively in terms of
8 technical aspects or purely subjectively in terms of users' perspectives; instead, they are best
9 considered as an interplay between humans and technology²³ that enhance our understanding of
10 how technology is applied and perceived²⁴⁻²⁸. More specifically, one recognised action potential
11 of e-mails is asynchronous production^{23 29}, i.e. the possibility of planning, producing, sending
12 and reading digital messages without the presence of the other participant(s) in the
13 communication. Using e-mail can be perceived differently depending on factors such as user
14 expectations and context. In order to understand how the affordances of asynchronous
15 production shape the interplay between technology and users, interview data are thus highly
16 appropriate.

30 METHOD

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32 This paper draws from a larger qualitative study of email consultations in general practice. The
33 project includes five subprojects that each address key aspects of email consultations:
34 technology, content and relations. The larger project involves a focused empirical analysis of
35 email consultations and perceptions of such consultations from different theoretical perspectives.

40 Data collection

41 The data set we analyse in this article stems from two of the five subprojects and consists of
42 semi-structured interviews with 30 patients and 23 GPs. The data were collected from February
43 2016 to September 2019. See Table 1 for an overview of the interview participants.

| Interviews | Number of participants | Gender | | Age span |
|------------|------------------------|--------|------|----------|
| | | Female | Male | |
| Patients | 30 | 18 | 12 | 40-91 |

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|----------------------------|-----------|-----------|-----------|-------|
| | | | | |
| GPs | 23 | 12 | 11 | 37-70 |
| Participants, total | 53 | 30 | 23 | |

Table 1: Overview of interviews

30 patients (18 women and 12 men), aged between 40-91 years, were interviewed individually or as a couple. All patients were recruited via their GPs through an open call communicated by word of mouth in our professional network within the Region of Southern Denmark, one of Denmark's five geographically defined regions. The interviews were conducted face-to-face in a setting of the patients' own choosing such as their homes (23), a senior activity house (5) and a public library (2).

When selecting GPs for the individual interviews, the aim was to achieve variation with respect to the GPs' age, gender, practice type, geographical location and years of practice as a GP. The GPs lived and worked within four of Denmark's five regions: the Region of Southern Denmark (17), the Central Denmark Region (4), the North Denmark Region (1), and the Capital Region of Denmark (1), thus including both urban and rural areas. The interviews with the GPs were conducted either face-to-face (15) or by telephone (8) and lasted between 10:53 and 78:23 minutes.

All interviews were conducted by AG and EAH. Semi-structured interview guides included open-ended questions such as "What are the communicative advantages of the email consultation, in your opinion?", "What are the communication challenges?" and "In what ways, if any, do email consultations impact on your relationship with patients/your GP, in your opinion?" Recruitment of interviewees continued until sufficient information power (also often referred to as "saturation") regarding the subject at hand was achieved³⁰.

Data analysis

The interviews were transcribed verbatim and coded using the software program NVivo 12. The first and second authors, AG and EAH, coded the transcripts in two phases: an initial open coding and a subsequent closed thematic coding using a node structure that reflected identified themes and subthemes and allowed for expansion and reduction along the way. The analytical

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3 process was inspired by Kozinets' netnographic approach³¹ and included coding, note-taking,
4 abstracting/comparing, checking and refining. All authors compared and discussed the identified
5 themes, relating them to the original transcripts and aligning them where necessary. This
6 analytical work was carried out in a dialectic (abductive) process where we went inductively
7 from the empirical examples in the interviews to the theoretical concepts, and deductively from
8 the theoretical concepts to the empirical examples from the interviews.
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14 **Patient and public involvement**

15 There was no direct involvement of patients or the public in the design of the present study.
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20 **RESULTS**

23 **Affordances of email consultation as a communication medium**

24 Focusing on email consultations as a communication medium, we found that the most prominent
25 affordances derived from the thematic analysis were: 1) lower contact threshold, 2) accessing a
26 new interaction space and 3) access to access (quicker access to face-to-face consultations).
27 From the perspective of the patients and GPs, these three affordances of email consultations
28 involved communicative advantages and disadvantages relating to doctor-patient
29 communication. In the following, we present the three affordances as perceived by patients and
30 GPs, respectively.
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38 **Lower contact threshold**

39 **Patient perspective**

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41 With respect to lower contact threshold, the technical affordance 'asynchronicity' (cf. section 1,
42 Introduction) was key. Many patients stated that they were happy not to have to attend the clinic
43 in person as they found that email consultations were more convenient than going to see the
44 doctor. The patients emphasized that they did not want to be any bother, and that email
45 consultations felt less disruptive than face-to-face consultations. For example, one patient said, "I
46 don't want to be any trouble because it's probably nothing", and another, when asked why she
47 preferred email consultations stated: "Because [that way] you are not any trouble. They answer
48 when they have time".
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3 Patients appreciated close contact with their GP which they considered to be facilitated by email
4 consultations. At the same time, they knew that GPs are busy as they have many other patients to
5 take care of. As one patient stated, “I also think that by using email consultations, it must take
6 some of the pressure off [the doctor] in [face-to-face] consultations”. Several patients considered
7 their GP’s workflow and mentioned that if they sent an email consultation message in the
8 morning, the GP would answer in the afternoon or the next morning, at the latest. Thus, patients
9 perceived email consultations as less disturbing for GPs, which made it easier for them to
10 communicate with their GP without feeling stressed or under time pressure.
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19 GP perspective

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21 The affordance of technical asynchronicity was thematized recurrently by the GPs as one of the
22 great advantages of email consultations for both patients and GPs: “The advantage is that people
23 can write whenever they want, at night, in the evening, when they are off work and have the
24 time, and the advantage for me as a doctor is that I can look at their inquiries when I have the
25 time”. Many GPs associated the introduction of email consultations in general practice with a
26 “lower contact threshold”, where quick, convenient access was made possible for patients who
27 otherwise might have had difficulties attending the clinic, for example, due to late working
28 hours, long travel distances or mental health issues. One GP described how email consultations
29 had facilitated increased contact and relationship-building with vulnerable patients, e.g. those
30 suffering from Asperger’s syndrome or autism, who might be reluctant to see their GP in the
31 clinic due to their life circumstances.
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41 Downsides of a “lower contact threshold” were also mentioned by some GPs. Easy, untriaged
42 access to GPs in some clinics had led to overuse of email consultations, with some patients
43 burdening GPs with high volumes of e-mail correspondence. As one GP put it:
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47 As 8,000 patients have round-the-clock access to us, we receive an enormous number of
48 e-mails. For some reason, there are some doctors whom patients feel a strong affinity for,
49 and those doctors receive many more e-mails than the others. The emails are not
50 distributed [between us] because they are not triaged. This kind of untriaged access
51 overloads some.
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3 Furthermore, given the direct access facilitated by email consultations and the fact that GPs are
4 obliged to respond to every email consultation, some GPs narrated that some patients, who
5 seemed unsure of where else to turn, used email consultations to address issues that extended
6 beyond the scope of general practice:
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11 Now you can write to your doctor 24/7, and they have to answer. I mean, many things
12 end up here where I just think, “This has absolutely nothing to do with medical practice”.
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14 But you can see that they don’t know where to ask their question, and you spend time on
15 it anyway.
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20 21 **A new interaction space is accessible**

22 23 Patient perspective

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25 The non-physical shared contact space of email consultations broke the traditional association
26 between social presence and physical proximity, creating a new form of mutual presence or co-
27 access. For patients, email consultations were perceived as facilitating new conversations with
28 their GP, which gave them peace of mind. Most patients found that they could ask their GP about
29 anything in email consultations including their worries and concerns. When asked if email
30 consultations would weaken their relationship with the GP because of its more formal framing
31 and written form, one patient stated:
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38 Not at all, quite the opposite. [...] If you have it in writing, you can read it, and you can
39 read it again, because you might have forgotten details. So, for me, it is an advantage [...] Because when talking, there might be something you can’t remember because there are
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57 The written form meant that patients could access and re-access the interaction space without the
58 GP being present at the same time. For patients, this created a safe feeling, and it was highly
59 valued by patients that they could access a space that permanently documented their
60 communication with their GP.

Some patients emphasised that the access to their GPs facilitated by email consultations

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3 promoted a clear and straightforward form of communication:
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5 Of course, we are emotional beings, but if we strip it [communication] of emotional talk,
6 it is very concrete. Does my knee hurt or not? Can I stretch my leg or not? I mean, that is
7 the way my brain works.
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12 Others, on the other hand, liked writing personal and emotional messages to their GP, and found
13 it easy to raise challenging topics by e-mail. Email consultations facilitated a new way of
14 gathering one's thoughts, as this patient explained:
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17 I thought that it must be possible to gather my thoughts in a different way [...]. When it
18 became possible to write to them, I wrote, "Sleeping is not going well. I don't feel like
19 taking the sleeping pills you gave me because I don't want to deal with the side effects.
20 Are there other options?", and then I get a response. And it is always quick, and it is
21 concrete. It is very concrete, and I am forced to think in a very concrete way.
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28 GP perspective

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30 Regarding the co-access facilitated by email consultations, many GPs stated that they
31 appreciated email consultation communication because of its brevity and precision. Compared to
32 telephone consultations, email consultations were perceived as compelling patients as well as
33 GPs to communicate effectively: "What I really like about email is that it forces both parties to
34 be brief and a little more precise". Moreover, email consultations were perceived by GPs as
35 providing patients with the opportunity to reflect on their communication, resulting in more
36 considered and constructive communication: "I think the strength of email is that when they ask
37 me something, they have thought about what they want to ask about".
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45 Email consultations were also experienced by GPs as facilitating access to new forms of
46 affective communication. For example, if patients were dissatisfied with their care, GPs deemed
47 email consultations to be a good medium for patients' expression of critique:
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51 If they are unsatisfied about something, they are afraid to say upfront... I have found that
52 a couple of times you receive an email where they write and tell you what they are
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3 unsatisfied with. That way, they have given it a lot of thought. [...] So, it is really good
4 for that purpose, and it opens up possibilities.
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7 Furthermore, GPs found that email consultations could facilitate emotional disclosure to a
8 greater extent than face-to-face consultations. Patients were able to write to their GP in the
9 moment of affect (e.g. anxiety, stress, anger and happiness), in the knowledge that the GP would
10 respond at some point. Several examples were provided by the GPs of how their patients shared
11 their feelings with them, e.g. if they were feeling miserable or better in the direct aftermath of a
12 treatment or social gathering.
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21 **Access to access**

23 Patient perspective

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25 Compared to telephone and face-to-face consultations, patients found email consultations to be
26 easier, more direct and most importantly, untriaged. The patients did not meet a “gatekeeping
27 function” in the guise of a medical secretary or a nurse, nor did they experience delays in getting
28 their message across. In that sense, email consultations were perceived as a means of dealing
29 with a situation directly. If a problem could not be solved via an email consultation, email
30 consultations could expedite the booking of a clinical appointment. One patient described the
31 improved access to their GP as follows: “Because I mean, you can't – after all, you don't come
32 directly in contact with the doctor, it's through the nurses up there, right? [...] If I have to go to
33 the doctor, I write.”
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43 Moreover, the patients stated that if GPs deemed the content of a patient's email consultation
44 message to be unclear or in other ways too complicated to answer directly, he/she typically
45 recommended a physical consultation. Sometimes, GPs booked an appointment time and
46 included information about it in the email consultation response. In that way, patients perceived
47 that they got access to access (face-to-face consultation) more quickly than if they phoned. One
48 patient explained as follows:
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54 I just wrote to him, and I got an appointment. And it was easier to get an appointment
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3 directly with him than it is if you book online because then it is several months away. I
4 got an appointment the next day every time.
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8 Another patient emphasized the usefulness of getting their GP's initial assessment of a situation
9 via email consultations:
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13 And that is also okay, because then they can judge "There must be something, let's get
14 her down here and look at it". If they had judged "That is nothing", then they would just
15 write "You don't have to worry about that".
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20 Thus, after the email consultation, the patient knew if the GP considered a physical consultation
21 to be necessary.
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24 25 GP perspective

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27 Reflecting patients' experiences of how email consultations facilitated quick access to access, the
28 GPs discussed how patients used email consultations as a way of bypassing waiting lists:
29 "Because sometimes, it is because they want to squeeze themselves in because they can't get an
30 appointment."
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35 Furthermore, GPs described how email consultations were used by some patients to "test the
36 water", checking with their GP whether their health problem elicited a "wait and see" or "book
37 an appointment immediately" response:
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41 Sometimes, someone asks about a certain issue, "Do I need an appointment?" And it can
42 be anything from giving them advice and saying, "You can just wait and see" or "You
43 need an acute appointment for that – you should call and get one today".
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47 According to some GPs, these kinds of email consultations could be redundant or wasteful as
48 they would very often elicit responses of the type: "We need to see you, you have to come in",
49 meaning "What you are presenting, we can't deal with via email"; one GP estimated that they
50 redirected "one third" of their email consultations to face-to-face consultations. However, in
51 other cases, email consultations could increase effectiveness: "There are definitely some where
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3 we say, “You don’t need to come in, you will get a prescription”. Like, threadworms, I don’t
4 need to see that.”
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8 9 **DISCUSSION AND CONCLUSION**

10 11 **Discussion**

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13 In this article, we explored a large qualitative data set of interviews to investigate GPs’ and
14 patients’ perspectives on the communicative advantages and disadvantages of email
15 consultations as a medium for accessing each other. We drew on a media-theoretical framework,
16 focusing on the concept of affordances, as we wanted to shed light on what the *medium* meant
17 for perceived communicative advantages and disadvantages of this still relatively new form of
18 patient-doctor consultation. Three affordances were evident in the subsets of data on doctors’ and
19 patients’ perspectives: email consultations were associated with a *lower contact threshold*, the
20 availability of a *new interaction space*, and *access to access*. These affordances are important as
21 they say something about the primary characteristics of email consultations as interpreted by
22 their users. They may also be relevant for other forms of e-mediated communication in
23 healthcare such as doctor-patient online forums; however, further studies would be required to
24 explore this. As pointed out by Mold et al. (2019) in their review of 57 electronic consultation
25 studies in primary care, remote care includes many other forms of communication than email
26 (e.g. telephone, video, text messaging, web-based portals etc.) and research in this area
27 recognizes this heterogeneity⁸.
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41 Many of our findings on GPs’ and patients’ perspectives on email consultation communication
42 resonate with those of previous studies. Patients in our study appreciated the lower contact
43 threshold to their GPs. Similarly, in previous research, patients liked being able to contact their
44 GPs from the convenience of their own homes at times that suited them^{2 32}.
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50 Similar to other studies³³⁻³⁵, patients in our study welcomed having time in email consultations to
51 reflect over their accounts of their health concerns. In our data, patients’ and GPs’ appreciation
52 of the brief, matter-of-fact communication of email consultations reflects the leanness associated
53 with the medium of e-mail³⁶. However, we also found that email consultations make it easier for
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3 patients to write than talk about sensitive or emotional topics, suggest their own hypotheses for
4 discussion, and ask questions, which resonates with previous findings^{32 37-41}. Moreover, in
5 previous research, doctors have reported that when used appropriately for relatively
6 straightforward tasks (e.g. prescription refills and information sharing regarding medication or
7 treatments), email consultations can impact the doctor-patient relationship positively and
8 improve continuity of care^{42 43}. Patients in our study anticipated that the time used on email
9 consultations might mean more time for consultations in the clinic.
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17 Doctors have voiced their concerns about the potentially negative effects of email consultations
18 on workload, compensation and litigation^{7 44} and that email consultations grant patients untriaged
19 access⁴³. We found similar results in our data related to GPs' concerns about access to access,
20 whereas patients were pleased about untriaged access to their GPs.
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26 What our article offers with respect to previous studies is a framework for interpreting doctors'
27 and patients' perspectives that links to the medium of email consultations. The findings
28 presented in this article are therefore not "just" advantages and disadvantages of email
29 consultations; rather, they represent advantages and disadvantages of perceived affordances of
30 the medium of email consultations, i.e. e-mail. The lack of a concerted medium-based focus in
31 previous research on email consultations misses the critical aspect of email consultations as
32 occurring in a different medium to the clinical dyad. As we have shown in our article, email
33 consultations permit access that is de-coupled from time and space which significantly impacts
34 the communication that is possible between patients and doctors.
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43 A strength of our study is the theoretical framework that draws on affordance theory coupled
44 with a qualitative approach that involves deductive and inductive approaches; we suggest that
45 this could be useful for other studies exploring emerging communicative practices that use new
46 media in healthcare settings. Besides our theoretical approach, other strengths of this study
47 include the use of interviews to investigate perspectives on email consultations and a large data
48 set. In addition, we see it as very valuable that the perspectives of both GPs and patients are
49 included in our study of the affordances of the medium of email consultations.
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3 A potential limitation of the study is that the majority of patients represented were born in 1954
4 or earlier (> 65 years) which might influence the results. Thus, our findings might not be
5 generalizable to all age groups. Moreover, there is a need for further studies in different countries
6 as our findings are likely to be inflected by the local Danish context (e.g. the triage system may
7 operate differently). Finally, we also need to highlight the likelihood that as our patient
8 interviewees were those who chose to use email consultations, they may be quite technology-
9 savvy and thus not be representative of the general population.
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18 **Conclusion**

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20 This study adds knowledge of how the affordances of the medium of email consultation may
21 impact access in doctor-patient communication. Communication may not only be more frequent
22 (lower contact threshold), it may also give rise to very different communicative practices as
23 witnessed by the affordances of the availability of a new interaction space. Moreover, email
24 consultations facilitate access to access as patients have a new means of gaining face-to-face
25 access to their GPs. Email consultations thus do not simply extend existing forms of contact and
26 consultation (face-to-face and telephone); they produce a new communication space with its own
27 affordances which result in new practices. With increasing use of email consultations, it is
28 important to be alert to the possibility that email consultations may involve new roles for patients
29 and GPs, and that there may be challenges involved in transferring some GP-patient
30 communication to the written medium. To keep pace with such developments, we argue, like
31 Schiller⁴⁵, that the knowledge and skill sets that could help manage the communicative demands
32 of email consultations should be reflected in doctors' education. Also, at policy level, there
33 should be greater awareness that email consultations may add extra tasks to GPs, as although
34 email consultations have been promoted to improve effectiveness in healthcare systems, they
35 may increase work strain on GPs.
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53 also like to thank student assistant Karoline Søberg for all her administrative help.
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Contributors

All authors (AG, EAH, MNB, AFB) have substantially contributed to the formulation of the research question and design of the study. All interviews were conducted by AG and EAH. The first and second authors, AG and EAH, coded the transcripts in two phases (open and thematic). All authors compared and discussed the identified themes, relating them to the original transcripts and aligning them where necessary. All authors have contributed to the process of writing the article, including proof-reading.

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Competing Interests

None declared.

Patient consent for publication

Not required.

Ethics approval

All participants gave written consent and were informed that participation in the study was voluntary. The study was approved by the institutional review board of the University of Southern Denmark, the Research and Innovation Organization (RIO) (Journal no. 10457) and was conducted in accordance with the General Data Protection Regulation (GDPR) and the Declaration of Helsinki.

Data sharing statement

We do not have ethics approval to share raw data from our interviews.

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Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

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| | | Page |
|--------------|--|--------|
| | Reporting Item | Number |
| Title | <p>#1 Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended</p> | 1 |

Abstract

[#2](#) Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions

Introduction

Problem formulation [#3](#) Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement

Purpose or research question [#4](#) Purpose of the study and specific objectives or questions

Methods

Qualitative approach and research paradigm [#5](#) Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability.

As appropriate the rationale for several items might be discussed together.

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| 6 | Researcher | #6 | Researchers' characteristics that may influence the |
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| 11 | | | and / or presuppositions; potential or actual interaction |
| 12 | | | between researchers' characteristics and the research |
| 13 | | | questions, approach, methods, results and / or |
| 14 | | | transferability |
| 15 | | | |
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| 21 | | | |
| 22 | Context | #7 | Setting / site and salient contextual factors; rationale |
| 23 | | | |
| 24 | | | |
| 25 | Sampling strategy | #8 | How and why research participants, documents, or |
| 26 | | | |
| 27 | | | events were selected; criteria for deciding when no |
| 28 | | | further sampling was necessary (e.g. sampling |
| 29 | | | saturation); rationale |
| 30 | | | |
| 31 | | | |
| 32 | | | |
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| 35 | Ethical issues pertaining | #9 | Documentation of approval by an appropriate ethics |
| 36 | | | |
| 37 | to human subjects | | review board and participant consent, or explanation |
| 38 | | | for lack thereof; other confidentiality and data security |
| 39 | | | issues |
| 40 | | | |
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| 43 | | | |
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| 45 | Data collection methods | #10 | Types of data collected; details of data collection |
| 46 | | | |
| 47 | | | procedures including (as appropriate) start and stop |
| 48 | | | dates of data collection and analysis, iterative process, |
| 49 | | | triangulation of sources / methods, and modification of |
| 50 | | | procedures in response to evolving study findings; |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | | |
| 57 | | | rationale |
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|----|-------------------------|---------------------|--|-----|
| 1 | Data collection | #11 | Description of instruments (e.g. interview guides, | 4-5 |
| 2 | | | questionnaires) and devices (e.g. audio recorders) | |
| 3 | instruments and | | used for data collection; if / how the instruments(s) | |
| 4 | | | changed over the course of the study | |
| 5 | technologies | | | |
| 6 | | | | |
| 7 | | | | |
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| 10 | | | | |
| 11 | Units of study | #12 | Number and relevant characteristics of participants, | 5 |
| 12 | | | documents, or events included in the study; level of | |
| 13 | | | participation (could be reported in results) | |
| 14 | | | | |
| 15 | | | | |
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| 18 | | | | |
| 19 | Data processing | #13 | Methods for processing data prior to and during | 5 |
| 20 | | | analysis, including transcription, data entry, data | |
| 21 | | | management and security, verification of data integrity, | |
| 22 | | | data coding, and anonymisation / deidentification of | |
| 23 | | | excerpts | |
| 24 | | | | |
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| 31 | Data analysis | #14 | Process by which inferences, themes, etc. were | 6 |
| 32 | | | identified and developed, including the researchers | |
| 33 | | | involved in data analysis; usually references a specific | |
| 34 | | | paradigm or approach; rationale | |
| 35 | | | | |
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| 41 | Techniques to enhance | #15 | Techniques to enhance trustworthiness and credibility | - |
| 42 | | | of data analysis (e.g. member checking, audit trail, | |
| 43 | trustworthiness | | triangulation); rationale | |
| 44 | | | | |
| 45 | | | | |
| 46 | | | | |
| 47 | | | | |
| 48 | Results/findings | | | |
| 49 | | | | |
| 50 | | | | |
| 51 | Syntheses and | #16 | Main findings (e.g. interpretations, inferences, and | 6- |
| 52 | | | themes); might include development of a theory or | |
| 53 | interpretation | | model, or integration with prior research or theory | |
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| 1 | Links to empirical data | #17 | Evidence (e.g. quotes, field notes, text excerpts, | 6- |
| 2 | | | photographs) to substantiate analytic findings | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | Discussion | | | |
| 7 | | | | |
| 8 | | | | |
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| 10 | Intergration with prior | #18 | Short summary of main findings; explanation of how | 12 |
| 11 | work, implications, | | findings and conclusions connect to, support, elaborate | |
| 12 | | | on, or challenge conclusions of earlier scholarship; | |
| 13 | transferability and | | discussion of scope of application / generalizability; | |
| 14 | | | identification of unique contributions(s) to scholarship | |
| 15 | contribution(s) to the field | | in a discipline or field | |
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| 24 | Limitations | #19 | Trustworthiness and limitations of findings | 14 |
| 25 | | | | |
| 26 | | | | |
| 27 | Other | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | Conflicts of interest | #20 | Potential sources of influence of perceived influence on | 15 |
| 31 | | | study conduct and conclusions; how these were | |
| 32 | | | managed | |
| 33 | | | | |
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| 35 | | | | |
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| 38 | Funding | #21 | Sources of funding and other support; role of funders in | 15 |
| 39 | | | data collection, interpretation and reporting | |
| 40 | | | | |
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| 42 | | | | |

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