



COMPLEXITY AND SIMPLICITY IN DOCTOR–PATIENT EMAIL CONSULTATIONS

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ABSTRACT

NEW TECHNOLOGIES HAVE FACILITATED DOCTOR–PATIENT EMAIL CONSULTATIONS (E-CONSULTATIONS). GUIDELINES FOR E-CONSULTATION USE IN DENMARK STATE THAT THEY SHOULD BE USED FOR SIMPLE, CONCRETE AND NON-URGENT QUERIES; HOWEVER, A SMALL-SCALE DANISH STUDY SUGGESTED THAT DOCTORS ENCOUNTER E-CONSULTATIONS THAT DO NOT MATCH THE GUIDELINES. THE PURPOSE OF THIS ARTICLE IS TO EXPLORE WHETHER E-CONSULTATIONS IN DENMARK REFLECT RECOMMENDATIONS THAT THEY SHOULD BE SIMPLE, SHORT, CONCRETE AND WELL DEFINED, AND IF NOT, WHAT FORMS OF COMPLEXITY ARE EVIDENT. WE INDUCTIVELY ANALYSED 1,671 E-CONSULTATIONS FROM 38 PATIENTS AGED 21–91 YEARS COMMUNICATING WITH 28 DOCTORS, 6 NURSES, 1 MEDICAL STUDENT AND 8 SECRETARIES. RESULTS SHOWED BOTH QUANTITATIVE COMPLEXITY IN TERMS OF NUMBER OF INTERACTION TURNS, COMMUNICATIVE PARTICIPANTS, AND QUESTIONS ASKED, AND QUALITATIVE COMPLEXITY RELATING TO PATIENTS' PSYCHOSOCIAL CONTEXTS AND GPs' BIOMEDICAL DISEASE PERSPECTIVE. THUS, DESPITE EXISTING GUIDELINES AND THE LEANNESS ASSOCIATED WITH THE EMAIL MEDIUM, MULTIPLE FORMS OF COMPLEXITY WERE EVIDENT. THIS MISMATCH HIGHLIGHTS THE NEED FOR THEORETICAL DEVELOPMENT AS WELL AS THE VALUE OF RE-EXAMINING EXISTING POLICIES AND GUIDELINES REGARDING EXPECTATIONS FOR E-CONSULTATION USE.

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Introduction

The advent of new technologies and media has made it possible for doctor–patient communication to move online. This is all the more profoundly evident since the COVID-19 pandemic highlighted the obvious advantages of telemedicine for maintaining healthcare services without necessitating the physical co-presence of doctor and patient (Hollander & Carr, 2020). Exemplifying these new media possibilities are e-consultations that typically supplement the (as yet) more mainstream doctor–patient consultations in the clinical setting (Kirsh, Ho, & Aron, 2014). E-consultations make it possible for patients to contact doctors with their queries through closed messaging systems that are associated with the patients’ medical records. It was anticipated that e-consultations would help to address the growing pressure on doctors to meet increasing numbers of patients in a cost-effective manner, and thus address consultation bottlenecks and reduce referral and waiting times (Banks et al., 2018; Joschko et al., 2017; Plener, Hayward, & Saibil, 2014). Another perceived advantage of e-consultations relates to improved access to specialist care (Liddy, Maranger, Afkham, & Keely, 2013), particularly for patients in remote areas (Mold, Hendy, Lai, & de Lusignan, 2019), with doctors “just a click away” (Joschko et al., 2017). E-consultations, it seems, allow patients to participate in their healthcare in new ways.

As email is a fairly recent medium in doctor–patient communication, research in the area is still limited (Cook et al., 2016; Voruganti, Husain, Grunfeld, & Webster, 2018). Empirical studies have investigated what patients and doctors think of e-consultations, often presenting the findings in terms of perceived advantages and disadvantages (e.g. Andreassen, 2011; Andreassen, Trondsen, Kummervold, Gammon, & Hjortdahl, 2006; Banks et al., 2018; Hsiao et al., 2011). For example, a literature review revealed that e-consultations are generally valued by patients who deem them to improve convenience and access, facilitate more detailed informational exchanges, and provide freedom from the medical gaze, although patients have also expressed concerns about security and delays in response (Fage-Butler & Nisbeth Jensen, 2015). Doctors, on the other hand, see e-consultations as having the potential to promote the doctor–patient relationship, but have expressed concern about increased workload, security issues, ethical issues, inappropriate use of email by patients, lack of reimbursement as well as the quality of the health outcomes deriving from e-consultations (Albersheim, 2010; Antoun, 2016; Luo, Logan, Long, & Bercovitch, 2009; Mold et al., 2019; Ye, Rust, Fry-Johnson, & Strothers, 2010).

Methodologically, studies of e-consultations, both in primary care and secondary care, have relied primarily on interview studies or surveys to obtain users’ perspectives on the genre (e.g. Banks et al., 2018; Cook et al., 2016; Dash, Haller, Sommer, & Junod Perron, 2016; Hassol et al., 2004). When the actual content of email exchanges between patients and doctors is analysed, focus has mainly been on categorising content into doctor-patient-related communicative activities or types. For example, Anand, Feldman, Geller, Bisbee, and Bauchner (2005), who stated they were the first to analyse the textual content of e-consultations, found in their content analysis of 81 email exchanges in a pediatric setting that all of the inquiries were for non-acute issues, and that the vast majority of inquiries required only one email response from the pediatrician. Cornwall, Moore, and Plant (2008) analysed 44 emails sent by patients or their relatives in a lung cancer setting to identify the reason for contact and found that over half of the messages related to on-going monitoring and support. Roter, Larson, Sands, Ford, and Houston (2008) found in their analysis of 74 email messages (40 from patients and 34 from their physicians) that physicians’ emails were shorter than patients’ emails. 72% of physician and 59% of patient statements were devoted to information exchange, while the remaining communication related to emotions or building the doctor–patient partnership, indicating that email communication supported the completion of informational tasks as well as functioned as a medium for emotional support and partnership. Grimsbø, Finset, and Ruland (2011) analysed 276 messages between 60 breast or prostate cancer patients and nurses and identified four main illness-related themes in patients’ messages: living with symptoms and side effects, living with a fear of relapse, concerns for everyday life, and unmet information needs from health care providers. Mirsky, Tieu, Lyles, and Sarkar (2016) in a safety net primary care setting analysed 31 emails and found that all of them were of a non-urgent nature, and that the kinds of content typically included in patients’ emails were medical updates, requests for action, most commonly regarding medications or treatment; most of the patients’ requests were resolved as a result of the exchanges. Farr et al. (2018) analysed 485 emails posted to their GPs and extracted from patients’ records, categorizing them into 11 types; the most common patient requests were of an administrative nature for matters such as repeat prescriptions, test notes, referrals, booking appointments and fit notes, with immunological and musculoskeletal queries in second and third place. As email is a new medium within doctor–patient communication, many practical and theoretical implications of the paradigmatic shift of

health communication from the clinical setting to the online setting remain not fully understood as has also been pointed out previously (e.g. by Fage-Butler & Nisbeth Jensen, 2015; Mold et al., 2019).

This paper takes up the question of e-consultations and complexity in the context of general practitioner (GP)–patient communication; as Kirsch et al. (2014) assert in their theoretical paper, one of the challenges of GP–patient communication in the clinical setting is how doctors best can manage the complexity that their patients may present. In what is now a slightly older study, Beasley et al. (2004) identified that patients in the US presented with an average of just over three queries at clinical consultations. Many patients present with multiple and complex health problems (Laerum, Steine, Finset, & Lundevall, 1998), and with aging populations, multimorbidity increases (Divo, Martinez, & Mannino, 2014). Indeed, there is considered to be an increasing mismatch between the needs of populations with complex chronic illnesses and the resources available in healthcare systems (Reeve et al., 2013). In line with the imperative of increased rationalization of healthcare provision, GPs are advised on how to manage complexity presented by older patients, for example, in the clinical situation (Blom et al., 2018).

While doctors in clinical consultations need to manage the complexity their patients present with, there appears to be broad consensus that e-consultations provide a poor medium for dealing with complex requests and questions from patients than face-to-face consultations (Sowerbutts & Fertleman, 2016). Real and Street (2009), for example, describe how email strips away the communicative context and excludes the potential for immediate feedback, impoverishing the medium’s ability to support communication of an emotional nature. Furthermore, they conclude that e-consultations facilitate rational and simple communication, and are thus unsuitable for GPs’ communication of complex or ambiguous test results, or for occasions where GPs and patients need to discuss an issue.

By 2019, the number of e-consultations had increased from 1.8 million in 2009 to 7.2 million, corresponding to 20.75% of all GP consultations (PLO, 2020). These e-consultations are described in the collective agreement for Danish GPs as “simple, concrete queries that are not urgent and which do not require supplementary questions by the doctor” (PLO, 2018). GPs are paid DKK45.08 (EUR6.04) (PLO, 2019) for an e-consultation. There is no payment for responses to patients’ supplementary questions or for GPs’ rejection of a patient’s request for an e-consultation.

In Danish GPs’ websites for instructions on e-consultation use, it is underlined that e-consultations should be used for “simple and concrete questions”, “short and well-defined issues” and be “brief and only concern one issue”. Below are some of the off-seen descriptions of e-consultation use in Danish GPs’ websites:

- It should only be a single, concrete question that is not acute and does not require supplementary questions from the doctor.
- You can write questions to the doctor, e.g. for blood test results. It is NOT for ordering medication, booking consultations or acute inquiries.
- The email consultation can be used for non-urgent questions. Email consultation is a safe way of communicating with the doctor, and can be used night and day.

Despite the fact that short, simple, straightforward and single-issue communication is how e-consultations are described, a small-scale Danish interview study from 2014 revealed that “GPs found it difficult to handle complicated medical problems by e-mail” (Skanderup Hansen, Lynghøj Christensen & Ertmann, 2014), suggesting that e-consultations are also used for more complicated matters than described in the collective agreement and on GP websites. The study also concluded that GPs “preferred short uncomplicated questions with no option for the patient to enter into a discussion” (Skanderup Hansen, Lynghøj Christensen & Ertmann, 2014). It seems, then, that there may be discrepancies between the intended and actual use of e-consultations, and thus between policy and practice. We need knowledge about what types of discrepancies appear in order for patients and health care providers to make more efficient and nuanced use of e-consultations. Empirical research that mapped out the kinds of complexity that may be evident in actual e-consultation correspondences would be valuable.

Against this backdrop, i.e. indications that e-consultations are not always used for simple queries even though they are not deemed to provide an appropriate medium for complex issues and requests, our aim is to investigate the following research questions: Do doctor–patient e-consultations in the Danish context reflect recommendations that they should be simple, short,

concrete and well-defined in practice? And if not, what forms of complexity are evident? To help account for why e-consultations are considered a poor medium for complex communication, we draw on media richness theory, which we present below.

Media richness theory and email

Media richness theory was introduced in 1986 (Daft & Lengel, 1986); it is a framework used to rank and evaluate the richness of certain communication media, including email. It is useful to distinguish, like Ishii, Lyons, and Carr (2019), between earlier versions of media richness theory (e.g. Daft, Lengel, & Trevino, 1987), which were objectivist and understood media such as email as inherently “lean” as opposed to the richness of face-to-face communication, and later forms of media richness theory which also incorporated subjective experience and social influence such as organizational culture in interpreting a medium’s potential (Carlson & Zmud, 1999). According to Ishii et al. (2019), media richness theory helps to explain why email is good at reducing certain forms of uncertainty as it facilitates the communication of very concrete messages; on the other hand, email is less good at dealing with equivocality as it lacks the nonverbal cues that could disambiguate meaning. Media richness theory has been used to help managers identify the most appropriate medium for a communicative task “by successfully matching the richness of a medium to the level of equivocality of the task” (Ishii et al., 2019, p. 124).

In line with media richness theory, perceived strengths and weaknesses of e-consultations vs. clinical consultations have resulted in recommendations as to what kind of communicative content would be most appropriate in both settings. Thus, for example, in order to reduce complexity in e-consultations, it is recommended that protocols are drawn up to inform patients about what they can and cannot write about (Car & Sheikh, 2004). Varsi, Gammon, Wibe, and Ruland (2013) state that “[e]mail is often preferred for simple interactions like refilling a prescription and general medical information whereas face-to-face encounters are preferred for more complex interactions like treatment instructions or communication about serious health issues” (p. 8). E-consultations, it is suggested, can be used for less serious illnesses – facilitating the redirection of the resources of face-to-face consultations to support “patients with more complex needs” (Stoves et al., 2010, p. 1). Kirsh et al. (2014) agree in principle with this, but point out that distinguishing between relevant forms of complexity in doctor–patient communication is difficult, and that there is a need for further exploration in order to be able to distinguish between complex and less complex elements.

Methods

We used a qualitative, inductive and explorative design where we analyzed e-consultations between general practices and their patients.

Participants and material

Between February 2018 and February 2019, we asked four GPs from four different practices to provide us with all email correspondences from 10 patients each. We asked for emails that, in their view, had some text and content, i.e. not only prescription renewals. All GPs were informed about confidentiality issues and signed an informed consent form. All patients were informed by their GP about the content of the project via email.

We received 1,671 e-consultations from 38 patients aged 21–91 years. Overall, the 38 patients communicated with 28 doctors, 6 nurses, 1 medical student and 8 secretaries (see Table 1).

General practice	Doctors	Nurses	Medical student	Secretaries	Patients
General practice 1	2	0	1	1	9
General practice 2	9	1	0	3	8
General practice 3	12	4	0	2	10
General practice 4	5	1	0	2	11

Table 1 Overview of employees in the four general practice offices

The emails were sent between 2007–2019. The reason for this broad date range is that we asked for all email correspondences for each patient, and thus we received everything from the very first email sent (or at least the first one logged in patient record) by the patient to the most recent one. The e-consultations in our data set ranged between 4 and 56 correspondences in length per patient (see Table 2 below). We define one correspondence as an original email plus all replies related to the topic of that email. This means that one correspondence is made up of interaction turns (Grønning, 2006, p. 168), and can vary in number – from one to several interaction turns.

Correspondences per patient	<10	11-30	>31
Number of patients	12	17	9

Table 2 Total correspondences per patient

Analysis

All three authors read all the data using an explorative and inductive approach where we looked into how simplicity and complexity might be manifested in the data. This process consisted of several phases. In order to become familiarized with the material, all three authors read all of the correspondences. After this, we individually read half of the material from General Practice 1, each identifying patterns and main categories. We then compared our notes and discussed preliminary analytical categories. We repeated this process for general practice 2, 3 and 4, going back and forth between categories, identifying new patterns etc. We then read the rest of the material, repeatedly discussing our interpretations of the data and refining them. In our presentation of the findings below, we translated from the original Danish to idiomatic English as content meaning was in focus, not linguistic aspects or orthographic mistakes. All quotes are presented in boxes. All names of GPs and patients are pseudonyms.

Ethics

All patients and health professionals were informed about the authors’ confidentiality agreements, and participant anonymity was assured. Written informed consent was obtained from all of the patients to use their e-consultations. All quoted health professionals gave oral consent to using the e-consultations. The study was approved by the Danish Data Protection Agency (Journal number 2015-57-0002). The study did not require approval from the Central Denmark Region Committee on Health Research Ethics, according to the Consolidation Act on Research Ethics Review of Health Research Projects.

Results

A key finding throughout the material was that e-consultations ranged from short, simple correspondences with only two interaction turns, i.e. ‘one message-one reply’ communication regarding simple problems, to highly complex communication involving several interaction turns back and forth between doctors and patients. Thus, the e-consultations in our data set included much more complexity in terms of interaction turns than the simple, short communication anticipated of them.

We identified both quantitative and qualitative forms of complexity in the material (see Table 3). E-consultations were quantitatively complex when they deviated from the anticipated e-consultation format, either with regard to the number of interaction turns, the numbers of questions asked or the number of senders and recipients involved. Qualitative complexity related to more content-specific issues, involving the illness perspective of the patient, and the biomedical perspective of the GP.

Quantitative complexity	Qualitative complexity	
Number of interaction turns in a correspondence	Illness perspective of the patient Emotions Social context Life situation	Biomedical complexity of GP
Number of questions asked		Pathology and treatment
Number of people involved		Biomedical problem Test results Emotional support

Table 3 Overview of analysis. Quantitative and qualitative complexity

Quantitative complexity

As mentioned, quantitative complexity appeared in the number of interaction turns in a correspondence, the numbers of questions asked or the number of senders and recipients involved.

Number of interaction turns in a correspondence

Our analysis showed a simplicity–complexity span with regard to the number of interaction turns involved in each e-consultation correspondence. Some correspondences involved few interaction turns as the prescribed (and reimbursed) format of one patient question and one doctor answer as in the following examples:

Patient -> doctor (General Practice 2: PT 5; General Practice 4: PT 1)

PT: Hi Thomas. Have you looked at the papers regarding my blood pressure? Best, Mark.
GP: Hi Mark. Your blood pressure is 132/86, heart rate 70. So, fine. Best, Thomas.

PT: Hi Lone. The pharmacy says that X eyedrops are on back order for many weeks [...]. Can you help? [...]
GP: Dear Mona. How annoying for you. I have ordered eyedrops E which I have good experiences with [...].

These examples matched the suggested correspondence format. However, we also witnessed many consultations that involved several interaction turns and thus more complex written dialogue, and certainly more interaction turns than the recommended format as seen by the total of six and eight interaction turns below:

Patient -> doctor -> patient -> doctor -> patient -> doctor (General Practice 3: PT 6)

Patient -> doctor -> patient -> doctor -> patient -> doctor -> patient -> doctor

(General Practice 2: PT 4)

We also saw examples that did not follow traditional turn taking but where one communication partner took another interaction turn before the other one replied:

Patient -> doctor -> doctor -> doctor -> patient -> doctor (General Practice 4: PT 7)

Patient -> doctor -> patient -> patient -> doctor -> doctor -> patient -> doctor -> patient -> doctor

(General Practice 2: PT 5)

These exchanges consisting of several turns back and forth are interesting in the light of the description of e-consultations as “simple, concrete queries that are not urgent and which do not require supplementary questions by the doctor”. Furthermore, as we know that GPs are not reimbursed for responses to patients’ supplementary questions, it is interesting that GPs engage in such long correspondences.

Number of questions asked

As mentioned in the section *The Danish e-consultation setting* above, e-consultations are also described on GPs’ websites as “single-issue” communication meaning that patients should only present with one issue or one question. In our data, we saw patients including many questions in their e-consultations, such as in the following example:

PT+RELATIVE: Hi Ken, we, Mum and Charlotte, would like to inquire about plan and time horizon. Is she going to the hospital? Are there any limitations she still needs to consider? Status: sometimes after activities and physical exertion, she experiences intense pain. Still cannot bend or stretch the leg fully. The swelling has subsided, but there is still some swelling around the entire kneecap, especially under it. Does this sound like something that will disappear of its own accord? Does she need arthroscopy? If yes, where and when? Would you like to see her? Best, M+C.

(General Practice 3: PT 4)

In this interaction turn, we witness a total of seven questions for the GP to answer, which exceeds the norm of “one concrete question per email”. However, all questions relate to the same problem, Charlotte’s knee, and it would not make sense to pose each question by itself. The seven questions arise naturally in relation to the patient’s problem and are intertwined. This indicates that sometimes the expected format of the e-consultation does not fit the complex reality of the patient’s health query.

Some patients included so much information that the maximum character count did not suffice, and they continued in a new e-consultation. One patient, for example, finished her e-consultation using “continued” and then proceeded with her message in four separate emails (General Practice 4: PT 8).

Number of senders and recipients

The material showed that the number of senders and recipients varied. Some consultations were simple ‘one patient question-one GP reply’ communication, as one would expect; however, it became evident that the standard e-consultation exchange did not always just include two people.

We saw examples of emails sent to a specific GP (evidenced by the greeting, e.g. “Dear Paul”), which were answered by another GP, a nurse or a secretary:

GP: Dear Maria. Marie is off today so I will handle it (General Practice 1: PT 4)

GP: Dear Marlene. I will take the liberty of answering for Claus as he is absent. (General Practice 3: PT 10)

GP: Hi Søren, I will answer instead of Lone who is on holiday. (General Practice 4: PT 7)

Some GP staff members took over the correspondence without explaining or apologizing. In most cases, this did not seem to disturb the communication; however, in some, it did. In one case, for example, the fact that the patient’s regular GP was away led to several interaction turns back and forth regarding medication. To begin with, the patient wrote and asked for stronger pain medication. The ‘stand-in’ GP then replied by ordering a painkiller. In the following interaction turn, the patient came back saying, “I know you are not the doctor that knows me best, but the cardiologists have expressly pointed out that I must not take (name of drug) or other (name) drugs due to the treatment of (name of diagnosis). If I could, I would not have contacted you. I will grit my teeth and endure until Anna [regular GP] is back” (General Practice 4: PT 1). In these cases, the expectation that one receives an answer from the same person the email is directed to is thwarted, sometimes bringing the communication to an end, e.g. as above where the patient chooses to wait until the regular GP is back.

Similarly, on the patient’s side, the sender’s role was occasionally complex, with other senders than the patient (and owner of the account) appearing. This was typically family members, e.g. parents or nieces writing on behalf of the patient, and thus creating a complex sender-receiver relation. One example was the patient, Charlotte, who in the early years of her e-consultations had her mother write on her behalf. Later, it varied as to who was the sender; in some e-consultations, Charlotte was the sender, in others, her mother, and in others again, they co-signed the email. To complicate the picture, Charlotte’s mother sometimes also included questions about her own medical issues. This co-writing would inevitably create challenges for the

GP. Directing information to Charlotte only would be impossible, which could result in confidentiality issues even though she seemed to understand and accept sharing her account with her mother.

Qualitative complexity

We also witnessed simplicity–complexity variation in the material that related to qualitative and content issues. Some interaction turns adhered to the anticipated simplicity norm of e-consultations, whereas others showed a greater degree of complexity. These forms of complexity reflected the illness perspective of the patient and the biomedical perspective of the doctor.

Complexities arising from the illness perspective of the patient

Different forms of complexity emerged in relation to the illness perspective of the patient. Dimensions such as patients' emotions, social context and life situation were all evident. These dimensions could be at play singularly or simultaneously in the interactions.

Patients' emotions

A recurrent pattern in the material was that complexity often related to patients' expression of emotions. This could involve worry about diagnoses and treatment or more long-term concerns and fears about health, etc. It emerged either directly in the interaction or more indirectly through multiple emotionally loaded questions, as observed in the example below:

PT: Hi R. My dizziness is getting worse and worse. Is there anything that can be done about it? Went through a CT scan, where they didn't find anything. But a week ago they called and said they would like to do an MR scan. Makes me nervous about what it could be. I know and believe that they think I am a hypochondriac, but I feel really affected at the moment.

GP: Hi J. You are not a hypochondriac, but probably anxious about the future and you could maybe also have depression. I think that we could change from sertain to cymbata. Should we try that? Best, R

PT: Let's do that. The doctor who discharged me said that it could also be benign paroxysmal positional vertigo, but she wasn't sure.

(General Practice 2: PT 4)

This interaction showed an example of how several dimensions could be at play that together create a more complex issue than what is recommended for e-consultations. The patient's experience of symptoms without tests indicating a diagnosis and treatment leads to his emotional outcry to the GP. He appears nervous and concerned about what is wrong with him and why no one can identify the problem, and he does not want to be perceived as a hypochondriac. The GP adheres to the norm of the e-consultation by providing a short answer to the concrete question without addressing the emotion directly. He focuses on the diagnosis by correcting the patient and suggests treatment.

Another type of answer to this type of emotional outcry is witnessed in the example below, where the GP answers empathetically and directly addresses the patient's emotions.

PT: Apologies for writing again. I haven't heard anything from (name) hospital. It bothers me. Can't stand this sweating. Am afraid to get stress again. I cry and sweat and am afraid that there is something in those cysts. I'm probably being impossible but normally I'm never ill. I don't sleep at night. I don't know what to do.

[Then the day after the patient receives information from the hospital, which has been delayed by mistake. And the GP answers]:

GP: Hi Hanne. It sounds really strange [the delay in the information]. I'm sorry that you have to deal with this in addition to your other problems. Claus

(General Practice 3: PT 8)

More rarely, patients wrote to the doctor without asking a specific question or posing a problem, but just to tell about how things

were going, or to brief the GP about how they were feeling. In these cases, the interactions deviated from the guidelines for e-consultations by appearing more like an ongoing correspondence known from other types of email correspondence, and reflecting slightly different norms of communication. This was evident in the following interaction which was quite typical for this patient:

PT: Hi Claus. I went to the pharmacy and bought vitamin D and 50+ vitamin D which are the strong ones which they recommended, and I hope that it works.
And thanks for the chat yesterday and your help.
Best regards, Hanne

GP: Sounds good. Claus

(General Practice 3: PT 8)

Compared to the guidelines on e-consultations, the patient's first turn is somehow unnecessary. It does not contain any questions, concrete problems or requests, but merely informs the GP that she has bought the medication, thanks him for helping, and just lets him know what happened after their 'chat'. The GP thus seems an anchor point in this patient's life – someone she writes to from time to time.

Social dimensions

Another identified dimension was when the patient's social life and context of the patient became part of problem solving and communication. This dimension involved elements such as the patients' relatives and family, involvement of social authorities, implications of their health issue for work, education or holiday, and the patient's ability to deal with existential life crises. The following interaction is an example of this. The GP provides a patient with a brief statement of results from screening for cervical cancer, which, however, causes several turns from the patient:

GP: The results of your smear test are now available. They are completely normal cells, but there is evidence of HPV (which can cause cell changes) which is why you have been offered another test a year from now. It all looks innocent enough, but we still keep an eye.
Best regards, Lone

(General Practice 4: PT 1)

In the next turn, the patient thanks the doctor for the positive reply but then three patient-initiated turns follow with only a few days between (despite the GP's answers in between trying to calm the patient down), of which the excerpts below are examples:

PT: What about the HPV found in the examination? Is this something you die from or with? On the top of the gout and the endoscopy I don't think I can take any more bad news! I have a boyfriend. Should he see a doctor?

GP: Dear Mona. Don't worry. Your boyfriend does not need to do anything.

PT: Thank you for the answer, but what about my boyfriend? Is the virus dangerous for men? It has never shown up before. Have I always had it? Am I infectious? Have I been infected by my boyfriend?

(General Practice 4: PT 1)

In this interaction, the patient is clearly worried about the HPV result, despite the GP's initial attempt to explain that there is no need to worry. The patient is worried not only about herself but also her boyfriend, and what implications the results may have for him and their relationship. The complexity reaches a level where the GP asks her to make an appointment if she wishes to discuss the HPV result.

Another way the social dimension created complexity was when the patient's illness or condition involved the need to fill out forms to help the patient's work conditions. This is illustrated in the following correspondence, where a patient who has had a

late miscarriage and suffered psychologically needed help from her GP to fill out a '§56 form', which would enable her employer receive reimbursement for her sick leave. The patient asked if she needed to make an appointment, but the doctors wrote:

GP: I think we can handle it via email. I hope we agree that I write that you have migraine and a stress disorder due to your late miscarriage.

PT: I am not sure whether we need to include the part about the late miscarriage, as I haven't mentioned this to my boss. I have mentioned migraine and headache to him. I think that we can put it in if it turns out to be necessary.

PT (after a couple of days): What did you end up writing...?

(General Practice 1: PT 1)

Here the complexity arises from the fact that the patient had not told her employer the whole story, and wished to keep this information from him if possible. What appeared to be something "we can handle via email" thus took longer and involved more turns back and forth to ensure that the GP and the patient were on the same track with regard to what information should be part of the information to the authorities and her employer.

Patients' life situations

Complexity also arose in relation to patients' life situations, i.e. the complexity inherent in people's lives over time, and the serious illnesses and personal losses they may face. One example of this was the following, where a patient's husband has suddenly passed away. The correspondence lasts almost six months. The patient wrote with the request to "go through the autopsy report together" with her GP. *[The patient previously asked for referral to a psychologist for her children, about a cholesterol test for her and her children]*

PT: Hi Poul. Do you have any results for the cholesterol blood tests you took and an idea about what we should do? You also need to specify in what periods Henry [late husband] did not order his medication.

The GP provides an answer regarding their blood tests and then writes:

GP: [...] with regard to Henry's medicine, it may take many hours to find out. I am a bit unsure about what you want to use the information for?

PT: It seems that my cholesterol level is the most urgent. Good to contact the experts. I'm best at putting things behind me after thorough analysis. I am only generally interested in whether there were year-long periods without any medication. It's not a blame-game and I am not bitter. My love is unconditional. Sonja

GP [in an answer where he states that he has spent some time looking into the husband's medical record] [...] So there were regular periods where he didn't take the medication on a daily basis.

PT: Hi Poul, thank you for your report, a very good picture of an unblinking optimist/disease denier [...]

(General Practice 4: PT 11)

In this example, the apparently simple, concrete question – to go over the autopsy report together – was only simple on the surface. By following the interaction, it becomes clear, turn by turn, that this request from the patient is needed not only to get the information as such, but also to help her deal with the tragedy of her husband's sudden death. Emotional complexity and the patient's need to "move on" only became apparent after the GP explored her reason and her thoughts. In addition, a potential ethical dilemma occurs for the GP, due to patient confidentiality. Both in terms of its content and the duration, this correspondence represents an example of what we would deem to be highly complex communication.

The biomedical complexity of the GP's communication

Complexity not only occurred from the patient's side of the correspondence but also emerged on the GP's side. Several themes were evident, such as pathology and treatment, biomedical problems, explanation of test results, and the provision of emotional support.

Pathology and treatment

Some queries from patients, on the face of it, seemed both simple and concrete; however, doctor's answers showed that they involved pathological complexity, for example, eliciting several questions about symptoms, as witnessed in the following interaction:

PT: Do you have my blood test results?

GP: Blood tests normal, but you have to tell me:
Do you experience any pain during urination or other symptoms of cystitis?
Do you have any fever?
How is the dizziness?
Did you receive an invitation from the cardiology department?
Then I can react tomorrow....

(General Practice 1: PT 9)

This interaction shows how complexity is not only part of the patient illness dimension, but is also inherent in disease-related issues. In this case, the GP exceeded the norm of one simple question per consultation.

Another type of disease-related complexity initiated by the doctors was observed when they provided answers to patients' requests in a very detailed manner and included complex medical terminology. This patient started the following interaction by posing two short and apparently concrete questions, followed by two separate answer turns from the doctor:

PT: Hi Claus. Have you received the results from the blood tests? And do you have an answer on getting my "flanks" removed?

GP: We have received the results of the last blood tests. One of them gives positive results for rheumatoid arthritis, the other one negative. Therefore, I can't say anything for sure. I suggest that, after you have been to the x-ray, we make a referral to the rheumatologists who will evaluate you.

GP: As for the extra skin on your stomach, the rules are as follows: [what appears to be a copy paste]
Patients must have been severely obese and have achieved weight loss of at least 15 BMI points. Significant functional discomfort from tissue excess or extreme change in relation to age. Stable weight for 6 months (weight stability defined as a weight of 5% below and 2% above the weight 6 months earlier). Any obesity surgery should be done at least 24 months prior to referral to ensure the patient is metabolically stable. BMI > 30 - however, panniculectomy may be offered at BMI = 34. Individual assessment of whether the patient is physically and mentally prepared for imminent plastic surgery.
Unsure whether you meet these criteria.
With best regards,
Claus

(General Practice 3: PT 10)

Biomedical problems

Sometimes what seemed a routine request from the patient was more problematic from the doctor's perspective. Several cases involved requests for morphine-based drugs or sleeping medication:

PT [After a short request for other prescriptions before taking off for a holiday, Kirsten briefly asks]: Also need Oxapax (50 pcs) for the holiday. Have a good day. Regards, Kirsten

GP: Hi Kirsten. Have ordered oxapax for you. I can see that since [date] you have had 150 pcs of Oxapax, that is almost one every day. I had understood that you only used them once in a while, when you're on holiday. Will you make an appointment after your holiday so we can talk about this? Regards, Lone

(General Practice 4: PT 8)

This is an example of a discrepancy between the GP’s and patient’s perspective regarding a topic that is too complex to deal with by email. The final question from the GP is an order in disguise and a sign of the power relation embedded in the relationship as a way to prevent the dilemma between patient expectations and regulations for prescribing addictive medicine.

Explanation of test results

In many cases, the GP combined a rather simple message with descriptions from hospitals, answers to test results, etc. by attaching or including copy-pasted information of the original information. While this copy-pasted information was probably intended to clarify the GP’s answer, it was often rather complex both due to the layout (occasionally missing reference values) and (heavy) medical terminology (see Figure 1 below for an example):

Prøvenavn	Dato	Resultat	Min ref	Max ref	Enhed
Hæmoglobin A1c (IFCC);Hb(B)	12-06-18	37		48	mmol/mol
B-Hemoglobin (Fe) stofk.	12-06-18	9.3	8.3	10.5	mmol/l
BILIRUBIN, TOTAL	12-06-18	8	5	25	µmol/l
LDL-Cholesterol;P	12-06-18	2.7		3	mmol/l
HDL	12-06-18	1.2	1		mmol/l
Total kolesterol	12-06-18	4.7		5	mmol/l
KALIUM	12-06-18	3.4	3.5	4.6	mmol/l
T4,frit;P	12-06-18	19.6	12	21	pmol/l
P-Creatinkinase, IFCC	12-06-18	140	50	200	U/l
P-Thyreidea-stimulerende Hormon arb.	12-06-18	1.48	0.3	4.5	10 ⁻³ int.enh/l
eGFR / 1,73m ² (CKD-EPI)	12-06-18	> 90	60		ml/min
Kreatinin;P	12-06-18	71	60	105	µmol/l
P-Thyr-kontrol	12-06-18	Taget			
NATRIUM	12-06-18	143	137	145	mmol/l
Glukose, middel (fra HbA1c);P	12-06-18	6.3	5.4	7.3	mmol/l
Triglycerid;P	12-06-18	1.5		2	mmol/l
URAT	12-06-18	0.30	0.23	0.48	mmol/l
P-Albumin	12-06-18	39	36	45	g/l
P-Alanin-aminotransferase kat.k.	12-06-18	21	10	70	U/l

Figure 1
 Blood test results

Doctor takes another turn asking for emotional wellbeing

Another type of GP-initiated complexity witnessed in the material involved turn-taking. In the following, a patient asks for test results, the doctor responds that tests were normal, and then invites the patient for another turn by asking how they were feeling/doing:

PT: Hi Marie. Have you received the result of the test from Friday? Best, Anja.
 GP: Hi Anja. The test was negative, as expected, which means that it is not herpes. How are you feeling? Best, Marie.
 [then PT, then GP]

(General Practice 1: PT 1).

Interestingly, the last GP-initiated turn flouts the ‘one question-one answer’ norm; however, it seems to create a sense of ongoing partnership with the patient, as the GP signaled interest more broadly in the patient’s wellbeing beyond the concrete issue presented.

Book a face-to-face consultation

When the complexity intensified, we saw instances of GPs redirecting patients out of the e-consultation and into the face-to-face setting by asking them to book a consultation, which suggests that the doctors viewed the complexity to be too much for the e-consultation:

PT: Hi Lone [...] I know that my intestines have been checked before but I have fresh blood/slime in my stools and pain in my left side [...] I think it could be constipation and that it doesn’t mean anything? Best, Kirsten
 GP: Hi Kirsten. I would like for you to book a consultation. Your problem is not suitable for email [...] Best, Lone.

(General Practice 4: PT 8).

Discussion and Conclusion

Our study has shown that despite existing guidelines and the anticipated norm of e-consultations as a lean medium suitable only for simple communication as characterized by media richness theory, complexity in e-consultations is still evident in many cases and takes many forms. We have shown how both quantitative and qualitative complexity were evident in the communication of patients and GPs alike. In other words, the norm of simple communication was transgressed in both qualitative and quantitative terms by both communicative parties. This is an important finding as it challenges existing understandings of emails, more generally, and e-consultations, more specifically, as best suited to simple communication. Indeed, one of the most important findings of this article is the striking disconnect between our present findings and theoretical understandings of emails as well as existing guidelines on e-consultations. This mismatch highlights the need for theoretical development as well as the value of re-examining existing policies and guidelines regarding expectations for e-consultation use.

More specifically in terms of our findings, one clear example of this transgression was that both patients and GPs occasionally would address emotions that created different forms of complexity. Our findings therefore nuance the study of Real and Street (2009), who found that emails stripped away context and impoverished the ability to support communication of an emotional nature. We found, however, that emotions and context did occur in the email consultations. This was seen as transgressing the anticipated norms, both in a positive manner – creating emotional support and building relationships – as well as in a more questionable manner, creating confusion or resulting in doctors ending the written communication with the patients, with patients asked to book a face-to-face appointment. Our analysis showed that this type of complexity must be seen as inherent to both the illness perspective of patients and the biomedical complexity of the doctor, and thus hardly avoidable in e-consultations. It is also striking that some GPs write correspondences with numerous turns, despite lack of compensation for any but their first response. This suggests that the expectation that doctor–patient communication may be satisfactorily completed after two turns may seem too restrictive for some GPs, raising the question of whether compensatory mechanisms should be changed to reflect this.

Although our findings are novel in that they showed different forms of complexity in e-consultations, there is some resonance between our findings and those of previous studies. Like Roter et al. (2008), who explored whether e-consultations could support patient centeredness, we found in our data set evidence of emotional complexity in Danish patients' e-consultations with their GPs, as well as the inclusion of a question from a doctor about a patient's general wellbeing. Patients' personal condition- or illness-related concerns were evident in the e-consultations we explored, just as they were in Grimsbø et al. (2011), whose study centered on cancer patients' use of e-consultations with their nurses. Of course, our data set consists of examples that from the doctors' perspective included communication that went beyond simple, transactional communication, and this means that our data set most likely includes a greater concentration of complexity than would exist in an average "sample". However, our findings and those of Roter et al. (2008) and Grimsbø et al. (2011) highlight that the rather perfunctory and functional qualities associated with email communication are directly challenged by the exigency of patients' healthcare needs, and e-consultations seem to have the ability to expand to accommodate some of the communicative content that seems to be expected of doctor–patient communication. In other words, it seems that the medium of email, which has been deemed to be "lean" (Daft, Lengel & Trevino, 1987), can and does stretch to accommodate at least some of the richness and complexity of face-to-face doctor–patient communication, despite guidelines for patients and lack of extra compensation for doctors.

E-consultations not only provide patients with access to their GP, but they also enable interaction with the GP (Carpentier, 2015, p. 15), and, as we have seen, this is not always just short, simple, straightforward and single-issue interaction. Although professional requirements state the terms and conditions for e-consultation interaction, we see that through the use of the e-consultation medium, new emergent norms for using the medium are co-created by patients and GPs. This is, for example, seen by patients asking many more than one question, or circumventing that maximum character count available by writing several emails, and by doctors asking follow up questions or taking another turn to ask about the patient's wellbeing. Thus, while the terms and conditions are set by professional requirements and reimbursement policies, norms for actual use seem to be the product of emergent and co-constructed practices, and can thus be seen as participation (Carpentier, 2015).

Limitations and strengths

A limitation of this study is that we only analysed email correspondences. This prevented elaborations on the different communication partners' views on the email interaction. For example, we do not know what patients may think about the fact that they may write to their own GP, but receive an answer from someone else. For some patients, this might be confusing or seem to threaten confidentiality, whereas others might find it reassuring that not only one doctor was responsible for treatment, but a team. Conducting interviews with doctors, patients, etc. could help shed light on this, and should be an aim for future studies. However, the fact that emails and their content were the object of this study is also a strength. As we saw in the Introduction, most of the research on doctor–patient email does not analyse email content but rather perceptions of use (e.g. perceived advantages and disadvantages) through interviews and surveys, and when content is examined, focus is mainly on categorizing content into various health-related communicative activities or types (e.g. non-acute issues, medical updates, requests for action regarding medications or treatment, etc.). In this study, textual content was analysed, and we applied a methodologically innovative approach in that entire correspondences were analysed, not just individual emails, which enabled us to get an overview of how the communication unfolded. Furthermore, an inductive approach enabled us to go beyond categorization of themes, and allowed for thick descriptions of unfolding complexity in GP–patient communication. Another strength of the study is the large number of emails analysed (1,671), compared to the studies reviewed in the Introduction which ranged from 31 to 485 emails. Finally, the fact that all of the emails were analysed by all three authors adds to the reliability of our results.

Practice implications

Understanding the kinds of complexity that GPs may meet in conducting their consultations by email is important with respect to identifying relevant communication skills for doctors. While there has been an increased focus on the value of communication skills, and teaching such skills in recent year, focus has almost exclusively been on oral communication skills, not on written communication or skills relevant specifically for email communication.

Doctor–patient communication often went beyond one simple, short question and one answer, because the medical, emotional and social complexity inherent in the problems that patients presented often demanded longer and more comprehensive communication. Thus, despite professional guidelines and the information provided to patients about appropriate use of e-consultations, our findings suggest that it is illusory to expect that e-consultations can just be used for simple, straightforward doctor–patient communication. As e-consultations seem to provide a medium than meets at least some of the complexity inherent in GP–patient communication, it may be valuable to reflect this by altering patient guidelines and reimbursement policies. This seems all the more relevant since COVID-19, where telemedicine is showing real potential for maintaining healthcare services (Greenhalgh, Wherton, Shaw, & Morrison, 2020; Hollander & Carr, 2020). Indeed, COVID-19 may result in increasing use of e-consultations in the long term as communication increasingly moves online and new practices are developed and routinized, both by doctors and patients.

References

- Albersheim, S. (2010). E-mail communication in paediatrics: Ethical and clinical considerations. *Paediatrics and Child Health*, 15 (3), 163-168
- Anand, S. G., Feldman, M. J., Geller, D. S., Bisbee, A., & Bauchner, H. (2005). A content analysis of e-mail communication between primary care providers and parents. *Pediatrics*, 115(5), 1283-1288.
- Andreassen, H. K. (2011). What does an e-mail address add? Doing health and technology at home. *Social Science & Medicine*, 72, 521-528.
- Andreassen, H. K., Trondsen, M., Kummervold, P. E., Gammon, D., & Hjortdahl, P. (2006). Patients who use e-mediated communication with their doctor: New constructions of trust in the patient-doctor relationship. *Qualitative Health Research*, 16(2), 238-248.
- Antoun, J. (2016). Electronic mail communication between physicians and patients: a review of challenges and opportunities. *Family Practice*, 33(2), 121-126. doi:10.1093/fampra/cmv101
- Banks, J., Farr, M., Salisbury, C., Bernard, E., Northstone, K., Edwards, H., & Horwood, J. (2018). Use of an electronic consultation system in primary care: A qualitative interview study. *The British Journal of General Practice*, 68(666), e1-e8. doi:10.3399/bjgp17X693509
- Beasley, J. W., Hankey, T. H., Erickson, R., Stange, K. C., Mundt, M., Elliott, M., . . . Bobula, J. (2004). How many problems do family physicians manage at each encounter? A WReN study. *Annals of Family Medicine*, 2(5), 405. doi:10.1370/afm.94
- Blom, J. W., Hout, W. B. V. d., Elzen, W. P. J. D., Drewes, Y. M., Bleijenberg, N., Fabbicotti, I. N., . . . Gussekloo, J. (2018). Effectiveness and cost-effectiveness of proactive and multidisciplinary integrated care for older people with complex problems in general practice: an individual participant data meta-analysis. *Age and Ageing*, 47, 705-714.
- Car, J., & Sheikh, A. (2004). Email consultations in health care: 2—acceptability and safe application. *British Medical Journal*, 329, 439-442.
- Carpentier, N. (2015) "Differentiating between access, interaction and participation", *Conjunctions* vol. 2, issue 2.
- Carlson, J., & Zmud, R. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal*, 42(2), 153-170. doi:10.2307/257090
- Cook, N., Maganti, M., Dobriyal, A., Sheinis, M., Wei, A. C., Ringash, J., & Krzyzanowska, M. K. (2016). E-mail communication practices and preferences among patients and providers in a large comprehensive cancer center. *Journal of Oncology Practice*, 12(7), 676-684. doi:10.1200/jop.2015.008722
- Cornwall, A., Moore, S., & Plant, H. (2008). Embracing technology: Patients', family members' and nurse specialists' experience of communicating using e-mail. *European Journal of Oncology Nursing*, 12(3), 198-208. doi:10.1016/j.ejon.2007.09.008
- Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness, and structural design. *Management Science*, 32, 554–571. doi: 10.1287/mnsc.32.5.554
- Daft, R., Lengel, R., & Trevino, L. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly*, 11(3), 355. doi:10.2307/248682
- Dash, J., Haller, D. M., Sommer, J., & Junod Perron, N. (2016). Use of email, cell phone and text message between patients and primary-care physicians: Cross-sectional study in a French-speaking part of Switzerland. *BMC Health Services Research*, 16(1). doi:10.1186/s12913-016-1776-9
- Divo, M. J., Martinez, C. H., & Mannino, D. M. (2014). Ageing and the epidemiology of multimorbidity. *The European respiratory journal*, 44(4), 1055-1068. doi:10.1183/09031936.00059814
- Fage-Butler, A. M., & Nisbeth Jensen, M. (2015). The relevance of existing health communication models in the email age: An integrative literature review. *Communication & Medicine*, 12(2/3), 117-128. doi:10.1558/cam.18399
- Farr, M., Banks, J., Edwards, H. B., Northstone, K., Bernard, E., Salisbury, C., & Horwood, J. (2018). Implementing online consultations in primary care: A mixed-method evaluation extending normalisation process theory through service co-production. *BMJ Open*, 8(e019966). doi:10.1136/bmjopen-2017-019966

- Greenhalgh, T., Wherton, J., Shaw, S., & Morrison, C. (2020). Video consultations for covid-19: An opportunity in a crisis? *British Medical Journal* 368(998). doi: 10.1136/bmj.m998
- Grimsbø, G. H., Finset, A., & Ruland, C. M. (2011). Left hanging in the air: Experiences of living with cancer as expressed through e-mail communications with oncology nurses. *Cancer Nursing*, 34(2), 107-116. doi:10.1097/NCC.0b013e3181eff008
- Grønning, A. (2006). *Personen bag: Tilstedevær i e-mail som interaktionsform mellem kunde og medarbejder i dansk forsikringskontekst*. [The person behind: Presence in email as interaction form between customer and employee in a Danish insurance context]. Frederiksberg: Samfundslitteratur.
- Hassol, A., Walker, J. M., Kidder, D., Rokita, K., Young, D., Pierdon, S., . . . Ortiz, E. (2004). Patient experiences and attitudes about access to a patient electronic health care record and linked web messaging. *Journal of the American Medical Informatics Association*, 11(6), 505-513. doi:10.1197/jamia.M1593
- Hollander, J. E., and Carr, B. G. (2020). Virtually perfect? Telemedicine for COVID-19. *New England Journal of Medicine* 382(18), 1679-1681. doi:10.1056/NEJMp2003539
- Hsiao, A. L., Bazy-Asaad, A., Tolomeo, C., Edmonds, D., Belton, B., & Benin, A. L. (2011). Secure web messaging in a pediatric chronic care clinic: A slow takeoff of "Kids' Airmail". *Pediatrics*, 127(2), e406-e413. doi:10.1542/peds.2010-1086
- Ishii, K., Lyons, M. M., & Carr, S. A. (2019). Revisiting media richness theory for today and future. *Human Behavior and Emerging Technologies*, 1(2), 124-131. doi:10.1002/hbe2.138
- Joschko, J., Liddy, C., Moroz, I., Reiche, M., Crowe, L., Afkham, A., & Keely, E. (2017). Just a click away: exploring patients' perspectives on receiving care through the Champlain BASETM eConsult service. *Family Practice*, 35(1), 93-98. doi:10.1093/fampra/cmz073
- Kirsh, S. R., Ho, P. M., & Aron, D. C. (2014). Providing specialty consultant expertise to primary care: An expanding spectrum of modalities. *Mayo Clinic Proceedings*, 89(10), 1416-1426. doi:10.1016/j.mayocp.2014.04.016
- Laerum, E., Steine, S., Finset, A., & Lundevall, S. (1998). Complex health problems in general practice: do we need an instrument for consultation improvement and patient involvement? Theoretical foundation, development and user evaluation of the Patient Perspective Survey (PPS). *Family Practice*, 15(2), 172-181. doi:10.1093/fampra/15.2.172
- Liddy, C., Maranger, J., Afkham, A., & Keely, E. (2013). Ten steps to establishing an e-consultation service to improve access to specialist care. *Telemedicine and e-Health*, 19(12), 982-990. doi:10.1089/tmj.2013.0056
- Luo, J., Logan, C., Long, t. P. and Bercovitch, L. (2009). Cyberdermatology: Ethical, legal, technologic, and clinical aspects of patient–physician e-mail. *Clinics in Dermatology*, 27 (4), 359–366
- Mirsky, J. B., Tieu, L., Lyles, C., & Sarkar, U. (2016). A mixed-methods study of patient-provider e-mail content in a safety-net setting. *Journal of Health Communication*, 21(1), 85-91. doi:10.1080/10810730.2015.1033118
- Mold, F. E., Hendy, J., Lai, Y.-L., & de Lusignan, S. (2019). E-consultation in primary care: A systematic review. *JMIR Medical Informatics*, 7(4), e13042. doi:10.2196/13042
- Plener, I., Hayward, A., & Saibil, F. (2014). E-mail communication in the management of gastroenterology patients: A review. *Canadian Journal of Gastroenterology and Hepatology*, 28(3), 161-165. doi:10.1155/2014/764538
- PLO (2018). Overenskomst om almen praksis. [Collective agreement for General Practice]. Retrieved from https://www.laeger.dk/sites/default/files/overenskomst_om_almen_praksis_ok18_endelig_udgave.pdf
- PLO (2019). Honorartabel [Remuneration table]. Retrieved from https://www.laeger.dk/sites/default/files/honorartabel_2019_oktober-1.pdf
- PLO (2020). Aktivitet og økonomi i almen praksis i dagtid og vagttid 2009 til 2019 [Activity and economy in General Practice 2009-2019]. https://www.laeger.dk/sites/default/files/aktivitet_og_oekonomi_2019.pdf
- Real, K., & Street, R. L. (2009). Doctor-patient communication from an organizational perspective. In D. E. Brashers & D. J. Goldsmith (Eds.), *Communication to manage health and illness* (pp. 65-90). Abingdon: Routledge.
- Reeve, J., Blakeman, T., Freeman, G. K., Green, L. A., James, P. A., Lucassen, P. L. B. J., . . . Weel, C. v. (2013). Generalist solutions to complex problems: Generating practice-based evidence - the example of managing multi-morbidity. *BMC Family Practice*, 14(112). doi:10.1186/1471-2296-14-11.

- Roter, D., Larson, S., Sands, D. Z., Ford, D. E., & Houston, T. (2008). Can e-mail messages between patients and physicians be patient-centered? *Health Communication, 23*(1), 80-86. doi:10.1080/10410230701807295.
- Skanderup Hansen, C., Lynghøj Christensen, K. & Ertmann, R. (2014). Patients and general practitioners have different approaches to e-mail consultations. *Danish Medical Journal 61/6*.
- Sowerbutts, H., & Fertleman, C. (2016). How best to use email with patients (Report). *British Medical Journal, 352*(8040), 81.
- Stoves, J., Connolly, J., Cheung, C. K., Grange, A., Rhodes, P., O'Donoghue, D., & Wright, J. (2010). Electronic consultation as an alternative to hospital referral for patients with chronic kidney disease: A novel application for networked electronic health records to improve the accessibility and efficiency of healthcare. *Quality and Safety in Health Care, 10*(e54). doi:10.1136/qshc.2009.038984.
- Varsi, C., Gammon, D., Wibe, T., & Ruland, C. M. (2013). Patients' reported reasons for non-use of an internet-based patient–provider communication service: qualitative interview study. *15*(11). doi:10.2196/jmir.2683.
- Voruganti, T., Husain, A., Grunfeld, E., & Webster, F. (2018). Disruption or innovation? A qualitative descriptive study on the use of electronic patient-physician communication in patients with advanced cancer. *Supportive Care in Cancer, 26*(8), 2785-2792. doi:10.1007/s00520-018-4103-7.
- Ye, J., Rust, G., Fry-Johnson, Y., & Strothers, H. (2010). E-mail in patient-provider communication: A systematic review. *Patient Education and Counseling, 80*(2), 266-273. doi:10.1016/j.pec.2009.09.038.