PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Patients' use and experiences with e-consultation and other digital health services with their general practitioner in Norway: results from an online survey
AUTHORS	Zanaboni, Paolo; Fagerlund, Asbjørn Johansen

VERSION 1 - REVIEW

REVIEWER	Dr Ruth Chambers Staffordshire STP, England
REVIEW RETURNED	06-Nov-2019

GENERAL COMMENTS	I think some of the references are slightly 'old' in that background references range from 2005 - 2013 (eg refs 3, 10, 11, 12) in some sections of the paper and I'd have thought there are more recently published refs about e-consultation for eg email consultation between patient/GP. Also as aiming for publication in UK journal, seems odd not to include he English NHS Patient Online/NHS app resource which was launched in 2017 (as GP Online; and NHS app 2019) as brief context in Background or Discussion sections.

REVIEWER	Helen Atherton University of Warwick, UK
REVIEW RETURNED	11-Nov-2019

GENERAL COMMENTS	This is an interesting exploration of the use of digital health services in Norway and provides excellent background and context to the set up and use there. I have some key changes to recommend that will improve the clarity and bring the manuscript more up to date. Please note that unfortunately there seems to have been an issue with the figures and supplementary files, I was unable to read the axis and there were no titles. I have assumed which one was which and what they tell me. I think this is an issue as a result of the formatting use for peer review. So I have not made any specific comments about those. The manuscript requires a clear definition of an e-consult as this has different meanings in different settings. Throughout the background you seem to allude to different meanings - email, video, both. Reference 17 is to a UK paper, where e-consult has a different

meaning, it refers to a one-way electronic contact from a patient where the response is a telephone call, and not to a two way electronic consultation. It is also the trade name of a company in the UK who offer this triage type tool. I would consider using a different reference there or making it clear that it referred to a different type of e-consult. Also worth noting that primary care to specialist care contact is known in Canada as an e-consultation which may ad further confusion if your use of the term is not clearly defined.

The references you use in the background are very old and have been superseded by newer research. Examples you could use include:
Huygens, M. W. J., et al. (2018). "Understanding the use of email consultation in primary care using a retrospective observational study with data of Dutch electronic health records." BMJ Open 8(1).
Mohammed, M. A., et al. (2019). "The value of a Patient Access Portal in primary care: a cross-sectional survey of 62,486 registered users in the UK." Universal Access in the Information Society.
Atherton, H., et al. (2018). "The potential of alternatives to face-to-face consultation in general practice, and the impact on different patient groups: a mixed methods case study." Health Serv Deliv Res 6(20).
Alfons Van den Bulck, S. H., R. Slegers, K. Vandenberghe, B. Goderis, G. Vankrunkelsven, P. (2018). "Designing a Patient Portal for Patient-Centered Care: Cross-Sectional Survey." Journal of Medical Internet Research 20(10): e269.
Chan, B., et al. (2016). "Primary provider influence on patient use of an electronic patient portal in an academic primary care practice." Journal of General Internal Medicine 1): S366-S367.
Eccles, A., et al. (2019). "Patient use of an online triage platform: a mixed-methods retrospective exploration in UK primary care." bjgp19X702197.

The latter is also online triage, just like reference 17, so possibly not very useful. There are more references than this that are recent, and even more if you include video. I don't think including references from 2003/2004/2005 is OK given how fast things have moved on. The reference lists of the above papers will be helpful. I'm not suggesting you have to include the ones I list, but do look for more recent evidence.

Page 4, Line 8 is from a paper I am co-author on and it showed low levels of use in practice but didn't measure reluctance to implement. we looked in more depth as implementation across the study as a whole (this was one part). Reference is above (Atherton)

In the description of e-consultation there are statements about what it is suitable for and can be used for but it is unclear who decides this? The patient has to follow the rules? Are these given to patients on sign up? I don't know how a patient would decide whether they need a physical examination or not?

Page 9, line 22. Please provide some more information about exactly what you asked the patients to comment on - knowing this is crucial in interpreting what they said.

Under patient and public involvement you say it was not possible to involve the public. I would suggest you reword this as you could have included them by asking them to pilot the survey or something similar but you didn't. Maybe instead be honest and say it was

	beyond the scope of the study but you full intend to disseminate the findings to them. A big issue for this study is the lack of denominator, the response means nothing at all without it. Is it really not possible to say how many people were sent the survey? If not, you must at least know how many people are registered with the portal across Norway? Otherwise it could be 2043 our of 10000 or 2043 our of 100000 which is very different. I found it hard to place the findings. You also need to elaborate more on this in the discussion. Your findings are true for people who are registered for the service and answered your survey. They tell us nothing about people who did not respond to the survey (who may be dissatisfied) and those people who did not choose to sign up. Without knowing what proportion of the general practice population are signed up, I don't know how important or significant your findings are.

REVIEWER	Shang-Jyh Chiou National Taipei University of Nursing and Health Sciences, Taiwan
REVIEW RETURNED	04-Feb-2020

GENERAL COMMENTS	The authors used online survey data to explore the experiences of e-communication between patients and their general practitioners (GPs) in Norway and provided information from qualitative data for further discussion in the development of relative policies. However, some points require addressing. 1. Information related to data collection is scattered in the manuscript and should be reorganized. For example, “digital dialogue with the general practitioner” was implemented on January 1, 2016, the online survey was conducted from November 14 to 28, 2017, and data analysis was performed from January 2017 to April 2018. Furthermore, 20% coverage among GP offices was reached in December 2018. This information was intermixed and requires clarification. 1-1. Please clarify whether the Norwegian government initiated the four e-health services simultaneously or launched some services later. 1-2. Page 5, line 2: In December 2018, that there were a total of 293 GP offices (out of 1,542) meant that only 1,542 GP offices provide primary care services in Norway. However, I suppose that GP offices may be more numerous (the Commonwealth Fund website states that “there was an average of 1,127 patients per GP in 2015 in Norway”). Do I misunderstand this information? 1-3. Page 8, line 22: A specific tariff for e-consultation was introduced in July 2016; what is its effect on patients and physicians? Have patients been required to pay more to use e-consultation since then? 2. The authors mentioned that the purposes of the study included collecting user characteristics, including sex, age, education level, health-related background, and computer literacy. However, the results only focused on age and gender. Can the authors elaborate on the participants’ backgrounds gathered from the online survey? 2-1. Little information was provided on health-related background

	and computer literacy; can the authors elaborate? 3. Regarding the time spent, I presume that the distributions are skewed, and I suggest providing the median and drawing the distribution of time spending between three groups (for example, e-booking and phone). 4. Page 10, line 24: Answers categorized as “negative” were more diverse than those categorized as “positive.” I do not understand how the authors gathered information from open-ended text for categorization into positive or negative answers. 5. Does the author have information related to physician characteristics? This information would be useful for discussing policy implementation for e-health services because although we understand that those who used e-health services were young with high computer literacy, who is willing to provide the e-health services? 6. Are electronic prescription services applicable to renewals or refills? 7. We understand that selection bias occurred in the online survey. Therefore, what type of information can be extracted from it to improve e-health services when we do not have information on barriers for those who did not use e-health services?

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Dr Ruth Chambers
Institution and Country: Staffordshire STP, England

I think some of the references are slightly 'old' in that background references range from 2005 - 2013 (eg refs 3, 10, 11, 12) in some sections of the paper and I'd have thought there are more recently published refs about e- consultation for eg email consultation between patient/GP.

Re: As also suggested by Reviewer 2, we have now included a number of recent publications on the use of e-consultation in primary care. We hope that the manuscript provides now a more comprehensive and up-to-date description of the context of use of e-consultation in primary care not only in Norway but also in other countries such as the UK.

Also as aiming for publication in UK journal, seems odd not to include he English NHS Patient Online/NHS app resource which was launched in 2017 (as GP Online; and NHS app 2019) as brief context in Background or Discussion sections.

Re: We are grateful for this suggestion. We have now enriched the Background section with a more comprehensive description of the UK context, including the GP Online services, the NHS app as well as access to GP consultations via mobile or online triage platforms (askmyGP, eConsult and Egton Online Triage).

Reviewer: 2
Reviewer Name: Helen Atherton
Institution and Country: University of Warwick, UK

Please state any competing interests or state ‘None declared’: None declared

This is an interesting exploration of the use of digital health services in Norway and provides excellent background and context to the set up and use there. I have some key changes to recommend that will improve the clarity and bring the manuscript more up to date.

Re: We sincerely thank Reviewer 2 for the positive feedback and the constructive comments, which we have addressed in this revised version of the manuscript.

Please note that unfortunately there seems to have been an issue with the figures and supplementary files, I was unable to read the axis and there were no titles. I have assumed which one was which and what they tell me. I think this is an issue as a result of the formatting use for peer review. So I have not made any specific comments about those.

Re: We will carefully check that all figures and supplementary files contain all the necessary information on the axis and that they will be uploaded and displayed correctly after the formatting for peer review.

The manuscript requires a clear definition of an e-consult as this has different meanings in different settings. Throughout the background you seem to allude to different meanings - email, video, both. Reference 17 is to a UK paper, where e-consult has a different meaning, it refers to a one-way electronic contact from a patient where the response is a telephone call, and not to a two way electronic consultation. It is also the trade name of a company in the UK who offer this triage type tool. I would consider using a different reference there or making it clear that it referred to a different type of e-consult. Also worth noting that primary care to specialist care contact is known in Canada as an e-consultation which may ad further confusion if your use of the term is not clearly defined.

Re: Thank you for this useful comment. We agree that it is important to clarify terms, provide clear definitions and references, and use them consistently in the manuscript. We decided to avoid the term “e-contact” in our manuscript. As a consequence, there is no risk that readers will relate to the eConsult triage platform available in the UK. We have carefully revised our introduction, so that the overall focus is on electronic communication between patients and their GP. Other forms of electronic communication in primary care, such as second opinion between GP and specialist, are therefore excluded and neither mentioned nor covered in this manuscript. We then introduce different forms of electronic communication between patients and their GP, namely email communication (the oldest, and as such with a number of still relevant old references as well as recent ones), asynchronous electronic communication via patient portals (the technology mostly in used today, and the focus of our manuscript), and finally real-time communication via Internet video (still at its infancy in primary care). We now introduce the term “e-consultation” in the section dedicated to the Digital dialogue with the general practitioner in Norway and define it according to proper references and its scope in the context of study.

The references you use in the background are very old and have been superseded by newer research. Examples you could use include:
Huygens, M. W. J., et al. (2018). "Understanding the use of email consultation in primary care using a retrospective observational study with data of Dutch electronic health records." BMJ Open 8(1).
Mohammed, M. A., et al. (2019). "The value of a Patient Access Portal in primary care: a cross-sectional survey of 62,486 registered users in the UK." Universal Access in the Information Society.
Atherton, H., et al. (2018). "The potential of alternatives to face-to-face consultation in general practice, and the impact on different patient groups: a mixed methods case study." Health Serv Deliv Res 6(20).

Alfons Van den Bulck, S. H., R. Slegers, K. Vandenberghe, B. Goderis, G. Vankrunkelsven, P. (2018). "Designing a Patient Portal for Patient-Centered Care: Cross-Sectional Survey." Journal of Medical Internet Research 20(10): e269.
Chan, B., et al. (2016). "Primary provider influence on patient use of an electronic patient portal in an academic primary care practice." Journal of General Internal Medicine 1): S366-S367.
Eccles, A., et al. (2019). "Patient use of an online triage platform: a mixed-methods retrospective exploration in UK primary care." bjgp19X702197.

The latter is also online triage, just like reference 17, so possibly not very useful. There are more references than this that are recent, and even more if you include video. I don't think including references from 2003/2004/2005 is OK given how fast things have moved on. The reference lists of the above papers will be helpful. I'm not suggesting you have to include the ones I list, but do look for more recent evidence.

Re: As also suggested by Reviewer 1, we have now included a number of recent publications on the use of electronic communication between patients and GP. We are confident that the manuscript provides now a more comprehensive and up-to-date description of the context of use electronic communication in primary care not only in Norway but also in other countries such as the UK.

Page 4, Line 8 is from a paper I am co-author on and it showed low levels of use in practice but didn't measure reluctance to implement. we looked in more depth as implementation across the study as a whole (this was one part). Reference is above (Atherton)

Re: We now focus on reporting background information on use rather than GP's reluctance since the scope of our manuscript is on patients' use and experiences.

In the description of e-consultation there are statements about what it is suitable for and can be used for but it is unclear who decides this? The patient has to follow the rules? Are these given to patients on sign up? I don't know how a patient would decide whether they need a physical examination or not?

Re: We have now clarified how the patients are provided with information on what e-consultation is suitable for: "Information on what e-consultation is suitable for is provided on the national portal". […] We have also added the following sentences to clarify how the patients should follow the rules and how GPs must assess whether patients need a physical examination or not:
"Patients should use the service according to the information provided on the national portal. The GP must independently assess whether the information provided by the patient is sufficient to be able to deliver proper health care. The GP must ask the patient to book an ordinary appointment if in doubt about whether a request can be resolved through an e-consultation."

Page 9, line 22. Please provide some more information about exactly what you asked the patients to comment on - knowing this is crucial in interpreting what they said.

Re: We have now clarified that: "Four non-mandatory open-ended questions were also included so that respondents could provide additional feedbacks on their experience with each of the four e-health services."

Under patient and public involvement you say it was not possible to involve the public. I would suggest you reword this as you could have included them by asking them to pilot the survey or something similar but you didn't. Maybe instead be honest and say it was beyond the scope of the study but you full intend to disseminate the findings to them.

Re: Thank you for this comment. It is correct that we could have potentially involved some users in the design of the survey to receive feedback on the questions, but this was beyond the scope of the study. We have therefore modified the text of this section accordingly.

A big issue for this study is the lack of denominator, the response means nothing at all without it. Is it really not possible to say how many people were sent the survey? If not, you must at least know how many people are registered with the portal across Norway? Otherwise it could be 2043 our of 10000 or 2043 our of 100000 which is very different. I found it hard to place the findings. You also need to elaborate more on this in the discussion. Your findings are true for people who are registered for the service and answered your survey. They tell us nothing about people who did not respond to the survey (who may be dissatisfied) and those people who did not choose to sign up. Without knowing what proportion of the general practice population are signed up, I don't know how important or significant your findings are.

Re: We acknowledge that this is a main limitation to our study. We have tried to collect the information on the number of users who were registered and used the services at the time we conducted the survey. However, after a dialogue with the Norwegian Directorate for e-health, we were informed that the number of unique users was not available due to privacy issues. The only information available was the number of monthly accesses. This information, however, can be completely misleading, as it does not take into account how many accesses each registered users had during one month. We have better elaborated this in the Discussion:
"The information regarding the number of unique users of the services was not available due to privacy issues related to the national platform. As a consequence, the potential number of patients who could have answered this survey was unknown and it was not possible to calculate a response rate."
As also commented by Reviewer 3, the aim of the present study was to explore patients' use and experiences with e-consultation and other digital health services with their GP implemented in Norway. As such, the study focused on respondents who used the services and not on those who did not sign up.
As per the specific respondents to this survey, we now acknowledge that: "GPs and citizens using digital health services in Norway are early adopters who might have a more positive attitude towards innovation than the general population and thus be more enthusiastic and inclined to use the services. Moreover, respondents might overall have a better level of satisfaction than non-respondents".
Despite this, we know that we received a total of 656 comments provided in the open text fields, and about half of them were categorized as negative. As a consequence, we believe that the respondents to this survey can be considered to be representative of those who used the services.

Reviewer: 3
Reviewer Name: Shang-Jyh Chiou
Institution and Country: National Taipei University of Nursing and Health Sciences, Taiwan

Please leave your comments for the authors below
The authors used online survey data to explore the experiences of e-communication between patients and their general practitioners (GPs) in Norway and provided information from qualitative data for further discussion in the development of relative policies. However, some points require addressing.

Re: We thank Reviewer 3 for the constructive comments. These have all been addressed as commended below. The current version of the manuscript has been revised accordingly.

1. Information related to data collection is scattered in the manuscript and should be reorganized. For example, “digital dialogue with the general practitioner” was implemented on January 1, 2016, the online survey was conducted from November 14 to 28, 2017, and data analysis was performed from January 2017 to April 2018. Furthermore, 20% coverage among GP offices was reached in December 2018. This information was intermixed and requires clarification.

Re: As suggested, we have restructured the information about implementation in the Background section as follows:
“The four services were introduced simultaneously in September 2014 and tested by selected GP offices. Following a pilot stage, the «Digital dialogue with the general practitioner» was implemented nationwide in 2016. Its use by GPs is not mandatory. By December 2019, these services were offered via the national health portal helsenorge.no by a total 386 GP offices (out of 1,542 offices) which volunteered as early adopters”.
We have also reorganized the information about data collection in the Methods section as follows:
“We conducted an online survey of citizens who had activated their personal account at the national health portal helsenorge.no and accessed at least one of the digital health services with the GP by November 2017. The survey was available after secure login on the national health portal helsenorge.no from November 14, 2017 to November 28, 2017. All active users received an invitation through a pop-up window with a brief description of the study and a link to the survey.”
We have also moved the information about data analysis at the beginning of that section:
“Data analysis was performed by the Norwegian Centre for E-health Research from January 2017 to April 2018.”

1-1. Please clarify whether the Norwegian government initiated the four e-health services simultaneously or launched some services later.

Re: We have added the information that: “The four services were introduced simultaneously in September 2014 […]”.

1-2. Page 5, line 2: In December 2018, that there were a total of 293 GP offices (out of 1,542) meant that only 1,542 GP offices provide primary care services in Norway. However, I suppose that GP offices may be more numerous (the Commonwealth Fund website states that “there was an average of 1,127 patients per GP in 2015 in Norway”). Do I misunderstand this information?

Re: A GP office is often organized as a practice with some (e.g. 5-6) GPs. GP offices can also be smaller and even run by one GP only (typical in rural places). As we did not have the detailed information about the number of GPs adopting the services, we chose not to report that information.

1-3. Page 8, line 22: A specific tariff for e-consultation was introduced in July 2016; what is its effect on patients and physicians? Have patients been required to pay more to use e-consultation since then?

Re: As explained above, we have now clarified that the services were first introduced in September 2014 and tested by selected GP offices, and then implemented nationwide in 2016 (when the tariff was introduced).

2. The authors mentioned that the purposes of the study included collecting user characteristics, including sex, age, education level, health-related background, and computer literacy. However, the results only focused on age and gender. Can the authors elaborate on the participants’ backgrounds gathered from the online survey?

Re: The results as reported in Table 1 as well as in the text of the manuscript include data on gender, age, education, health-related background, data literacy, and work status. Such results are also further elaborated in the Discussion.

2-1. Little information was provided on health-related background and computer literacy; can the authors elaborate?

Re: The variables health-related background and data literacy are defined in the manuscript based on the possible answers as reported in Table 1, which is self-explanatory. Health-related background is a dichotomous variable (yes/no). The level of data literacy can be far below average, below average, average, above average, and far above average. As a consequence, we decided not to add additional information in the manuscript which is already provided in tables.

3. Regarding the time spent, I presume that the distributions are skewed, and I suggest providing the median and drawing the distribution of time spending between three groups (for example, e-booking and phone).

Re: As requested, we have now provided all the medians for the time spent using the four digital health services as well as their alternatives.

4. Page 10, line 24: Answers categorized as “negative” were more diverse than those categorized as “positive.” I do not understand how the authors gathered information from open-ended text for categorization into positive or negative answers.

Re: As explained in the manuscript, answers categorized as “positive” included perceived benefits and good user experiences, while answers categorized as “negative” included perceived disadvantages, poor user experiences, suggestions for service improvement. It was overall quite immediate to understand whether an answer was intended to provide a positive experience or a criticism.

5. Does the author have information related to physician characteristics? This information would be useful for discussing policy implementation for e-health services because although we understand that those who used e-health services were young with high computer literacy, who is willing to provide the e-health services?

Re: Since the survey was oriented towards patients, and data collected were completely anonymous, we did not have any detailed information related to the characteristics of GPs or GP offices. Such information was also beyond the scope of the study.

6. Are electronic prescription services applicable to renewals or refills?

Re: As the name of the service suggests, the electronic prescription renewal is used for renewals of prescriptions. Some prescriptions might authorize a certain number of refills. Refills, however, are linked to the prescription itself, rather than to this service in particular. That is, through the service patients can get their prescriptions renewed electronically rather than at the GP office, regardless from refills. We do not provide any information about refills in the manuscript as this is not necessary to the reader.

7. We understand that selection bias occurred in the online survey. Therefore, what type of information can be extracted from it to improve e-health services when we do not have information on barriers for those who did not use e-health services?

Re: As acknowledged in the Study strengths and limitations: “the services are initiated directly by patients who, as early adopters, could be more inclined to use the services”. Still, the aim of the present study was to explore patients’ use and experiences with e-consultation and other digital health services with their GP implemented in Norway. As such, the study focused on respondents who used the services. On the contrary, exploring barriers for not using the service was beyond the scope of the study and would require a different design. Moreover, users who responded to this survey also have criticisms, which we analyzed systematically to extract useful information on how to improve the service.