

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Google Search Histories of Patients Presenting to an Emergency Department: an Observational Study
AUTHORS	Asch, Jeremy; Asch, David; Klinger, Elissa; Marks, Justine; Sadek, Norah; Merchant, Raina

VERSION 1 – REVIEW

REVIEWER	Reviewer name: Martin Nordberg Institution and Country: Dept. Clin sci and Edu, Södersjukhuset, Karolinska Institutet, Sweden Competing interests: None
REVIEW RETURNED	17-Jul-2018

GENERAL COMMENTS	<p>Thank you for the opportunity to review this manuscript and congratulations to a innovative and interesting study!</p> <p>I have some comments on the study and the manuscript, which I think should be addressed by the authors:</p> <ol style="list-style-type: none"> 1. The abbreviation "EMR" is written out only in the abstract, and not in the main text 2. Page 7, line 30: "Searches occuring seven days before...", it is not clear to the reader if this means within seven days before the ED visit or only day seven before the ED visit. This is clarified in the abstract and later in the main text, but for the sake for readability I would recommend to clarify this already this early in the text. 3. Page 7, lines 28 and 37: Kappa-values should be presented in the Results section. 4. Page 8, line 34: "Eighty six patients made searches in the seven days before...", this seems as an oddly low number (approx. 25 % of the participants did not make ANY google search for 7 days?). I think this fact should be problematized in the Discussion section. 5. Page 9, line 12: "first effort to link internet search histories to medical records...", please see McCarthy, D. M., et al. (2017). "What Did You Google? Describing Online Health Information Search Patterns of ED patients and Their Relationship with Final Diagnoses." West J Emerg Med 18(5): 928-936. My recommendation is that McCarthy et al is included in the references and their findings discussed in the manuscript at hand. Line 12 on page 9 should also be revised according to the study mentioned above. 6. Page 9, line 17: "expressed concern for privacy in internet settings". What concerns? And expressed by whom? Please clarify. 7. Page 9, line 25: "search data reflect what they want to know". What does this come from? How do we know that search data truly reflects what people want to know? Are there studies on the matter? If so, please add references, otherwise please revised the sentence.
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	<p>8. Page 9, line 50: "invisible gaps in patients' understanding", VERY interesting finding! This is almost worth a study of its own.</p> <p>9. Page 10, lines 15-16 and 52-53: Both sentences on these lines are very speculative, and I suggest the authors moderate this for the sake of seriousness.</p> <p>10. Page 11, line 23: "use of social media", is not a matter adressed in this study. I suspect this is a sentence left from earlier versions of the manuscript (?).</p> <p>11. Page 11, line 28: "and perhaps more...", is again speculative, with, to my knowledge, no fact to back it up. I suggest this is also moderated.</p> <p>12. Page 16 (and pages 6 and 8): The discharge diagnoses (DD) presented in Table 1 are interesting, but more interesting, in relation to google search history, are the presenting complaints (PC). I think this matter is deserve more coverage in the study at hand. My opinion is that the manuscript would be improved if the authors presented a sub-analysis of search history in relation to PC; what were the search differences between those presenting with GI symptoms compared to those with neurological symptoms, for example? This matter should also be adressed in the Discussion section; what are the differences between choosing PC instead of DD as variables in studies on search patterns of ED patients? What are the implications? What is feasible?</p> <p>13. Concerning participant consent, I miss a somewhat more thorough description; was the consent oral or written? How was the study presented to the participants?</p> <p>I sincerely would like the the authors reply on the matters above and revisions made to the manuscript.</p>
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REVIEWER	<p>Reviewer name: James Raftery Institution and Country: University of Southampton, UK Competing interests: None declared.</p>
REVIEW RETURNED	27-Sep-2018

GENERAL COMMENTS	<p>This interesting study raises more questions than it answers. It concludes that patients were prepared to allow access to their google searches and these were health relevant. The implications of this are left unclear. What might be the added value of an ED or other health facility to have such access? How might the data "suggest opportunities and to anticipate and improve health care utilisation in advance of ED visits"?</p> <p>How specific is the finding to ED and the US? Applied to current UK debates on A&E, the question would have to do with potential to avoid an attendance. And is it not odd that people were doing searchers in advance before visiting an Emergency Department. Surely some, perhaps even most emergencies are not foreseen.</p> <p>The aim of the paper is not clear. It poses three questions to do with data sharing, variation in searches and content of searches. While the first is reasonable and well answered, the others seem less thought through.</p> <p>As a result the discussion is limited. And generalisability is left unclear.</p> <p>Major revision is required for this interesting if minor piece of work to maximise its contribution.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Martin Nordberg

Institution and Country: Dept. Clin sci and Edu, Södersjukhuset, Karolinska Institutet, Sweden

Please state any competing interests or state 'None declared': None

Thank you for the opportunity to review this manuscript and congratulations to a innovative and interesting study!

Thank you for taking the time to review this manuscript. You have given a large amount of useful feedback and we hope we have addressed these comments below.

I have some comments on the study and the manuscript, which I think should be addressed by the authors:

1. The abbreviation "EMR" is written out only in the abstract, and not in the main text

We have changed the wording to EMR instead of "medical record" or "electronic medical record" throughout the paper for consistency.

2. Page 7, line 30: "Searches occurring seven days before...", it is not clear to the reader if this means within seven days before the ED visit or only day seven before the ED visit. This is clarified in the abstract and later in the main text, but for the sake for readability I would recommend to clarify this already this early in the text.

Good point. We changed the wording to make it clearer that the data were analyzed for the entire week and not a single point in time.

The methods now includes: "Searches occurring within seven days before their recruitment visit to the ED were further coded into more granular themes."

3. Page 7, lines 28 and 37: Kappa-values should be presented in the Results section.

We moved the calculation to the appropriate section.

4. Page 8, line 34: "Eighty six patients made searches in the seven days before...", this seems as an oddly low number (approx. 25 % of the participants did not make ANY google search for 7 days?). I think this fact should be problematized in the Discussion section.

We have added some clarification and removed these 164 participants from the analysis and updated the consort. 164 participants had no data at all which in turn lowers our rate of patients who had data in the final 7 days. This had to do with the way data were collected. After the study concluded, Google changed the format of the download process. With this change, it is possible to tell if a person has data prior to an attempt at downloading. If this study were to be redone or expanded on, participants like those 164 who in fact had no data would have been recognized as ineligible at the start and excluded, the rate of null data from participants should drop dramatically.

5. Page 9, line 12: "first effort to link internet search histories to medical records...", please see McCarthy, D. M., et al. (2017). "What Did You Google? Describing Online Health Information Search Patterns of ED patients and Their Relationship with Final Diagnoses." West J Emerg Med 18(5): 928-936. My recommendation is that McCarthy et al is included in the references and their findings discussed in the manuscript at hand. Line 12 on page 9 should also be revised according to the study mentioned above.

We added this study as a reference. We believe our statement is still accurate as the McCarthy et al. study did not specifically download the Google searches of patients. In the McCarthy et al study, participants were asked to self-report what they searched for which produced very different outcomes. It however does show some interesting comparisons to what patients report searching for against their actual search data.

6. Page 9, line 17: "expressed concern for privacy in internet settings". What concerns? And expressed by whom? Please clarify.

Thank you for pointing out this need for additional clarity. We added some clarification. We believe that with the increased news regarding data breaches and privacy in the U.S. people would be more reluctant to share their online data.

The discussion now includes the statement "The high rates of participation may be surprising against a backdrop of expressed concern for privacy in internet settings and in health care settings after the Equifax breaches and issues regarding Facebook and Google's handling of user data." We also added the following reference:

10. Mahmoodi J, Čurdová J, Henking C, Kunz M, Matic K, Mohr P, et al. Internet Users' Valuation of Enhanced Data Protection on Social Media: Which Aspects of Privacy Are Worth the Most? *Frontiers in psychology*. 2018;9:1516-.

7. Page 9, line 25: "search data reflect what they want to know". What does this come from? How do we know that search data truly reflects what people want to know? Are there studies on the matter? If so, please add references, otherwise please revised the sentence.

We agree with the reviewer. While we cannot truly know what someone's intentions are when they search, we are making the assumption that if someone makes a search, they want to know about their query. We have revised the discussion to include

"search data reflect what presumably they want to know"

8. Page 9, line 50: "invisible gaps in patients' understanding", VERY interesting finding! This is almost worth a study of its own.

We also found this incredibly interesting and hope to expand on it in a later study.

9. Page 10, lines 15-16 and 52-53: Both sentences on these lines are very speculative, and I suggest the authors moderate this for the sake of seriousness.

We have revised this language significantly and added this citation

11. Libert T, Grande D, Asch DA. What web browsing reveals about your health. *BMJ*. 2015;351.

10. Page 11, line 23: "use of social media", is not a matter addressed in this study. I suspect this is a sentence left from earlier versions of the manuscript (?).

We have changed the phrase from "social media" to "search histories."

11. Page 11, line 28: "and perhaps more...", is again speculative, with, to my knowledge, no fact to back it up. I suggest this is also moderated.

We have removed the statement.

12. Page 16 (and pages 6 and 8): The discharge diagnoses (DD) presented in Table 1 are interesting, but more interesting, in relation to google search history, are the presenting complaints (PC). I think this matter is deserve more coverage in the study at hand. My opinion is that the manuscript would be improved if the authors presented a sub-analysis of search history in relation to PC; what were the search differences between those presenting with GI symptoms compared to those with neurological symptoms, for example? This matter should also be addressed in the Discussion section; what are the differences between choosing PC instead of DD as variables in studies on search patterns of ED patients? What are the implications? What is feasible?

We agree. We mainly focus on the PC throughout the paper and made the mistake of including the DD in its place in our final version. We have added to Table 1 the presenting complaint in place of the DD.

13. Concerning participant consent, I miss a somewhat more thorough description; was the consent oral or written? How was the study presented to the participants?

We have added clarification to the methods section to include more descriptive statements on where patients were recruited (written consent) and how.

We added to the methods

“Eligible patients were approached while they were a patient at the Emergency Department”

And

“All patients provided written consent to be considered eligible.”

I sincerely would like the the authors reply on the matters above and revisions made to the manuscript.

Best regards,

Martin Nordberg

Reviewer: 2

Reviewer Name: James Raftery

Institution and Country: University of Southampton, UK

Please state any competing interests or state 'None declared': None declared.

This interesting study raises more questions than it answers. It concludes that patients were prepared to allow access to their google searches and these were health relevant. The implications of this are left unclear. What might be the added value of an ED or other health facility to have such access? How might the data "suggest opportunities and to anticipate and improve health care utilisation in advance of ED visits"? How specific is the finding to ED and the US? Applied to current UK debates on A&E, the question would have to do with potential to avoid an attendance. And is it not odd that people were doing searches in advance before visiting an Emergency Department. Surely some, perhaps even most emergencies are not foreseen.

Thank you for your thoughtful suggestion. This study was conducted entirely in the U.S.; Our assumption is that the search patterns of patients who are seeking care maybe translatable across geographic regions but we did not specifically study this. This would be an interesting area of focus for a future study.

We agree that emergencies are often not foreseen although sometimes individuals present after symptoms have been smoldering and then become acute. Some individuals also use the ED for general care because they don't have access to other care. We have added some text to highlight the differences in care.

"Participants often searched for health-related topics multiple times prior to making the decision to visit the hospital. These findings suggest an ability to anticipate demand even for patients visiting the ED."

The aim of the paper is not clear. It poses three questions to do with data sharing, variation in searches and content of searches. While the first is reasonable and well answered, the others seem less thought through. As a result the discussion is limited. And generalisability is left unclear.

We have added more clarification to the methods and discussion which have hopefully have made the study outline and goals clearer.

Major revision is required for this interesting if minor piece of work to maximise its contribution.

FORMATTING AMENDMENTS (if any)

Required amendments will be listed here; please include these changes in your revised version:

- Please remove figure 1 in your main document and it separately under file designation 'Image' (except tables and please ensure that Figures are of better quality or not pix-elated when zoom in). NOTE: They can be in TIFF or JPG format and make sure that they have a resolution of at least 300 dpi and at least 90mm x 90mm of width. Figures in PDF, DOCUMENT, EXCEL and POWER POINT format are not acceptable.

We have removed Figure 1.

- Please embed your DATA SHARING STATEMENT in your main document file as shown in ScholarOne.

Below is now added.

Data Sharing Statement: Because of the potential identifiability of participants through either their search histories or their EMR information, data will not be shared.

- Please provide a detailed contributorship statement. It needs to mention all the names/initials of authors along with their specific contribution/participation for the article.

The contributorship statement is included

- Patient and Public Involvement:

Authors must include a statement in the methods section of the manuscript under the sub-heading 'Patient and Public Involvement'.

This should provide a brief response to the following questions:

How was the development of the research question and outcome measures informed by patients' priorities, experience, and preferences?

How did you involve patients in the design of this study?

Were patients involved in the recruitment to and conduct of the study?

How will the results be disseminated to study participants?

For randomised controlled trials, was the burden of the intervention assessed by patients themselves?

Patient advisers should also be thanked in the contributorship statement/acknowledgements.

If patients and or public were not involved please state this.

The manuscript includes:

Patient and Public Involvement

No patients were involved in the study design nor in the recruitment plans for this research. There are no plans for dissemination of the outcomes of this research to the patients.

VERSION 2 – REVIEW

REVIEWER	Reviewer name: Martin Nordberg Institution and Country: Karolinska Institutet. Sweden Competing interests: None declared
REVIEW RETURNED	01-Dec-2018

GENERAL COMMENTS	Well done.
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REVIEWER	Reviewer name: James Raftery Institution and Country: University of Southampton, UK Competing interests: None declared
REVIEW RETURNED	30-Nov-2018

GENERAL COMMENTS	None
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