

A case study to explore patients' views on the use of an online system for eliciting medical histories from patients in primary dental care

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AIM

To explore patients' experiences of using the Patient Portal Medical History (PPMH) system and investigate how the system can be used to improve patient care

LEARNING OBJECTIVES

- To gauge patients' perspectives on the use of the PPMH
- To describe the implications of the findings for improvement of the PPMH

- To discuss how communication between patients and dental professionals can be improved

LEARNING OUTCOMES

Readers will understand the findings of the study and appreciate how these can be employed for reflection and application to their own practice to improve the taking of medical histories.

Aligned with GDC development outcomes: A, C, D

ABSTRACT

Background

Obtaining an accurate medical history from dental patients is vital for the provision of successful dental treatment. This is often undertaken utilising an online form. Little data exists about patients' perspectives of using these forms or their effectiveness in taking medical histories.

Aim

The aim of the study was to explore the effectiveness of the Patient Portal Medical History [PPMH] system as a means of collecting dental patient medical history data and to suggest how dental professionals can use this system to improve patient care.

Method

A qualitative case study utilising six semi-structured Zoom™ interviews. Interview transcripts were thematically analysed.

Results

Analysis identified three interdependent themes which

might increase the effectiveness of patient completion of online PPMH: [1] ease of use of the system; [2] patient confidence in data handling; and [3] patient confidence in correct data use.

Conclusion

Whilst the results of this small qualitative study cannot be generalised, the outcomes nevertheless offer indicative insight and are useful in terms of highlighting: [1] the benefits of a patient consultation when seeking to introduce or improve patient facing technology; and [2] exploring some of the reservations that impact on patients fully disclosing their medical history. This study identified how the effectiveness of the PPMH could be improved through reviewing and developing its content, reassuring patients regarding data security and educating patients to understand their medical histories in more detail. Although the study has limitations, it may be useful to others interested in this area that, for the participants involved, the PPMH was considered most effective when used to support a dental professional and patient verbal dialogue.

KEY WORDS

Dental, online, medical history, patient's perspective

Introduction

Obtaining and understanding a patient's medical history (MH) is crucial to delivering safe dental treatment.¹ Registered dental professionals [DPs] are trained to take MHs during their initial

pre-registration training.² Failure to take a MH is grounds for removal from the General Dental Council [GDC] register.³

In England, the population is ageing with around 75% of 75-year-olds having more than one long-term medical

condition⁴ and many taking multiple medications.⁵ As they cannot gain access to a patient's medical records, DPs therefore rely on patients to accurately self-report their MH.⁶ Inaccurate recording of a patient's MH may negatively impact any treatment provided, and could cause harm to a patient. Subsequently, this may also lead to complaints⁷ and litigation against the clinician.⁸ The GDC has reported a rise in complaints⁹ due to failure to maintain patient records, which included the taking of MH.¹⁰

The Faculty of General Dental Practice [UK] guidelines¹ advise that dental practices ask patients to fill in a medical history form [MHF], prior to a medical history interview [MHI] at the chairside. However, the validity of self-reported MH on a form has long been questioned by dental patients.¹¹ Ultimately, despite following guidelines, the accuracy of the MH is not certain as patients frequently fail to include all their MH.¹² A recent study found that 15.1% (n=62) of patients misreported their diabetes condition, while 29% (n=263) of patients with hypertension did not report this to their dental clinicians.⁶ This may result in negative outcomes for patients.

There are many different types of MHF available for use in dentistry.¹ During the COVID-19 pandemic, dental practices were encouraged to use an online MHF called the Patient Portal Medical History [PPMH].¹³ Adopting the PPMH created a new challenge for the dental team [DT] and patients alike, due to poor enrolment in the PPMH and patients not reporting their full MH. The effectiveness of an online format is therefore open to question.

There is little research on patients' perspectives of the usability of the Electronic Recording System in hospital settings, including in a cardiology step-down unit¹⁴ and an emergency department.¹⁵ There is currently no research available on dental patients' perspectives of using the PPMH.

Aim

To explore patients' experiences of using the PPMH as a means of collecting dental patient medical history data and to suggest how the system can be used to improve patient care.

Methodology

A qualitative case study conducted from a relativist constructivist perspective was undertaken. Ethical approval was granted by the University of Kent Ethics Committee. Data were collected from six selected consenting private patient participants via semi-structured, approximately 45-minute, recorded Zoom™ interviews. Pseudonyms [P]1-6 were used to preserve participant anonymity.

Thematic analysis [TA] was conducted using a four-stage model.¹⁶ Interviews were professionally transcribed, and participants checked the accuracy of the transcripts prior to TA commencing. The coding and theming of the analysis were inter-rated between the authors.^{17,18} The final analysis was checked and confirmed by the participants to ensure they had not been misinterpreted or misrepresented.

Results

Three themes emerged following TA:

Theme 1: Ease of use of the PPMH

This was defined as the factors affecting the ease with which

participants could use the online system. All participants reported that using the online MHF was easier than using a paper form:

"Typing is a lot quicker than writing..." [P4]

All participants found it more convenient to fill in the MHF in advance and complete their personal details in a private space prior to their appointments, for example:

"This will save time [as I don't] need to arrive [at] the practice earlier." [P5]

"If you were filling it in the waiting [room]...you might be under pressure..." [P1]

Participants found the PPMH easy to use and were astonished to hear that the majority of patients still did not use it. They suggested that there was value to be gained by raising awareness among any patients who did not yet use the PPMH.

"I think you need to do a bit of a PR job on it." [P6]

Participants used the PPMH but suggested an introduction would make it more inviting at the start, such as:

"This is very important for the dental people to protect patients. Please share your answers?" [P5]

"Your information is now fully encrypted, you know, impossible to be hacked." [P6]

"It would be helpful if there is a bit of guidance in terms of, like, what is expected of me to write." [P4]

Furthermore, some additional technical features were suggested such as using a mouse hover to help patients understand medical questions:

"The mouse coming over the word, I think it's easier..." [P5]

Some participants suggested a computerised translation system to avoid potential language barriers:

"The form offered in a variety of different languages." [P1]

Even with these changes, some patients may still need human assistance:

"You or a receptionist, can help them fill in the form by talking to them." [P4]

Some participants preferred to talk to DPs and said that the technology could not replace the patient-DP relationship. However, some participants observed that DPs' time constraints impacted on dialogue during the appointment:

"They [patients] just want a bit of a conversation, don't they? But it's all time isn't it and while you're doing that you can't be doing something else." [P3]

Theme 2: Confidence in data handling

This theme was defined as participants' concerns over data security, integrity and accessibility. All participants agreed that receiving a verification code from their dental practice gave them confidence to use the online MHF. However, some were cautious and suggested informing patients that they would receive a link:

"There is a message telling me, 'You should expect a link from us.' That is when I feel a lot more secure." [P4]

Trust in data security encouraged participants to share their MH, for example:

"I'm prepared to disclose everything because I'm trusting you that you will use it appropriately." [P6]

Theme 3: Confidence in Correct Data Use

This theme was defined as the participants expressing concern about how medical information would be used by DPs to support their dental treatment. Most participants were willing to answer all questions in the PPMH whether or not they could see a connection to their oral health. Some participants thought that more guidance for each question would help to educate patients about what MH was relevant to declare, and to whom they should declare it:

"Giving people a few pointers ... what's minor and what's not... do we need to fill all [since childhood] that in for a dental visit... I don't know whether the expectation... is ... to tell the practice, the receptionist... the dentist or whoever... that something has changed on your medical record." [P1]

Some participants were hesitant to divulge social habits such as alcohol and drug use without an explanation in the PPMH of their relevance to dentistry:

"There's no context of why it ... would matter?" [P2]

Participants also feared that divulging some conditions might lead to discrimination by the DPs:

"I don't want to tell them I've got HIV [if I had it] because that's kind of private... how is it going to have an outcome [to receive fair treatment]?" [P2]

Participants mentioned that the PPMH was not a substitute for face-to-face communication to clarify any questions they might have:

"It's those things that I think you only get when you talk to the dentist." [P5]

After sharing their MH, some participants noticed that they did not receive any acknowledgement from DPs that the form had been read and they had given sufficient information:

"Does anybody actually check it [collected medical information] before the appointment?" [P3]

Participants were reluctant to provide information if it was not used:

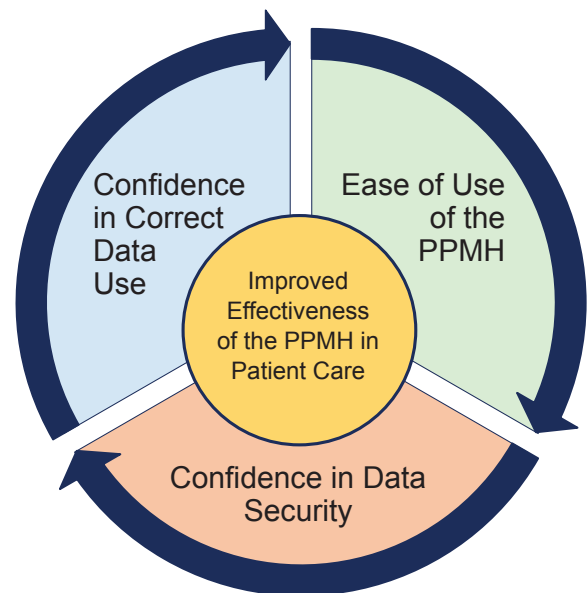
"If nobody looks at it, why bother to answer questions, why bother capturing it?" [P2]

Some participants thought that patients may be reluctant to trust the system enough to divulge MH fully if DPs did not review and discuss their existing data with them in person:

"Well, that's a little bit paying lip service... it's almost like, "We've got to ask about the medication, so we'll do it here but we're not that interested." [P6]

Some also felt that they had not been 'listened to' with sufficient empathy by DPs:

"These are quite big things for people [to share the MH]. I was more committed to it. I might be wrong... I don't recall having a discussion about my form." [P6]



■ **Figure 1: Inter-dependency of the themes**

Discussion

These results present the views and experiences of six private patients using the PPMH in a mixed dental practice and, as such, are not considered to be representative of all dental patients. Nevertheless, the outcomes of the study may have applicability to DPs interested in patient views and experiences regarding the use of computerised forms of MH taking in dental settings.

Patients' Willingness to Provide Comprehensive Data

The study found that to enhance patients' confidence in using the PPMH, it is necessary to ensure its ease of use and provide reassurance to patients that their data will be held securely. Although all participants in this study found the PPMH easy to use, they identified ways to improve the system, such as adding hyperlinks to descriptions of medical conditions and translating into multiple languages. These ideas are consistent with national guidelines, highlighting the fact that some individuals may need extra guidance to complete their MH.¹

Additionally, the study found that participants hesitated to divulge what they perceived to be stigmatised MH (e.g. HIV) and social habits. This is consistent with the published literature, where it has been shown that the misreporting of MH is sometimes related to patients not understanding the relevance of their condition to dentistry, or concerns (no matter how unfounded) about discriminatory practice by the DP.¹⁹

Patients should be reassured that their data will be handled securely by trained DPs, following General Data Protection Regulations²⁰ and used for the provision of fair dental treatment protocols for all patients. The PPMH could be customised to provide this information. Such refinements could lead to both improved patient confidence in the system and greater disclosure.

Improved Dialogue with DPs

This study found that for most effective use of PPMH, the technology should be used to enhance, rather than to replace, dialogue with DPs. Participants pointed out that the information is only useful if it reaches the DPs and is used to inform their

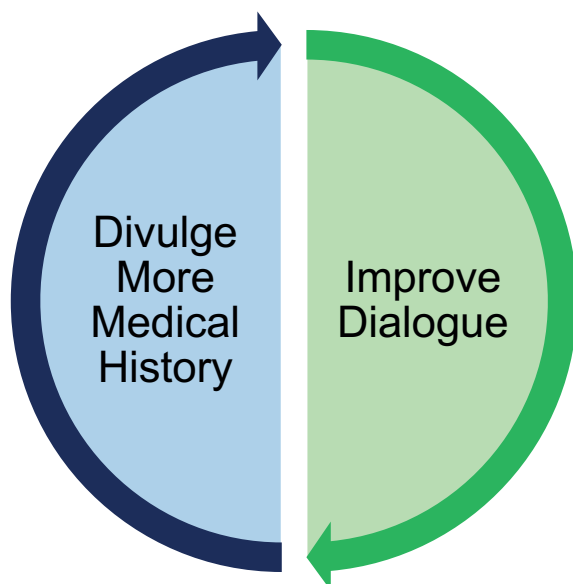
treatment. An established finding²¹ remains the basis of practice guidance, DPs should read the patient's self-reported PPMH and complete their MH through verbal enquiry.

The study showed that participants wished to discuss their MH in a face-to-face collaborative dialogue with DPs, which echoes existing dental literature guidelines.¹ This also aligns with the results of a previous study²¹ where it was found that the most accurate information is gained when DPs, as with other health professionals, discuss and verify the contents of a PPMH or similar document face-to-face. This suggests that, to initiate and improve dialogue with patients, the self-reported PPMH should be used by DPs to guide the MHI and educate patients as to the importance of their MH. Similar to other findings in the literature,²² patients need to be notified that DPs use updated MH data for clinical decision making to provide them with safe treatment.

Building Trust to Assist Full Disclosure

This study also found that the PPMH could be used to build trust and assist DP-patient relationships, to achieve fuller patient MH disclosure. The findings of a previous study²³ showed that patients prefer to communicate their sensitive MH in person because of concerns about internet safety. However, in this study, although all participants declared their confidence in data security, they still appreciated a dialogue with DPs in order to establish a rapport and build trust. Participants emphasised the sensitivity of sharing their MH and that they expected to be listened to empathetically. Patient satisfaction could be improved through patient-centred communication, using patients' self-reported PPMH as a prompt to stimulate conversation.

It has been found that the process of an MHI, supported by a PPMH, is an opportunity to foster rapport with patients,²⁴ which may encourage confidence in the DP and reassure the patient to divulge their full MH. From this study, it was possible to identify a 'virtuous circle' (Fig. 2) that the continuous process of improving dialogue in turn builds trust between the DP and patients and thus encourages full and detailed disclosure by patients. This improves the dialogue between the DP and the patient, and in turn improves the future completion and therefore the overall effectiveness of the PPMH.



■ **Figure 2:** A model of The Virtuous Circle to improve effectiveness of the PPMH

Further Training for DPs

Throughout the study, the importance of patient-centred communication was highlighted. This may require, as identified elsewhere in literature and guidelines,^{3,25} that DPs complete further training to update their skills in conducting MHIs.

This study found that patients may believe that DPs do not have enough time to discuss MH with them. These results are consistent with other studies where it was found that time constraints placed on DPs regarding depth of dialogue with patients, impacts on patients fully reporting MH.²⁶ It has been suggested that this can be addressed by adopting an interprofessional approach involving other members of the dental team,²⁷ such as trained dental nurses and the reception team,²⁸ rather than relying solely on the clinical DPs to conduct the process. The data collected will be used for clinical decision making by clinical DPs. However, this approach should be introduced to patients face-to-face and they ought to be told that this will occur at their next appointment.

The participants were surprised at how few patients used the PPMH and attributed this to poor advertising of the system. It has been found previously that patients become regular users of a new technology, such as the PPMH, if it is recommended by healthcare workers.²⁹ This indicates the importance of a whole DT approach for using the PPMH. These results are consistent with other studies that have found that the DT must be trained to have confidence to recommend the system³⁰ by understanding the effectiveness of the PPMH, and their responsibilities to support patients to use the system,³¹ encouraging patients to fully divulge their MH before being treated in the dental practice.

In summary, enhancement of the three themes: ease of use of the system; confidence in data handling; and confidence that data will be used correctly, all contributed to a positive patient experience and supported full disclosure of their MH to improve patient care.

Conclusion

This study was small-scale and only included patients from one private practice who were already using the PPMH, so the outcomes cannot be used to make generalisable claims for all patient experiences. By the nature of the study, the applicability to different dental practices is limited, however the outcomes did highlight a few interesting points which may be useful to others in practice using similar systems: [1] the PPMH is helpful but usability can be improved and patients reassured that data will be kept securely and used to enhance their care; [2] The PPMH is an aid to, not a substitute for, the DP-patient relationship; [3] DP-patient dialogue is key to building relationships and motivating patients to divulge their MH in the PPMH and face-to-face; [4] Improved dialogue with the DPs leads to fuller completion of the PPMH and vice versa, forming a virtuous circle; and [5] there is a need for comprehensive dental team training prior to implementing new patient facing technology.

Recommendations

- Conduct a larger quantitative based survey to assess the generalisability of conclusions across a wider range of patients in the practice.
- Patient experiences offer perspective and a rich source of information that can assist in refining and customising initiatives, from software to processes, to ensure patient needs are more fully met.

- Market new initiatives so that patients fully understand and 'buy into' the innovation and changes being introduced.
- Ensure that the all members of the dental team are fully trained, from data security to the necessary skills to communicate with patients, and are able to offer support to patients using, in this case, the PPMH.

Acknowledgements

The research was undertaken as part of a self-funded MSc dissertation. The researcher would like to thank the participants.

Conflict of interest

Neither author is aware of any conflict of interest.

There was no funding for this study as it was part of the lead author's MSc.

Authors contribution

1. MM designed and composed the project proposal, collected and analysed the data and is first author.
2. DR was the academic supervisor of the study and was involved in supervising its execution and analysis of the data and guided writing the drafts and final version of the study report and this paper.

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Peer reviewed: Accepted 16 March 2023