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Patient experience of the Electronic Health Record (EHR) in a maternity unit in Ireland

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Abstract

The introduction of the Electronic Health Records (EHRs) for maternity services in Ireland provided an opportunity to examine patient satisfaction and to examine what patients require from an Electronic Health Record. The implementation of the EHR in Ireland started in 2016, and at present, four of the 19 maternity units are digital. Patients at antenatal booking visits in an Irish maternity unit were invited to participate in the project. The invite was taken up by 201 women. The survey took 10-15 minutes to complete. The survey was conducted nine months following the implementation of the MN-CMS. The survey was anonymous and was divided into three distinctive sections; participant information, regarding the staff encounters on their visits and questions about the new system. 70% of participants rated their overall consultation from very good to outstanding. 73% of participants believe the computer system will ensure quality of care. Participants believe their personal information is safe (65%) in the new computer system. Over 75% of participants did not have any concerns regarding the new computer system. Eighty-one percent of participants noted that they would like access online to their charts and 91% of these respondents would like access to the full chart. Patients in this study were very receptive to the introduction of EHR and noted that it would be beneficial for their care. They also noted the impact the EHR could have on clinic time and interactions with staff. However, patients require access to their charts this they believe would provide them with ownership of their health.

Keywords

Patient satisfaction, patient experience, electronic health records

Introduction

Electronic Health Records (EHRs) provide clinicians the opportunity to ensure care is patient centred. EHRs can be accessed at any time by multiple users, they allow data to be transferred easily and provide for a complete overview of the patient, including information from the whole multidisciplinary team. This ensures accurate information is available at the time of all patient interactions. Local policies as well as national guidelines can be accessed through the chart.¹

The last number of years have seen a digital boom in new technologies in all aspects of life. Communication between patient and the healthcare professional needs to be maintained and in some situations improved. Patients need to feel they have been heard and that they can speak openly with their healthcare professional. Good communication between healthcare professionals and patients can lead to greater adherence to treatment and improved clinical outcomes.¹ The introduction of the European General Data Protection Regulation 29 (GDPR) in May 2018 ensures patients have the right to control how their data is used. The public consultation for the

introduction of GDPR noted that citizens want greater access to their data and wish their data to be available for treatment and research if appropriate safeguards are put in place.³ This requires IT infrastructure to be developed in conjunction with data protection rules to ensure citizens have the right to access and share their health data.⁴

The Consultation and Relational Empathy (CARE) Measure has been extensively validated and is widely used by doctors in primary care. This model was adapted for this study.²

The introduction of the EHRs for maternity services in Ireland provided an opportunity to examine patient satisfaction and to examine what patients require from an EHR. The implementation of the EHR in Ireland started in 2016 and at present four of the 19 maternity units are digital; the remaining hospitals will go live in a phased manner.

The computer and the use of the computer by the healthcare professional can be seen by some patients as a barrier. The patient may be reluctant to ask questions or voice concerns regarding their care.³ Street et al. examined

thirty-two physicians and 217 patients with a mean visit length of 20.3 minutes, found that physicians clicked the mouse 216 times and spent 8.9 minutes gazing at the screen. At times the clinician may feel under pressure to collect all the data required. They may spend time typing and looking at the screen, altering the doctor-patient interaction; they may then be reluctant to express concerns or ask questions.⁵ Although the implementation of EHRs requires time, issues arise due to the complexity of the data, data entry errors, IT security and confidentiality concerns.^{6,7} Clinician's acceptance of the EHR is important and these key personnel should be highly engaged in the implementation process. Ensuring the staff are kept motivated with prompt feedback and high-quality support contributes to the overall satisfaction of the implementation and thus leading to an overall better patient experience.

Providing patients with access to their health records online has been debated in detail. Research has shown that there are positive benefits to the patient's experience; however, many healthcare professionals still have a number of fears regarding patient access.⁸ These fears include the erroneous interpretation of the results by the patient without clinical input. Security concerns regarding how and who can access the data raises concerns for the staff.⁹ Maternity patients in Ireland had access to the paper records before the introduction of the EHR. A considerable amount of time was given to speaking with patient representatives regarding the removal of the paper record from the women. This decision was not taken lightly, as it is known that women report a greater understanding and a feeling of control when they have access to the health record. Carrying the notes gave women confidence, ensured accuracy of the information and made them feel in control of their own health.⁴ Taking these key elements into consideration, the aim of this study was to assess patient satisfaction and to examine perception of the introduction of the new EHR.

Methods

Pregnant women attending antenatal booking visits in an Irish maternity unit were invited to participate in the project. These women were either attending their first booking visit to the hospital, or any of their appointments between 12 to 39 weeks of their pregnancy. Approximately 230 women were approached to participate in the project. The questionnaire was administered 9 months following the implementation of the MN-CMS in 2016. The survey was a paper-based survey and was conducted by the researcher. The questionnaire was completed by a sample size of 201 patients (women) aged over 18 years. The questionnaire took 10 -15 minutes to complete. The researcher administering the survey timed the participants to see how long the survey took to complete. This was an important element when requesting people to participate

in the study. The questionnaire was anonymous and was non-compulsory. It was divided into three distinctive sections; participant information, questions based on the Consultation and Relational Empathy (CARE) Measure and questions about the new system. Information about the study was provided to the participants.

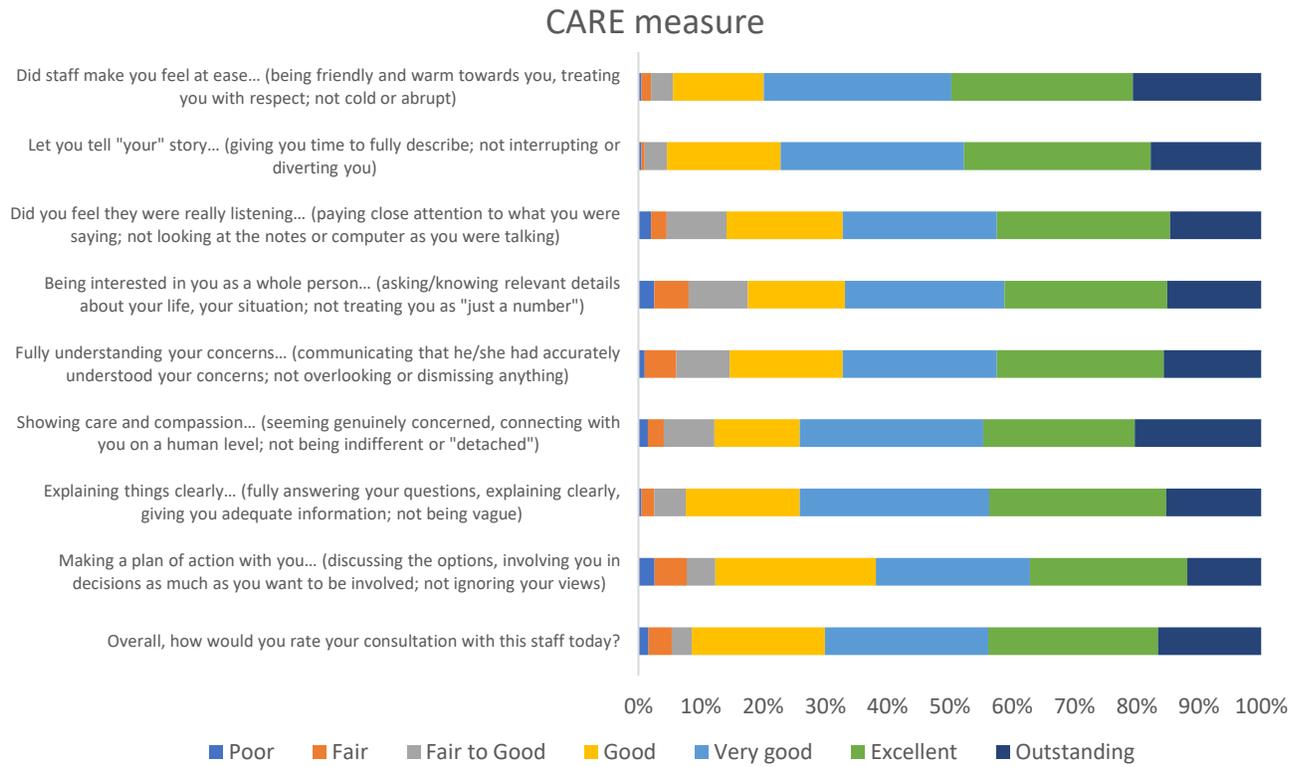
The CARE Measure is a person-centred process measure. Dr Stewart Mercer et al. at the Departments of General Practice in Glasgow University and Edinburgh University originally developed the CARE measure. The scale comprises of 10 questions measuring empathy in the setting of the therapeutic rapport during a one-on-one consultation between a clinician and a patient.^{2,10} For the purpose of this project, a modified version of the CARE measure was used. This was decided because of the population completing the questionnaire. Aspects of the questionnaire for example feeling positive and helping you take control were two questions removed from the questionnaire. For this project we used a 7-point Likert Scale ranging from 'poor' to 'outstanding', generating values between 1 and 7. Overall satisfaction was rated on a Likert scale (from 1 = completely satisfied to 7 = completely dissatisfied). We adapted the CARE Measure to highlight the overall general satisfaction of the patients attending the clinic. From this we were able to get an understanding of how the patients felt about the clinics. The general descriptive baseline allows us to have a reference point for future work.

One-way analysis of variance (ANOVA) was used to compare mean levels of satisfaction between more than three groups, e.g., first-time mothers, women who already had a baby in the unit, women who already had a baby but not in the unit (see Appendix, Supplementary Table 1). The Cork Teaching Hospitals Ethics Committee, University College Cork, granted ethical approval. Descriptive statistics were reported, and all analyses were performed with SPSS 20.0 software (SPSS, Chicago, IL).

Results

A total of 201 questionnaires were collected at antenatal visits. Over 90% of respondents had visited the clinic more than once. Participants were asked a series of questions regarding the staff they encountered on their visit. For this project, we adapted the CARE Measure questionnaire to provide a general description of the patients experience with the HCP attending the clinic (Figure 1).

Overall, the participants were positive about their experience; 70% (n=81) of participants rated their overall consultation from very good to outstanding. The question that showed the most varied responses asked if participants felt staff were interested in them as a whole person (asking/knowing relevant details about your life,

Figure 1. The Consultation and Relational Empathy (CARE) Measure

your situation; not treating you as "just a number"). A reliability analysis was carried out on the perceived task values scale comprising of nine items. Cronbach's alpha showed the questionnaire to reach acceptable reliability, $\alpha = 0.97$. All questions appeared to be worthy of inclusion. There was no variation in mean satisfaction score between first-time mothers, women who already had a baby in CUMH, women who already had a baby but not in CUMH (p-value=0.939).

Mean satisfaction differed by 'Q16, specify' (p-value<0.001). Those who said yes to Q16 were, on average, more satisfied. Their average score was 6.9 (16%) higher than those who said no to Q16. Mean satisfaction differed by 'Q17, specify' (p-value=0.024). Those who were not sure with respect to Q17 were, on average, less satisfied. Their average score was 5.4 and 6.3 lower than those who said yes and no, respectively.

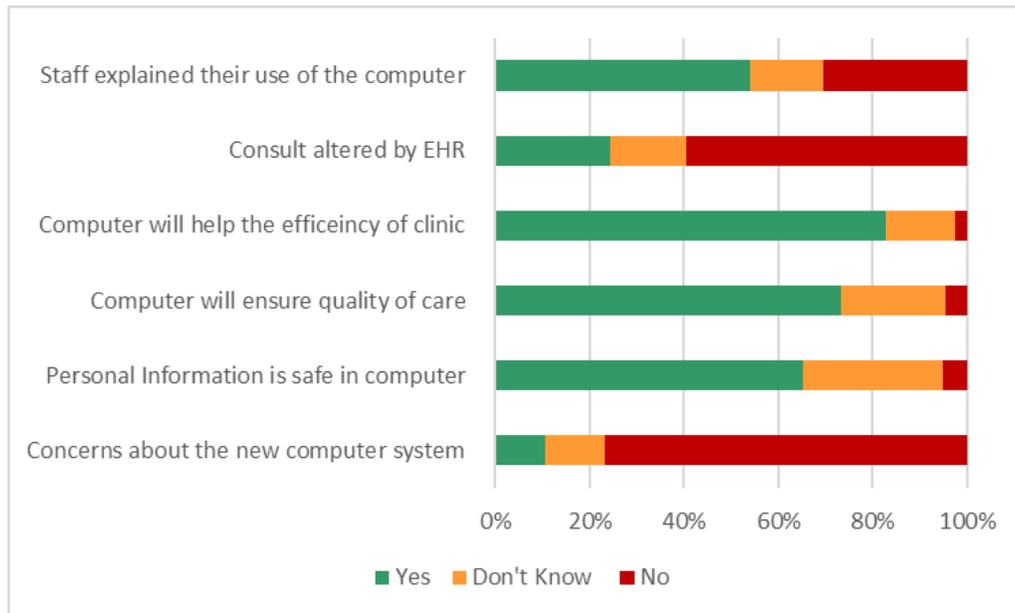
There was no notable variation in mean satisfaction score between women who responded differently to Q18 (p-value=0.860), Q19 (p-value=0.526), Q20 (p-value=0.386), Q21 (p-value=0.314).

The second section asked participants to comment on the new system (Figure 2). Over 53% of staff explained their use of the computer to participants. Nearly 60% of

participants felt their consultation had not been altered by documenting it on the computer system. Nearly 83% of participants felt the efficiency of the clinic will be improved by the computer system and 73% of participants believe the computer system will ensure quality of care. Sixty-five percent of participants believe their personal information is safe in the new computer system with only about 5% noting they would feel it wasn't safe others felt they didn't know. Over 75% of participants did not have any concerns regarding the new computer system.

Participants were asked if it would be helpful if more information was available regarding the computer system. Over 51% of participants felt this would be helpful and responded that the most helpful way to receive this information would be by leaflet (75%), from staff (67%), from their GP (55%) and 45% suggested at antenatal classes. The majority (81%) of participants noted that they would like online access to their charts and 91% of these respondents would like access to the full chart. One participant noted, "Yes I think it is important to be able to have access to my notes after all the information is about me and I have a right to know what's going on." The themes that emerged from the women attending the clinic included access to their chart, new staff and the new system. The comments were complimentary of the staff and the service they provide but at least 15% of the women commented that the clinic

Figure 2. Patient Views on the Implementation of the New System



should be run more efficiently with the introduction of an electronic system. *“Make sure every patient is listened to carefully about their previous birth deliveries, making sure the patient best interest comes first. Any complications that have not been recorded that the staff know that the patient knows more about her health than anyone.”* Some patients noted that more training is required as it had an impact of their appointments and clinic times. *“I think more training needs to be given to staff on how to use the database. My appointment went on for nearly 2 hours as the member of staff clearly did not know how to use it. It was like keep clicking the mouse and hoping something would happen on numerous occasions. I actually took the mouse off her. In the end she had to get another member of staff.”*

Discussion

Patient data is the foundation of the EHRs, their data deserves to be treated with respect, and every effort must be made to ensure the accuracy of the data, including patient review and input. The benefits of EHRs are evident for patients; there is improved documentation, improved patient safety, and staff members may have more time with patients. EHRs offer the potential to reduce risk but do need to be monitored continuously to achieve this outcome.¹¹ The maternity services provides a unique opportunity to develop an interactive, patient driven chart. The MN-CMS (EHR) shows how all aspects of the patient's care are connected, and the multidisciplinary team can use the chart to ensure high-level, safe care. Data is available about the patient from their first encounter until they leave the hospital.¹²

The introduction of EHRs is a complex change management project that requires the patient to be at the centre of the development of the project.⁶ The results of this study are divided into three sections. The first section examines how satisfied the patient was with their visit. This information is important to capture, as it provides knowledge of the perception the patient had of the staff they encountered. The patients were asked a series of questions that showed how they rated the staff. In this study, over 80% of patients rated feeling at ease from very good to outstanding. The move towards patient focussed care is becoming more and more prominent. The core element of the care model is to have the patient at the centre of the care. For patient centred initiatives, it shows that patients' satisfaction with their physician is a marker in health care; it allows for patient compliance and may lead to better health outcomes.¹³

Patient satisfaction is now key for healthcare providers and it is a focus for the industry to examine the quality of the healthcare services.⁴ The EHR may have changed the dynamic of the exam room but it has not changed what people expect.¹⁴ Patients still wish to have their care documented correctly and feel that they have engaged in conversation with the clinician. The aim for all healthcare providers should be to mark highly in this area. The elements of listening, making a plan and understanding are indicative of how the healthcare professional and the patient are interacting. Over 40% of participants felt their encounter was altered using the computer system – this ranged from the length of time (felt shorter for the patient) that the patient was seen by the clinicians and the

clinicians use of the chart. The HealthCare Professional (HCP) use of the EHR may lead to the patient's reluctance to express concerns or talk as the HCP is typing or looking at the screen.¹⁵

Patient access to their records was a significant finding in this study with patients wishing access to their electronic record was mandatory. Maternity patients feel a level of control having their notes, and this study found that 91% of participants would like full access to their charts. The perception that this is their data was very evident amongst participants. Due to the introduction of GDPR and a greater awareness of the right to access their data and their wish to access the data, there is an urgent need to provide such access, optimally to the whole record. Access to data will be available to patients in time and a consultation process is required to examine what level of access is considered appropriate by the patients. There is limited evidence to show that patient access to charts improves health outcomes and at times patient access is not met with enthusiasm by the HCP.¹⁶

This introduction of the EHR in maternity services in Ireland is a first step in the introduction of a complete EHR. This study shows that patient satisfaction is at a high level with the introduction of the EHR. Further work is needed to examine the benefits of patient access to Electronic Charts. Studies are also required to examine the level of access, appropriate for patients, this may be the complete record in pregnancy but different in other areas of healthcare. Public health education programmes may be required to inform patients of the information held and the reasons for same and to assess how much of it they wish to access. Further research is required to work with patients regarding the interpretation of information, how they wish to input data including health literacy projects. Data can be provided in two ways; the patient may have view only access or be more interactive inputting information to their notes (to be endorsed for final inclusion after discussion with the HCP) asking for advice, assistance, booking their visits via a portal.¹⁶ Additional research is required to examine how patients should access the chart and the information they have access to. Communication between the HCP and patient is key to any development. We need to examine patient and HCPs consultations to see if there are areas for improvement and enhancement.²⁰ The Health Information and Quality Authority in Ireland commented that *“As new digital technologies for healthcare, such as electronic health records and patient portals, are introduced, it is essential that a robust consent model is in place to ensure good information management practices and to provide assurance that people's rights in relation to privacy and confidentiality will be upheld.”*¹⁹ There are key elements that need to be addressed and there are opportunities for digital departments within the health service to examine the role of the patient and digital healthcare.

Patients can further provide feedback regarding their experience with the healthcare professionals and the services they encountered.¹⁷ A well-planned and well-resourced patient portal may provide the complete picture of care with patients at the centre. Taking steps to set up the patient portal with the patients involved in the development may remove the possibility that patient access to the EHRs causing anxiety and worry for the patient about information they access.⁸ This emerging area of EHRs needs to be examined both qualitatively and quantitatively. This development can allow for researchers to join with IT and clinicians to develop a change management project to transform how patient care is provided. As EHRs become embedded in healthcare systems, there is a move towards an integrated approach for the collection of patient-reported outcome measures (PROMS). It may be a challenging for the healthcare system; however, there are many benefits for patients and healthcare providers. The benefits include improvements to patient care, shared decision-making and patient focussed research.¹⁸ The core element of this project is the patient-HCP communication. Frameworks may be followed to allow for improvement and analysis of communication.¹³

Strengths and Limitations

Our study had several strengths, one of these strengths included the validated survey tool, it is recommended that the minimum of 200 subjects allows for a reliable factor analysis.² We were able to achieve this number. The study provided us with a unique opportunity to engage with patients at the implementation phase of the MN-CMS. We gathered information that showed what patients needed. One limitation of the study is that we may have been able to open it up to a wider audience and move the study online and open the survey up to different groups using the service. This would also us to use a more targeted approach to address issues that some users may be experiencing that may show the inequalities of the services provided.

Conclusion

Patients in this study were very receptive to the introduction of EHR and noted that it would be beneficial for their care. They also noted the impact the EHR could have an impact on clinic time and interactions with staff. However, patients require access to their charts; they believe this would provide them with ownership of their health. If patients have access to their charts the ability to complete their data before their booking visit and subsequent visits would free up time to allow for meaningful patient engagement. Patient satisfaction plays a key role in the further development of the EHRs as one component of healthcare. For some countries, merging the patient portal element and the implementation of the EHR

may allow for a complete patient centred chart to be developed.

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Appendix

Supplementary Table 1. Between Group Summary Statistics for Satisfaction Level

Factor	Group	Mean (SD)
Women	First time mother (n=62)	46.4 (11.4)
	Woman who already had a baby in CUMH (n=95)	46.3 (10.9)
	Woman who already had baby but not in CUMH (n=23)	47.2 (9.0)
Q16 Did you feel documentation by electronic health record altered your consultation on your visit	Yes (n=94)	49.0 (10.1)
	No (n=55)	42.1 (11.0)
	Not sure (n=27)	46.4 (10.9)
Q17 I believe the computer will help the clinic be efficient	Yes (n=40)	46.8 (11.0)
	No (n=105)	47.6 (10.6)
	Not sure (n=28)	41.4 (10.9)
Q18 I believe the computer will help ensure the quality of my care	Yes (n=148)	46.7 (11.2)
	No (n=4)	44.0 (6.5)
	Not sure (n=25)	46.0 (9.9)
Q19 I believe personal information is safe in the computer	Yes (n=130)	47.1 (11.0)
	No (n=8)	44.8 (8.8)
	Not sure (n=37)	44.6 (11.0)
Q20 I have concerns about the new computer system	Yes (n=116)	47.4 (10.3)
	No (n=10)	44.6 (12.4)
	Not sure (n=50)	45.1 (11.9)
Q21 It would be helpful if more information was available regarding the new computer system	Yes (n=18)	44.5 (12.0)
	No (n=134)	47.4 (10.2)
	Not sure (n=22)	44.4 (12.8)