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The impact of viewing a hysteroscopy on a screen
on the patient's experience: a randomised trial

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Abstract

Background: The introduction of patient screens for outpatient procedures is becoming increasingly common. To date the impact on the patient of viewing the screen remains unknown. **Objectives:** To explore how viewing the screen during a hysteroscopy procedure affects the patient's experience. **Setting:** The outpatient clinics at the Royal Surrey Hospital in Guildford and the Royal Infirmary in Bradford. **Design:** A randomised control trial. **Sample:** Women undergoing a hysteroscopy procedure were randomly allocated to see the screen (n=81) or not to see the screen (n=76). **Results:** Seeing the screen or not had no impact on several measures of pain perception, mood, illness cognitions or communication. However, patients who did not see the screen were more optimistic about the effectiveness of their treatment and felt that the health professional was more receptive to them during the consultation compared to those who saw the screen. After controlling for the use of a local anaesthetic, those who did not see the screen also reported a greater decrease in anxiety after the procedure. However, those who saw the screen described pain more positively (i.e. in terms of comfort, reassurance or encouragement) compared to those who did not see the screen. **Conclusion:** Viewing the screen does not benefit patients and may interfere with the patient - physician interaction.

Key words: Hysteroscopy, screen, patient experience, visualisation.

Introduction

A hysteroscopy is most often prescribed following uterine problems such as bleeding or pain and can either be diagnostic or operative (1). A hysteroscopy can be carried out under a general anaesthetic although most are now carried out using a local or regional anaesthetic within the context of 'one stop' and 'see and treat' out patient clinics (2). Research has explored women's experiences of undergoing a hysteroscopy in these contexts and suggest that the although procedure is associated with raised anxiety and pain most patients state that they would still rather have the procedure in an outpatient clinic under the same conditions than be admitted into hospital (3-8).

Contemporary gynaecological procedures including hysteroscopy use modern technology such as telescopes and monitors which allow clinicians to have a more precise understanding of what changes are occurring in a patients' health (9). Many clinics now also enable the patient to see the procedure either on their own screen or the clinician's screen. Although such visual imaging has proved to be beneficial for the clinician as a means to carry out such procedures, there remains only limited evidence concerning the potential impact of seeing the procedure on the patient experience. For example, Sutton (10) provides a review of the hysteroscopy procedure and suggests that some patients find viewing the screen during the procedure an interesting and informative experience, although some can find it unnerving. Morgan et al (11) carried out a small scale descriptive study to explore women's experiences of having a hysteroscopy which included a reference to the impact of seeing the screen. They analysed the data from 29 women and concluded that whilst 10 women had watched the screen as they were interested in the procedure

and found it a distraction from their pain, 14 had chosen to look away for fear of becoming anxious through what they might see. Morgan et al (11) also described how those who did not see the screen reported more pain. A further 5 were unable to see the screen as it was positioned out of their line of sight.

This study therefore suggests that viewing a procedure on a screen may influence a number of different aspects of the patient's experience. First, the results indicate a role for pain perception which is in line with research indicating that an individual's attentional state through focus or distraction can exacerbate or minimise the pain they experience (12,13). Second the results indicate that seeing the screen may influence an individual's mood, particularly their level of anxiety which finds reflection in research illustrating how information about a medical procedure can either increase or decrease negative mood (eg. 14, 15). Third, Morgan et al (11) also highlighted the importance of communication and the patient's relationship with the clinician although the impact of the screen on this variable was not examined. It is possible that having a screen available for both the clinician and patient could change the communication between these two individuals. Research in Primary Care indicates that the increasing use of computers within the General Practice consultation has implications for the doctor patient relationship (16,17). In line with this, the availability of the screen during a hysteroscopy may also have an impact upon the communication process although whether the presence of a screen is either positive or negative remains unclear.

Patients are therefore increasingly being given access to a screen in order to watch their hysteroscopy procedure. The impact of this remains unknown although

preliminary exploratory research suggests that the screen may have an impact upon the patient experience in terms of pain perception, mood and communication. The present study therefore aimed to test these findings quantitatively using an experimental design with patients being randomly allocated to seeing or not seeing the screen during their procedure. Research within parallel areas also indicates a role for illness cognitions which are the ways in which a person makes sense of their health problem. In particular, Leventhal and colleagues (eg. 18) argue that people make sense of their health problem in terms of a number of different dimensions such as beliefs about the cause of their problem and beliefs about the impact of the problem on their lives and much research indicates that these dimensions are consistently held by patients with a range of illnesses including coronary heart disease, diabetes, obesity and cancer (19,20). Furthermore, research also indicates that they can change following information, education, side effects of medication and symptom experience (21,22). It is possible that seeing a hysteroscopy procedure on a screen could change the ways in which a patient makes sense of their health problem. Accordingly the present study also explored the impact of viewing the screen on patients' illness cognitions.

Method

Design

The study involved a randomised trial with two conditions: seeing the screen versus not seeing the screen. Baseline mood and clinical variables were measured before the procedure. Aspects of the patients' experience (mood, pain perception, illness cognitions, communication with the health professional) were assessed after the procedure.

Participants

Consecutive patients attending the hysteroscopy outpatient clinics at the Royal Surrey County Hospital in Guildford and the Bradford Royal Infirmary were invited to take part in the study. Patients were excluded if they did not speak sufficient English to complete the questionnaire (or did not have someone with them who could translate) or if they ended up not having a hysteroscopy. Women who did not wish to be randomised were also excluded from the study. Approximately 60 were approached in Bradford and 132 were approached in Surrey (these numbers are approximate due to some data not being recorded). Completed questionnaires were received from 117 patients from the Royal Surrey and 40 from Bradford. Data collection took place in two blocks with the Bradford component occurring in 2006 and the Royal Surrey occurring in 2007. The project was approved by the Bradford and Royal Surrey Local Research Ethics Committees. Due to this being the first trial in this area and the absence of any existing data on the impact of seeing the screen during a hysteroscopy no formal sample size calculation was carried out. However, it was calculated that with alpha set at 5% and beta set at 80% a sample size of 150 ($n=75$ in each arm) should be sufficient to detect a medium effect size.

Procedure

On the day of appointment all patients attending the hysteroscopy clinic were invited to take part in the research. Those who agreed were further informed about the purpose of the study and provided with the information sheet and consent form. The patients were advised that fifty percent of women would see the screen during the procedure and fifty percent would not see the screen depending on the number on the

questionnaire. Patients who agreed to continue signed the consent form and completed the baseline questionnaire. The follow up questionnaire was completed by patients after the hysteroscopy had been carried out. The questionnaire was anonymous and not linked to the patient's notes.

Randomisation

Randomisation was carried out using a random number generator. An odd number on the questionnaire meant that the patient was not able to see the screen during the procedure, and an even number indicated that the person was able to see the screen during the procedure. All participants were asked to pick the top questionnaire from a randomly ordered pile.

Measures

Baseline

The baseline questionnaire consisted of the following:

i) **Demographics**: Participants described their age, occupation, ethnicity, whether they were a parent (excluding fostering and adoption), method of delivery (“vaginal”, “caesarean” or “both”) and first language.

ii) **Mood (Pre Hysteroscopy)**: Participants completed an adapted version of the Profile of Mood States questionnaire (POMS; 23) to describe their mood in terms of anxiety (8 items), depression (14 items), fatigue (4 items) and vigour (6 items) rated on a 5 point Likert scales ranging from ‘Not at all’ (1) to ‘Very much’ (5).

Follow up

The follow up questionnaire consisted of the following:

i) *Mood (Post Hysteroscopy)*: The POMS questionnaire was completed for a second time. Changes scores for each mood subscale were computed (follow up – baseline) for the analysis.

ii) *Pain perception*: Perceived pain was assessed using an adapted version of the McGill Pain Questionnaire (24) to evaluate two aspects of pain: sensory (eg. flickering, quivering, pulsing (6 items)) and affective (eg. punishing, gruelling (5 items)). In addition, positive pain items (eg. interesting, reassuring, comfortable (4 items)) and negative pain items (eg. painful, frightening, worrying (4 items)) were added to the scale and checked for internal reliability. Patients rated these constructs on a 5 point Likert scale ranging from “not at all” (1) to “extremely” (5). All items has Cronbach’s alphas >0.6).

iii) *Illness cognitions*: These were assessed using an adapted version of the Illness Perception Questionnaire (IPQR; 25, 26) to assess different dimensions of illness cognitions each of which was rated using three items: cause of problem (e.g. ‘stress or worry’; ‘My own behaviour’; ‘hereditary – it runs in the family’), its consequences (e.g. “my problem has major consequences on my life”), time line (e.g. “my problem will last a short time”), treatment effectiveness (eg. ‘my treatment can control my problem’), affect (e.g. “my problem is a misery to me”) and sense making (e.g. “my problem is puzzling to me”). Patients rated dimensions of the IPQ on a 5 point Likert type scale ranging from “strongly disagree” (1) to “strongly agree” (5). The causal items were summated to create a variable reflecting psychological causes (eg. ‘My

own behaviour’) and one reflecting a belief in biological causes (eg. ‘hereditary – it runs in the family’).

iv) *Communication:* The interaction with the health professional was assessed using a measure of patient centeredness developed by Ogden et al (27). This focuses on four dimensions of the interaction with the health professional each of which is assessed using 3 items: patient involvement (eg. “my clinician allowed me to speak freely”), emotional interaction (eg. “my clinician was aware of my feelings in the consultation”), information giving (eg. “my clinician explained the possible consequences of my problem”) and doctor receptiveness (eg. “I felt my doctor acknowledged my views when discussing the cause of my problem”). Each item was rated on a 5 point Likert scale ranging from ‘Not at all’ (1) to ‘Very much’ (5).

vi) *Clinical variables:* Patients were also asked if this was their first experience of having a hysteroscopy and if not they were asked to indicate how many previous hysteroscopies they had had and to describe the gender of the health professional who had carried out their current procedure. The researcher noted what type of hysteroscopy they had (“diagnostic”, “operative” or “coil”), and the qualification of a health professional that carried out the procedure (nurse vs doctor vs consultant). In addition, whether or not they had been administered a local anaesthetic during the procedure was recorded for 116 patients. The missing data for this variable was due to a change in researcher and could not be obtained after the patient had left the clinic as the data collection process was anonymous.

Data analysis

The data were analysed to describe the participants' demographic and clinical variables and to explore differences in these variables between the two conditions using either t tests (for scale data) or X^2 for (dichotomous data). The data were then analysed to assess the impact of the intervention (screen on vs screen off) on aspects of the patient's experience (change in mood, pain perception, illness cognitions and communication with the health professional) using ANOVA. Finally, this analysis was repeated using the presence or absence of a local anaesthetic as a covariate using ANCOVA. Partial eta² is reported for the analyses of the impact of the intervention as a measure of effect size.

Results

1. Participants' demographic and clinical variables

Participants' demographic and clinical variables and differences in these factors by condition are shown in table 1.

-Insert table 1 about here -

The sample consisted of 157 women aged between 21 and 74. The majority of patients were white whose first language was English. The majority of women had children, with the most common type of delivery being vaginal delivery followed by caesarean delivery. Most had not had a hysteroscopy before although a number of women reported that they have had one hysteroscopy in the past and a minority of patients reported having two or three previous hysteroscopies. The majority of women underwent the hysteroscopy for diagnosis and did not receive a local anaesthetic. Of the 157 women undergoing a hysteroscopy procedure 81 had the screen on whilst 76 had the screen off.

The results showed that the two conditions were comparable for all demographic and clinical variables.

2. Impact of the intervention on patient outcomes.

The data were analysed to assess the impact of the intervention (screen on vs screen off) on aspects of the patient's experience (change in mood, illness cognitions, pain perception, communication with the health professional) using one-way ANOVA.

i) Mood

Differences in changes in mood from baseline to follow up by condition are shown in Table 2.

-insert table 2 about here-

The results showed no impact of the intervention on patients' change in mood.

ii) Pain perception

Differences in pain perception by condition are shown in Table 3.

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The results showed no significant impact of the intervention on patients' perception of pain.

iii) Illness cognitions

Differences in illness cognitions by condition are shown in table 4.

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The results showed no impact of the intervention on patients' beliefs about the cause, consequences, meaning or time line of their problem. However, those who had the screen on reported feeling less optimistic about the effectiveness of their treatment.

iv) Communication with the health professional

Differences in perceptions of communication with the health professional are shown in table 5.

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The results showed that the intervention had no impact upon patients' experiences of communication with the health professional in terms of patient involvement, affect and information giving. However those who did not see the screen felt that the health professional was more receptive to them during the consultation.

4. Impact of the intervention (controlling for the use of a local anaesthetic).

Due to the potential impact of receiving a local anaesthetic on the patient experience the above analysis was repeated using local anaesthetic as a covariate in those participants for whom this was assessed (n=116: screen on n=51; screen off n=54). In line with the analysis described above, the results showed that those patients who did not see the screen during the procedure were more optimistic about the effectiveness of the treatment they were offered ($F[104,1]=6.93$, $\eta^2=0.06$, $p=0.01$) and felt that the health professional was more receptive to them during the consultation ($F[104,1]=3.83$, $\eta^2=0.04$, $p=0.05$). In contrast to the above results however, those who saw the screen described pain in more positive terms (eg. comfort, reassurance, interesting) ($F[104,1]=6.09$, $\eta^2=0.06$, $p=0.02$) but showed a smaller decrease in

their anxiety levels than those who did not see the screen ($F[104,1]=5.09$, $\eta^2=0.05$, $p=0.03$).

Discussion

The present study aimed to assess the impact of viewing the screen during a hysteroscopy on the patient's experience.

The results showed that whether the patients saw the screen or not had no impact upon their pain perception which is in contrast to the suggestion made by Morgan et al (11). Further it does not support research which indicates that distraction and or focus can ameliorate the pain experience (12, 13). The results also showed no impact of seeing the screen on changes in mood, several aspects of illness cognitions and the patient's experience of communication with the health professional. However, the results indicated that having the screen off resulted in the patient's reporting greater confidence in the effectiveness of their treatment and describing improved communication with the health professional in terms of the clinician's receptiveness to their views. Furthermore, when controlling for the use of a local anaesthetic the results also showed that those not seeing the screen reported a greater decrease in anxiety compared to before the procedure. These results support previous studies indicating that illness cognitions can be changed by information (eg. 22), that the presence of a screen may be detrimental for communication (16,17) and that seeing a procedure may exacerbate anxiety (11). The results from the present study, however, indicate that the impact of the screen was not entirely negative with patients who saw the screen being more likely to use terms such as 'interesting' and 'reassuring'.

To conclude, although the use of patient screens is becomingly common practice for a number of outpatient procedures these results indicate that it may not be a benign intervention and may have a number of implications for the patient experience. In the main the results indicate that having a screen on whilst having a hysteroscopy has a negative impact in terms of mood, cognitions and communication with the health professional. These results not only have implications for the use of screens for patients undergoing a hysteroscopy but also for the increasing number of other outpatient based procedures where screens are being introduced. Further research is needed to support the results from the present study both in the context of having a hysteroscopy and also for other similar procedures. In addition, how patients from different cultures, social classes and with different patient histories differentially experience viewing a screen could also be examined.

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Table 1: Differences in demographics and clinical variables by condition.

Variable	N	Screen on (n=81)	Screen off (n=76)	T or X²	P
Location of the hospital	157	Guildford= 62 Bradford= 19	Guildford = 55 Bradford= 21	X ² = 0.36	p= 0.55
Age (yrs)	119	Mean = 45.5 SD = 12.61	Mean = 47.7 SD = 10.76	t = -1.04	p = 0.30
Ethnicity	132	White = 64 Asian = 2 Other = 0	White = 62 Asian = 3 Other = 1	X ² = 1.23	P= 0.54
First Language	132	English = 65 Other = 1	English = 62 Other = 4	X ² = 1.87	P= 0.17
Children?	120	No = 11 Yes = 47	No = 11 Yes = 51	X ² = 0.03	P= 0.86
Type of delivery	118	Vaginal = 36 Caesarean = 7 Both = 3 No children =11	Vaginal = 39 Caesarean = 4 Both = 7 No children = 11	X ² = 2.40	P= 0.49
No. of hysteroscopies	154	None = 62 One = 13 Two = 3	None = 55 One = 17 Two = 1	X ² = 2.18	P = 0.54
Procedure	157	Diagnostic = 78 Operative = 0 Coil = 3	Diagnostic = 70 Operative = 4 Coil = 2	X ² = 4.48	p = 0.11
Qualification of health professional	117	Nurse = 7 Doctor = 17 Consultant = 38	Nurse = 6 Doctor = 16 Consultant = 33	X ² = 0.04	p = 0.98
Gender of a health professional	157	Male = 39 Female = 39 Both = 3	Male = 35 Female = 39 Both = 2	X ² = 0.26	p = 0.88
Local anaesthetic	116	No = 45 Yes = 10	No = 47 Yes = 14	X ² = 0.40	p = 0.52
Occupation	110	Housewife = 11 Employed = 44 Unemployed= 0 Retired = 3	Housewife = 8 Employed = 35 Unemployed = 3 Retired = 6	X ² = 5.19	p = 0.16

Table 2: Impact of intervention on mood at follow up

Variable	Screen on (n=81)	Screen of (n=75)	F	P	Partial eta squared
Change in Anxiety	Mean = - 0.18 SD = 0.68	Mean = - 0.39 SD = 0.76	3.24	0.07	0.03
Change in Depression	Mean = - .0.09 SD = 0.41	Mean = - 0.08 SD = 0.41	0.001	0.98	0.0001
Change in Vigour	Mean = - 0.19 SD = 0.70	Mean = - 0.12 SD = 0.70	0.41	0.52	0.0001
Change in Fatigue	Mean = 0.14 SD = 0.83	Mean = 0.10 SD = 0.70	0.09	0.77	0.001

Table 3: Impact of intervention on pain perception

Variable	Screen on (n=81)	Screen off (n=75)	F	P	Partial eta squared
Sensory pain	Mean = 1.61 SD = 0.70	Mean = 1.63 SD = 0.73	0.35	0.85	0.0001
Affective pain	Mean = 1.30 SD = 0.69	Mean = 1.36 SD = 0.69	0.32	0.57	0.003
Negative pain	Mean = 2.19 SD = 0.92	Mean = 2.35 SD = 1.00	1.03	0.31	0.01
Positive pain	Mean = 2.81 SD = 0.91	Mean = 2.55 SD = 0.75	3.63	0.06	0.05

Table 4: Impact of the intervention on illness cognitions

Variable	Screen on (n=81)	Screen off (n=75)	F	P	Partial eta squared
Consequences of illness	Mean = 2.46 SD = 0.85	Mean = 2.55 SD = 0.76	0.50	0.48	0.003
Treatment effectiveness	Mean = 3.50 SD = 0.80	Mean = 3.77 SD = 0.59	5.44	0.02*	0.04
Sense making	Mean = 2.23 SD = 0.90	Mean = 2.22 SD = 0.85	0.01	0.97	0.0001
Biological cause	Mean = 2.02 SD = 0.80	Mean = 2.05 SD = 0.68	0.04	0.83	0.001
Psychological cause	Mean = 1.92 SD = 0.83	Mean = 2.00 SD = 0.74	0.35	0.56	0.0001
Time-line of illness	Mean = 2.61 SD = 0.89	Mean = 2.60 SD = 0.74	0.01	0.92	0.0001

*significant impact of intervention

Table 5: Impact of the intervention on communication with the health professional.

Variable	Screen on (n=81)	Screen off (n=75)	F	P	Partial eta squared
Patient's Involvement	Mean = 3.61 SD = 0.68	Mean = 3.68 SD = 0.66	0.39	0.53	0.003
Emotional Interaction	Mean = 4.29 SD = 0.59	Mean = 4.27 SD = 0.64	0.05	0.83	0.002
Information giving	Mean = 3.98 SD = 0.80	Mean = 3.82 SD = 0.74	1.51	0.22	0.02
Doctor's Receptiveness	Mean = 3.94 SD = 0.65	Mean = 4.16 SD = 0.68	4.12	0.04*	0.03

* significant impact of the intervention