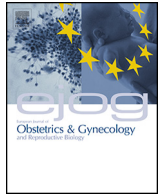




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Information seeking and perceptions of anxiety and pain among women undergoing hysterosalpingography



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ABSTRACT

Objective: Hysterosalpingography (HSG) is an accepted diagnostic tool for infertility workup and is considered an invasive procedure that is generally regarded as uncomfortable and painful, though research on psychological consequences is scarce and outdated. The study objective was to investigate women's experience of HSG in terms of fear, anxiety and pain, as compared to colposcopy.

Study design: This cross sectional questionnaire study was conducted at two public women's health clinics in Israel between January 2013 and March 2014. 137 women were included in the study. 42 consecutively sampled women referred for outpatient HSG and 95 consecutively sampled women referred for outpatient diagnostic colposcopy. The main outcome measures were: state-trait anxiety, information seeking behavior, fear of pain, fear of the results, retrospective pain.

Results: Compared to those undergoing colposcopy, women undergoing HSG expressed significantly higher anxiety prior to the procedure, feared the pain involved more, and rated the procedure as more painful retrospectively. HSG patients tended to report a higher degree of information seeking. Information seeking was correlated with higher anxiety among HSG but not colposcopy patients.

Conclusion(s): HSG is a highly stressful procedure associated with fear, anxiety, pain and information seeking. Research is needed to find possible ways of ameliorating these emotions and behaviors as they may have negative impact on patient cooperation.

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Introduction

Infertility, defined as one year of attempted conception without success, is one of the most prevalent chronic health disorders affecting young adults; 10–15% of couples have difficulty conceiving and experience infertility or subfertility [1–3]. Hysterosalpingography (HSG) is an accepted diagnostic tool for infertility workup and provides an assessment of both fallopian tube and uterine causes of infertility [4]. It is a reliable test of tubal patency, with National Institute for Health and Care Excellence (NICE) guidelines recommending HSG for screening for tubal patency in the absence of co-morbidities [5]. Although new technologies for assessment of the uterine cavity and the patency of the tubes are

now emerging (such as Hydrosalpingography) HSG remains the main diagnostic tool in many countries.

This invasive procedure is generally regarded as uncomfortable and painful [6–8], yet the literature concerning the psychological implications of the procedure is scarce and outdated. The few documented studies, most of them 20 years old, have shown that HSG patients experienced considerable stress before and during HSG [9,10]. State anxiety, defined as unpleasant feelings that arise when facing certain situations, was significantly higher among women awaiting HSG than those awaiting mammography or abdominal ultrasonography [11]. More recently, a qualitative study found that although healthcare providers relate to HSG as a routine outpatient examination at the start of subfertility investigations, this procedure is perceived by women as influencing their future treatment options [12]; and thus evokes a high degree of stress. We did not find in the literature any studies that investigated the information seeking patterns of women scheduled to undergo HSG, nor studies that assessed anxiety, fear and pain in one population.

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As HSG is considered a highly stressful procedure and the literature concerning it is rather scarce, the aim of the study was to compare the psychological stress of women who underwent HSG to that of women who underwent another procedure with psychological stressful implications that are well established – colposcopy. Women attending colposcopy have been shown to exhibit high levels of stress and anxiety [13,14]. It should be noted that the stress and fear from colposcopy may be somewhat different from HSG. Colposcopy is associated with possible cancer detection and HSG with possible implications regarding infertility, though both procedures may involve fear from possible unwanted results and from the discomfort associated with the procedure in itself.

We compared information seeking behavior, retrospective pain, state anxiety, fear of pain and fear of results between women undergoing HSG and women undergoing colposcopy. We also assessed trait anxiety in order to exclude the possibility that differences in trait anxiety may explain differences in state anxiety.

Materials and methods

This prospective study was conducted at two public women's health clinics between January 2013 and March 2014. Research assistants approached consecutive women referred for outpatient HSG and outpatient diagnostic colposcopy on arbitrarily selected days. Women were eligible to participate if they could complete a questionnaire in Hebrew and were at least 18 years. Women who agreed to participate received a detailed explanation, signed a consent form and filled all questionnaires except for the questionnaire regarding pain, which was administered immediately after the procedure. The study was approved by the local IRB (Protocols n. 0028-13-COM, 0029-13-COM). As the literature regarding HSG is scarce, we committed to detecting a large effect size of 0.8 with 70% power. This required about 40 participants in each group. Since colposcopy is far more common, the outcome was that by the time 44 HSG patients were recruited, a much larger group of colposcopy patients had already joined the study (99), making group difference detectability even more powerful.

The demographic questionnaire was used in previous studies by our research team (removed for blind review) and adapted to meet the objectives of the present study. Patients were asked if they had sought information about the procedures prior to undertaking them, and to state the sources of information that they had used.

Fear of the procedures was measured by two questions: (1) "How afraid are you from the pain caused by the examination?" (2) "How afraid are you from the examination results?" Answers for both questions were given on a 7 point likert scale where 1 is not at all and 7 is very much.

The State Anxiety Index questionnaire short version and The Trait Anxiety Index questionnaire are well validated and reliable measures of state and trait facets of general anxiety [15,16]. The short state scale consists of 6 items and the trait inventory consists of 20 items, all measured on a four-point scale ranging from "not at all" (1) to "very much" (4). The range of scores for the trait scale is 20–80, and for the state scale 6–24. Higher scores indicate more anxiety. Internal consistency in the current study was 0.88 for trait and 0.84 for state anxiety.

Retrospective pain was measured using one question: "On a 10 point scale (1–10), how painful was the examination?" Higher values indicated more pain.

Statistical analysis

Differences between groups on continuous scales were tested using One Way ANOVA, or One Way ANCOVA when controlling for

age. Differences in information seeking were tested using the Chi-square test. Levels of fear from pain and from the results of the procedure were compared between groups using a paired samples *t*-test.

Results

One hundred and forty-three women volunteered for the study; 44 underwent HSG and 99 underwent colposcopy. Six were excluded from the analysis due to incomplete data collection. Table 1 presents demographic and study variables for the study population (42 who underwent HSG and 95 who underwent colposcopy).

The mean age of the women who underwent colposcopy was older than that of the women who underwent HSG. Therefore, to rule out age as a confounder, we examined correlations between age and the outcome variables. Age was found to be negatively correlated to retrospective pain ($r = -0.23$, $p = 0.14$) and patients who sought information were younger ($m = 34.05$, $sd = 9.2$) than patients who did not ($m = 38.11$, $sd = 13.00$) ($F(1,123) = 4.05$, $p = 0.046$). Following these findings, the comparisons between the groups in retrospective pain and information seeking were performed with and without controlling for age, yielding essentially equivalent results in both cases. For reasons of parsimony and consistency in statistical analysis, the results presented in this section are those obtained without controlling for age.

A higher proportion of women who underwent HSG had sought information regarding HSG than had women who underwent colposcopy, 79% (33/42) vs. 39% (37/95), $p < 0.001$. The vast majority of patients who sought information reported searching the internet (91.4%). Pre-exam state anxiety was greater among women who sought information ($m = 15.6$, $sd = 1.6$) than among those who did not ($m = 13.8$, $sd = 1.7$), ($F(1,121) = 8.3$, $p = 0.005$, $\eta^2 = 0.064$). Colposcopy patients showed no significant difference in state anxiety, whether they sought information or not. In contrast, among HSG patients anxiety was significantly higher among those who sought information ($m = 16.8$, $sd = 1.2$) than among those who did not ($m = 13.2$, $sd = 1.5$), ($F(1,26) = 6.6$, $p = 0.016$, $\eta^2 = 0.202$).

A statistically significant difference was observed in state anxiety between the two groups, but not in trait anxiety (Table 1). The mean score for fear of pain was significantly higher among women prior to HSG than prior to colposcopy (Table 1). The mean scores for fear of the results were similar for the two groups (Fig. 1).

For women who underwent colposcopy, the mean score for fear of pain was significantly lower than that for fear of result. For women who underwent HSG, the mean score for fear of pain was significantly higher than that for fear of result. HSG patients reported higher levels of retrospective pain than did colposcopy patients.

Table 1
Demographic and study variables, according to type of procedure.

	Colposcopy <i>m</i> (<i>sd</i>)	HSG <i>m</i> (<i>sd</i>)	<i>F</i>	η^2
Age	37.7 (12.7)	32.2 (5.4)	6.2*	0.049
Years of schooling	14.8 (2.6)	14.7 (2.6)	0.04	0.000
Trait anxiety	38.3 (2.2)	37.0 (3.8)	0.46	0.004
State anxiety	13.8 (1.8)	16.2 (1.4)	5.8*	0.046
Fear of pain	3.4 (2.13)	6.8 (2.4)	67.1**	0.335
Fear of result	4.7 (2.2)	4.9 (2.7)	0.18	0.001
Retrospective pain	3.3 (2.6)	5.9 (2.6)	26.7**	0.171

* $p < 0.05$.

** $p < 0.01$.

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