

Results from a prospective, randomized, controlled study evaluating the acceptability and effects of routine pre-IVF counselling

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BACKGROUND: The aim of this study was to evaluate a model of routine pre-IVF counselling focusing on the narrative capacities of couples. The acceptability of counselling, the effects on emotional factors and the participants' assessments were considered. **METHODS:** The study included 141 consecutive childless couples preparing for their first IVF. Randomization was carried out through sealed envelopes attributing participants to counselled and non-counselled groups and was accepted by 100 couples. Another 12 couples refused randomization because they wanted counselling and 29 because they did not. Questionnaires including the State-Trait Anxiety Inventory, the Beck Depression Inventory and assessments of help were mailed to couples before IVF and counselling, and after the IVF outcome. **RESULTS:** Counselling was accepted by 79% (112/141) of couples. There was no significant effect of counselling on anxiety and depression scores which were within normal ranges at both times. Counselling provided help for 86% (75/87) of initially non-demanding subjects and 96% (25/26) of those initially requesting a session. Help was noted in areas of psychological assistance, technical explanations and discussing relationships. **CONCLUSIONS:** This model of routine counselling centred on the narrative provides an acceptable form of psychological assistance for pre-IVF couples.

Key words: assisted reproduction/counselling/emotional factors/infertility/IVF

Introduction

The widespread use of assisted reproduction technologies such as IVF and ICSI has enabled many infertile couples to attain pregnancy and parenthood. The experience of infertility, assisted reproduction treatment procedures and success or failure must be integrated into each patient's life history and this may occur with more or less serenity depending on psychological, sociological and religious factors (Beaurepaire *et al.*, 1994; Syme, 1997; Wischmann *et al.*, 2002). Before treatment, anxiety is identified as the main psychological manifestation, related to the stressful nature of IVF and the fear of failure (Golombok, 1992). Depressive symptoms may be present before IVF and have been shown to be higher in childless couples (Baram *et al.*, 1988). They are furthermore negatively correlated with previous failed attempts, the woman's age and the duration of infertility (Baram *et al.*, 1988; Newton *et al.*, 1990; Abbey *et al.*, 1992; Demyttenaere *et al.*, 1998). The span of emotional reactions couples must deal with from the diagnosis of infertility, through treatment, to success or failure and beyond has been described in detail (Slade *et al.*, 1997; Hammer-Burns and Covington, 1999;

Strauss, 2002). Possible offers of psychological assistance include individual, couple or group counselling. There is now an international consensus (Boivin and Kentenich, 2002) that infertility centres should address psychosocial and emotional issues and in some countries such as Switzerland it is mandatory to offer psychological support before, throughout and after treatment in accordance with the law. The debate over implementing voluntary or mandatory psychosocial counselling for infertility patients remains open and is discussed in the recent 'Guidelines for Counselling in Infertility' (Boivin and Kentenich, 2002). Mandatory counselling may induce suspicious or defensive behaviour in some patients, while voluntary counselling can be difficult to take up for others, even in case of need (Boivin *et al.*, 1999; Klock, 1999).

A preventive counselling concept was developed in the Reproductive Medicine Unit (RMU) in collaboration with the Consultation/Liaison Psychiatry Service. A qualitative study evaluating videotaped interviews with infertile couples was carried out (Darwiche *et al.*, 2002) and defined the offer of psychological support in relation to the 'narrative capacity' of

each couple. This narrative capacity indicates the way in which the partners share their personal and family histories as perceived by the interviewer. The hypothesis was that the couples' abilities to stand back from their own stories and to share them with a third party is linked to their capacities to handle emotional stress, to act as partners to the medical team and to prepare themselves for future parenthood. In practice, this model of counselling requires couples to participate in an initial 60–90 min interview in which they share the history of their infertility. The personal and family histories of both partners are also narrated and summarized on a genogram. This illustration includes family members and friends, strong ties and support as well as difficulties, conflicts, deaths, accidents, illnesses or other events which could have generated emotional distress. In conclusion, possible offers of further psychological support or investigation are discussed.

A retrospective study evaluating this model was carried out (Béran and Germond, 2000) and showed that the majority of participants felt reassured and had gained knowledge of their personal resources through counselling. Results indicated that routine counselling is more acceptable to couples than the selection of 'fragile' couples by the treating physician. Selection reinforces the couples' feelings of inadequacy: 'not only can we not have a baby naturally, but the doctor thinks we have a mental problem as well!' As a routine procedure it specifies clearly to all patients that taking care of their emotional state is important.

Various types of psychological assistance in the field of assisted reproduction technologies have undergone evaluation. Domar *et al.* (2000) carried out a prospective controlled clinical trial comparing a cognitive-behavioural therapy group and a psychological support group with a control group. Results showed that the participants in the intervention groups experienced psychological improvement compared with the control group, especially in the cognitive-behavioural group. A controlled study by Stewart *et al.* (1992) also showed that participants in their professionally led support groups lowered their anxiety and depression scores compared with controls. It must be noted that both these studies concern patients motivated for psychological support and therefore the results cannot be generalized to an IVF population. One study supporting the implementation of routine nurse counselling (Terzioglu, 2001) shows that couples who receive daily information and support during treatment lower their anxiety and depression scores and indicate higher life satisfaction than controls. Connolly *et al.* (1993) evaluated the effects of systematic psychosocial counselling through a randomized, controlled study. Couples having participated in counselling and in an information session were compared with those participating in the information session alone. The results showed no differences between groups in terms of anxiety and depression scores. However, only 82 of 152 couples completed the evaluation and the study concludes that these may represent the more 'robust' couples, as those with psychological difficulties may have quit the programme. Furthermore, half of the IVF treatments were natural cycles, which are less invasive and thereby less stressful than those requiring pituitary down-regulation and ovarian stimulation. In

conclusion it was mentioned that information alone may be sufficient to act as a protecting factor against anxiety and depression.

The aim of the present study was to evaluate the RMU's model of routine pre-IVF counselling which focuses on the narrative capacities of couples. The population was selected to be homogeneous for known factors that increase anxiety: only childless couples awaiting their first cycle of IVF treatment involving pituitary down-regulation and ovarian stimulation were included. The hypotheses were that routine pre-IVF counselling is acceptable to most couples, that it can contribute to lessening anxiety and depressive symptoms during and after the first cycle of IVF, and that couples feel they are helped through this form of psychological assistance. A prospective, randomized, controlled design was applied, using standardized measures. The two assessment points were before counselling and IVF, and 6 weeks after IVF.

Materials and methods

Subjects

All couples recruited in the IVF programme of the University Hospital in Lausanne were screened for the study. Recruitment began in May 1999 and ended in December 2000 with the 100th couple accepting randomization; this population was considered adequate for revealing clinically significant results. Inclusion criteria were: first IVF for first child, both partners French-speaking and living in Switzerland. These criteria concerned 144 couples, representing ~25% (144/580) of all couples enrolled in the IVF programme during that period. The initial screening was carried out by the physicians who informed the potential subjects about the study. A 15 min presentation of the counselling concept as well as complete information on the study by the investigator took place just after this. Couples initially indifferent but open to counselling, who accepted randomization and agreed to fill out questionnaires, were attributed to either group A (counselling) or group B (no counselling). Randomization was carried out through sealed envelopes prepared independently by a secretary. Couples who wanted counselling (no randomization) and agreed to fill out questionnaires constituted group C. Couples who refused counselling (no randomization) but agreed to fill out questionnaires made up group D. The passage from one group to another remained open, in particular for couples wanting to meet a counsellor. This entire procedure was explained to each couple in order to obtain informed consent with respect to the guidelines of the Ethics Committee of the University Hospital of Lausanne.

Participant flow

Of the 288 patients (144 couples) approached for the study, six (three couples) declined participation because of lack of time or interest concerning the questionnaires. The remaining 282 were included as follows: 200 signed their consent for randomization and filling out questionnaires, giving 100 in group A (counselling) and 100 in group B (no counselling), another 24 wanted counselling and agreed to fill out questionnaires (group C) and 58 refused counselling but agreed to fill out questionnaires (group D). Thereafter, six participants (three couples) in group B requested counselling before IVF and passed into group C. Finally, the total of 282 participants were distributed as follows: 100 in group A, 94 in group B, 30 in group C and 58 in group D. There were 268/282 participants who returned the questionnaires at T1 (before commencement of IVF treatment) and T2 (6 weeks after embryo transfer). Two subjects in group A dropped out as they

decided not to begin treatment. Others did not return questionnaires and were lost to follow-up (four in group A, three in group B, seven in group D). The variations of participant numbers in the analyses are due to missing data in questionnaires for each measure.

Study design

Data were obtained through self-administered questionnaires which were sent to the participants' homes with a stamped envelope for their return. First they were mailed to all subjects at T1, after the nurses' IVF information session, but before the counselling intervention for groups A and C and before the initiation of IVF treatment. Partners were asked to fill out the questionnaires separately. The second mailing occurred at T2, 6 weeks following embryo transfer and therefore 4 weeks after the outcome of treatment was known. If a participant had not sent back the questionnaire after 4 weeks, a replacement copy was sent. If there was still no response after 2 weeks, the subject was noted as lost to follow-up.

Measures

The State-Trait Anxiety Inventory (STAI)

The STAI is a widely used instrument composed of two 20-item scales. Each item has a four-point evaluation of how participants feel. The first 20 items evaluate how they feel 'right now' (state anxiety), the second how they generally feel (trait anxiety). The French translation (STAI-Y) (Spielberger *et al.*, 1993) was used, which includes scores of French populations in different situations of stress.

The Beck's Depressive Inventory (BDI)

The BDI is widely used for detecting depression in normal populations and for evaluating severity of depression in clinical situations (Beck *et al.*, 1988). It comprises 21 items, each with five possible indications of the severity of the symptom. The BDI is sensitive to change and exists in a validated French translation which was used for this study (Cottraux *et al.*, 1985).

Assessments of counselling

Participants were asked to rate the help they expected to receive through counselling at T1, and the help they had received at T2. The ratings were: no help (1), little help (2), moderate help (3), much help (4), or don't know.

They were also asked in which areas they had received help: by receiving technical explanations (body functioning, aspects of treatment); by receiving psychological support; by reinforcing the solidarity within the couple; by discussing family relationships; by other means; don't know. More than one answer was possible.

Statistical analyses

Mean trait anxiety (STAI-T), state anxiety (STAI-S) and depression (BDI) scores were computed using analyses of variance (ANOVA). The within-subjects variable was time. The between-subjects variables for simple and interaction effects were: group, gender and outcome.

The differences between ratings of expected help at T1 were analysed with the non-parametric Kruskal-Wallis test. The Wilcoxon signed rank test was applied to differences at T2 between groups A and C who had received counselling. For the various types of expected help, differences between groups at T1 were analysed with χ^2 -tests. Cochran's *Q*-test was applied to differences between T1 and T2. A confidence interval of 95% was used for interpreting the significance of differences.

Results

Descriptive data of the sample

Sociodemographic characteristics

Data were obtained from 268/282 subjects (95%) who returned questionnaires at T1 and T2. The mean ages were 34.4 ± 4.9 years for the men and 32.1 ± 3.9 years for the women. A professional activity was noted for 243/268 participants (90%) who worked an average of 39.4 ± 11.4 h per week. The mean duration of the couples' relationships was 6.9 ± 3.1 years. The mean duration of infertility was 3.8 ± 2.1 years, and of previous treatment 2.8 ± 1.9 years. The overall pregnancy rate after the first IVF was 24.8% (70/282). There were no significant differences between the four groups for these descriptive data.

Acceptability of counselling

The initial distribution of the sample in the four groups shows that pre-IVF counselling was acceptable to 224/282 (79%) of all participants: 200 agreed to be randomly attributed to the counselled or non-counselled groups, and another 24 requested a counselling session. The 24 subjects (8.5%) who requested counselling before treatment put forward their need to 'better understand what they were going through', to 'feel less alone' and to 'receive support'. Of the 58 (20.5%) refusing counselling, 28 indicated 'being interested but not wanting to take more time off work', 18 felt 'strong enough and had no interest', 12 felt 'they already had enough support in their environment'. The 200 participants (70%) accepting randomization had no strong feelings either way but were open to the idea of counselling. All subjects knew that psychological support would be available in case of need and six participants in the randomized no-counselling group B did request it before their treatment.

In the groups A and B accepting randomization, the percentage of higher education was ~40% (40/95 and 36/91 respectively) while it was 20% (10/51) in group D who refused counselling and 70% (21/30) in group C who requested counselling. The differences were statistically significant between the four groups ($\chi^2 = 20.26$, $P < 0.001$), and between group D and C ($\chi^2 = 20.30$, $P < 0.0001$).

Trait anxiety

Higher scores indicate a higher level of trait anxiety. Norms for French-speaking adults (Spielberger *et al.*, 1993) in non-stressful situations are: 41.9 ± 9.5 for men, and 45.1 ± 11.1 for women. In this sample, mean scores for both genders are within the normal range for all groups at T1 and T2 (Table I). There are no differences between the counselled and non-counselled groups. The outcome of treatment influences the evolution of scores between T1 and T2 (Table II). Contrast analyses show that for participants with a pregnancy, scores decrease ($P < 0.01$) between T1 and T2. Furthermore, scores are lower at T2 ($P < 0.01$) for participants with a pregnancy than for those with a negative outcome.

State anxiety

Higher scores indicate a higher level of state anxiety. Norms for French-speaking adults (Spielberger *et al.*, 1993) in

Table I. Mean scores on STAI-T, STAI-S and BDI before (T1) and after (T2) first IVF attempt for counselled groups (A, C) and non-counselled groups (B, D)

Measure	Group	Men		Women	
		T1	T2	T1	T2
STAI-T	A (<i>n</i> = 86)	34.6 ± 8.0	32.6 ± 7.0	37.6 ± 10.7	38.0 ± 10.8
	B (<i>n</i> = 82)	30.8 ± 6.4	30.7 ± 8.6	35.4 ± 9.8	34.9 ± 9.5
	C (<i>n</i> = 24)	33.2 ± 6.6	32.9 ± 6.6	32.7 ± 5.2	32.7 ± 5.6
	D (<i>n</i> = 49)	33.8 ± 7.0	34.0 ± 8.9	39.4 ± 9.7	39.3 ± 13.6
	Total (<i>n</i> = 241)	33.0 ± 7.2	32.3 ± 7.9	36.7 ± 9.9	36.7 ± 10.8
STAI-S	A (<i>n</i> = 86)	30.7 ± 8.7	29.8 ± 10.4	36.3 ± 13.6	37.8 ± 12.7
	B (<i>n</i> = 82)	27.9 ± 7.6	29.2 ± 8.7	31.3 ± 9.9	33.9 ± 11.6
	C (<i>n</i> = 24)	31.4 ± 6.1	33.5 ± 6.2	33.4 ± 10.7	35.4 ± 10.8
	D (<i>n</i> = 49)	27.4 ± 6.7	30.2 ± 10.4	35.5 ± 11.7	38.7 ± 15.0
	Total (<i>n</i> = 241)	29.2 ± 7.8	30.1 ± 9.5	34.1 ± 11.8	36.4 ± 12.7
BDI	A (<i>n</i> = 86)	3.3 ± 3.5	3.4 ± 4.0	4.8 ± 4.5	5.6 ± 5.6
	B (<i>n</i> = 82)	2.3 ± 3.0	2.9 ± 4.0	3.9 ± 4.0	5.7 ± 5.1
	C (<i>n</i> = 24)	3.1 ± 2.1	3.7 ± 3.8	3.5 ± 3.5	4.7 ± 2.7
	D (<i>n</i> = 49)	2.8 ± 4.0	3.8 ± 6.0	4.9 ± 5.4	6.6 ± 7.1
	Total (<i>n</i> = 241)	2.9 ± 3.3	3.4 ± 4.4	4.4 ± 4.4	5.8 ± 5.5

No significant effects of group or time (analysis of variance).

STAI = State-Trait Anxiety Inventory (-T = Trait; -S = State); BDI = Beck's Depression Inventory.

Table II. Effect of IVF outcome (pregnancy or no pregnancy) and time (T1 to T2) on mean STAI-T, STAI-S and BDI scores

Measure	Pregnancy (<i>n</i> = 61)			No pregnancy (<i>n</i> = 180)		
	T1	T2	Total	T1	T2	Total
STAI-T	33.4 ± 7.7	31.2 ± 6.7 ^{a,b}	32.3 ± 6.6	35.4 ± 9.2	35.6 ± 10.3	35.5 ± 9.3
STAI-S	30.5 ± 7.6	28.9 ± 7.2	29.7 ± 6.3 ^c	32.1 ± 11.1	34.8 ± 12.5 ^d	33.4 ± 10.4
BDI	2.9 ± 3.5	3.4 ± 3.2 ^e	3.2 ± 3.0 ^f	3.9 ± 4.2	5.0 ± 5.6	4.4 ± 4.4

F and *P* values were obtained by ANOVA and are indicated when *P* < 0.05:

^aScores decrease between T1 and T2 (*F* = 8.68, *P* = 0.004).

^bLower score at T2 for subjects with a pregnancy (*F* = 10.32, *P* = 0.002).

^cLower total score for subjects with a pregnancy (*F* = 4.91, *P* = 0.028).

^dScores increase between T1 and T2 (*F* = 12.03, *P* = 0.001).

^eLower score at T2 for subjects with a pregnancy (*F* = 12.94, *P* = 0.00001).

^fLower total score for subjects with a pregnancy (*F* = 4.45, *P* = 0.036).

STAI = State-Trait Anxiety Inventory (-T = Trait; -S = State); BDI = Beck's Depression Inventory.

non-stressful situations are: 35.7 ± 10.3 for men and 40.8 ± 10.3 for women. In this sample, mean scores for both genders are within the normal range for all groups at T1 and T2 (Table I). There is no effect of time and there are no differences between groups with or without counselling. The women's mean scores (35.3 ± 10.8) are overall higher (*F* = 7.83, *P* = 0.006) than the men's (29.6 ± 7.5). Participants with a pregnancy have lower scores (*P* < 0.05) than those with a negative outcome (Table II). Scores increase (*P* < 0.01) for participants with a negative outcome between T1 and T2. Furthermore, participants with a pregnancy present lower total scores (*P* < 0.001) than those with a negative outcome.

Depression

Higher scores on the BDI indicate more depressive symptoms. The cut-off score (Beck *et al.*, 1988) for minimal depression is 10.9 ± 8.1 and for mild depression it is 18.7 ± 10.2. Results from this sample show mean BDI scores under the limit for minor depression for all groups at T1 and T2 (Table I). There

are no differences between counselled and non-counselled groups. Mean scores are significantly higher (*F* = 6.48, *P* = 0.012) at T2 (4.6 ± 5.1) than at T1 (3.6 ± 4.0) in the total sample, indicating a general rise in depressive symptoms. The women's mean scores (5.1 ± 4.4) are overall higher (*F* = 7.24, *P* = 0.008) than the men's (3.1 ± 3.6). Furthermore, as shown in Table II, participants with a pregnancy have lower scores at T2 (*P* < 0.001) and lower total scores (*P* < 0.05) than those with a negative outcome.

Assessments of counselling

At T1, 65% (174/267) of participants noted that they expected to be helped through counselling. The ratings were significantly higher ($\chi^2 = 31.1$, *P* < 0.001) in groups A (3.2 ± 0.8) and C (3.4 ± 0.6), who were to receive counselling, than for groups B (2.6 ± 0.9) and D (2.5 ± 0.9), who were proceeding without counselling. At T2, the majority of subjects who had participated in counselling noted that they had received help: 86% (75/87) in randomized group A and 96% (25/26) in group C

Table III. Numbers of participants in each group expecting help through counselling in listed areas at T1

Areas of help	Randomized		Couples' choice		χ^2	<i>P</i>
	A (<i>n</i> = 96)	B (<i>n</i> = 91)	C (<i>n</i> = 30)	D (<i>n</i> = 51)		
Technical explanations	61	56	14	19	11.71	0.009 ^a
Psychological support	45	33	21	15	15.06	0.002 ^b
Discussing relationships	16	14	7	7	1.39	0.708

χ^2 and *P* obtained by χ^2 -test.

^aLess in group D expected help than in groups A, B, C.

^bMore in group C expected help than in groups D, B, A.

Table IV. Number of participants in counselled groups A and C having expected help in listed areas at T1 and having received help at T2

Areas of help	Randomized A (<i>n</i> = 88)				Couple's choice C (<i>n</i> = 26)			
	T1	T2	<i>Q</i> ^a	<i>P</i> ^a	T1	T2	<i>Q</i> ^a	<i>P</i> ^a
Technical explanations	58	38	11.7	0.001 ^b	12	9	0.82	0.366
Psychological support	42	57	7.76	0.005 ^c	19	14	1.67	0.197
Discussing relationships	15	29	6.53	0.011 ^d	5	10	2.78	0.096

^a*Q* and *P* obtained by Cochran's *Q*-test.

^bNumber decreased between T1 and T2.

^{c,d}Number increased between T1 and T2.

who had requested counselling from the start. There were no differences between the ratings of help received and expected, which remained 'moderate' in both groups.

The types of help participants expected at T1 are summarized in Table III. Most help was expected through technical explanations and psychological support. In group D, where participants refused counselling, fewer subjects expected help than in other groups ($P < 0.01$). However, 37% (19/51) did expect that help could be provided through technical explanations and 29% (15/51) through psychological support. In group C, where counselling was requested, 70% (21/39) of participants expected help through psychological support and this was significantly more ($P < 0.01$) than in the other groups.

The comparison between the types of help expected (T1) and received (T2) are shown in Table IV. In the randomized group A, 43% (38/88) of participants at T2 had received help through technical explanations, which was significantly less than expected at T1 ($P < 0.01$). Furthermore, 65% (57/88) at T2 had received help through psychological support, which was significantly more than expected at T1 ($P < 0.01$). Reinforcing the couple's solidarity or discussing family relationships was noted as helpful by 33% (29/88) at T2 and this was significantly more than expected at T1 ($P < 0.05$). There were no significant differences between groups A and C at T1 or T2.

Discussion

A preventive counselling concept focusing on the narrative capacities of couples is routinely used in the RMU in accordance with the team's ethics of global care. About 80% of the subjects in this study sample were open to participate in routine counselling which confirms the first hypothesis that this

is an acceptable form of psychological assistance. The groups of participants accepting and refusing counselling were similar in terms of age, duration of relationship and duration of infertility. Those who refused counselling mostly cited the difficulty of taking more time from work or their lack of interest because they 'felt strong enough'. There were a majority of participants with a higher education level in the group requesting counselling versus a minority in the group refusing. This offer of counselling may be too intellectual and/or intimidating for individuals not used to verbalizing problems and emotions, or perhaps individuals in higher professional positions have more flexibility in their schedules to accept a non-mandatory consultation. More focus could be given to other means of providing psychological support for the 20% turning down the offer of counselling. Information booklets and video material (Hammer-Burns and Covington, 1999; Boivin and Kentenich, 2002) should be framed by the possibility of sharing the thought process with a professional. Telephone counselling could be less time-consuming and less confronting and therefore be more acceptable to this population. Taking part in self-help groups and professionally facilitated group-work requires motivation for participation but some people may be attracted to a group rather than to meeting individually with a professional. The 9% of participants in the present study sample who requested a counselling session represent the handful of patients taking up 'voluntary counselling' observed by others (Strauss, 2002). One study of 143 patients offered voluntary counselling (Boivin *et al.*, 1999) showed that only a minority (6–9%) took up the proposal even if they were feeling distressed. Most of these patients relied on pre-existing relationships for support, and in case of difficulty did not ask for professional help mainly because of practical

concerns such as not knowing whom to ask or the costs of the intervention. Other reasons noted for declining psychological assistance (Strauss, 2002) were the desire for couples to remain socially acceptable and to delay rather than to confront conflicts, the wish to avoid the anxiety of facing one's emotions and the lack of collaboration between the medical teams and the psychologists. In the present study, the overall willingness to participate in routine counselling certainly reflects the adherence of the RMU team to psychological assistance being an important part of global care. This is seen by couples as an institutional gesture which gives strength to the recommendation and diminishes the threatening aspect of being specially selected for a psychological intervention (Klock, 1999; Béran and Germond, 2000).

Concerning the effects of counselling on the patients' emotional states, this study revealed mean anxiety and depression scores in the normal 'no stress' range for all groups before and after IVF. As observed in other studies, women presented higher state anxiety and depression scores than men (Beaurepaire *et al.*, 1994; Slade *et al.*, 1997; Boivin *et al.*, 1998), as did participants with a negative outcome compared with those with a pregnancy (Beaurepaire *et al.*, 1994; Bryson *et al.*, 2000; Kee *et al.*, 2000; Hammarberg *et al.*, 2001). However, there were no significant differences between counselled and non-counselled groups and the second hypothesis that pre-IVF counselling could positively influence anxiety and depression scores was not verified. The previously mentioned controlled study (Connolly *et al.*, 1993) also resulted in no measurable effects of counselling on emotional factors. Higher levels of anxiety were expected in the present study because it included only first IVF attempts for childless couples, because the financial aspects were consequential (there is no insurance policy covering IVF in Switzerland) and because of the more intrusive nature of the treatment (all cycles with pituitary down-regulation and ovarian stimulation). The relatively low scores indicated that subjects were emotionally well prepared for coping with their IVF treatment and outcome. However, the questionnaires employed may have been insufficient to specifically evaluate emotional components related to infertility and assisted reproductive technologies. An extensive review of psychosocial interventions in infertility (Boivin, 2003) has recently demonstrated that studies using non-validated outcome measures of infertility-specific distress showed more positive effects of psychosocial interventions than those using non-specific or global measures. Future research recommendations therefore aim toward the further development and validation of measures with higher specificity (Glover *et al.*, 1999; Newton *et al.*, 1999).

Over half of the participants expected counselling to be helpful, including those who had refused to take part in a session. Individuals who knew they were to participate in counselling expected to receive more help than those who were to proceed without counselling. For those having requested counselling this seems evident, and for the randomized group it may indicate a positive but also resigned attitude: 'since we are going to do it, we might as well be positive', which is often heard in the consultations. The great majority of participants report having been helped by counselling, whether they were

initially motivated (96%) or not (86%). They rated the help received as slightly above 'moderate' which corresponded to the rate of help they had expected. This signifies that the objectives of counselling were initially well defined and understood by the participants and it confirms the third hypothesis that participants receive help through this form of psychological assistance. Help was mostly expected in the areas of technical explanations and psychological support, over reinforcing the solidarity in the couple and discussing family relationships. Fewer participants received help through technical explanations than initially expected help in that area. Technical questions evidently have their place in assisted reproductive treatment counselling as clarifications give reassurance and furthermore provide openings to explore certain fears or doubts that couples are burdened with. However, this model of counselling focusing on the narrative is clearly oriented toward psychological support. This is confirmed by further results which showed that more participants had received help through psychological support (65%) and discussing relationships (33%) than had initially expected help in these areas. These assessments support former observations that pre-IVF counselling is perceived as globally reassuring and helpful (Connolly *et al.*, 1993; Béran and Germond, 2000).

The psychological reactions related to the unfulfilled desire to have a child and the fear of treatment failure are the unchanging issues which must be recognized and addressed for every couple (Beaurepaire *et al.*, 1994; Syme, 1997; Wischmann *et al.*, 2002). Moreover, as assisted reproduction technologies advance and ethical limits are challenged, other issues arise which bring about new doubts and concerns. During the early years of IVF, anxiety levels were higher because the procedures were new, considered with suspicion and were often kept secret (Golombok, 1992). Ten years later, technical advances have made procedures more comfortable and outcome studies concerning the physical and mental health of IVF offspring are generally reassuring (Golombok, 2000; Sutcliffe *et al.*, 2001; Bonduelle *et al.*, 2002). However, a recent study of ICSI offspring showed that the risk of a major birth defect was twice as high than in naturally conceived children (Hansen *et al.*, 2002) and concerns about the safety of ICSI have been reactivated. Disquiet also emerges when the media expand on excesses of scientific power as in reproductive cloning, treatment of elderly women or errors occurring in assisted reproduction technologies. These aspects have not been taken into account in this study but arise from the practice of routine counselling where couples' concerns are voiced and worked through. To measure this function of counselling may be difficult but it may also be necessary in order to widen the accepted scope of its helpfulness. The omnipresent issue of cost-effectiveness and the limited resources for psychological interventions make it difficult to favour of routine counselling as hard data do not show enough distress to justify psychological assistance for all (Boivin *et al.*, 1999). This was confirmed in the present study, but it also showed that even non-demanding participants feel helped and reassured through counselling. Creating a supportive relationship in which couples confronted with assisted reproduction

technologies can work through their ethical deliberations and their emotional reactions represents the basis for recommending routine pre-IVF counselling.

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References

- Abbey, A., Halman, L.J. and Andrews, F.M. (1992) Psychosocial, treatment and demographic predictors of the stress associated with infertility. *Fertil. Steril.*, **57**, 122–128.
- Baram, D., Tourtelot, E., Muechler, E. and Huang, K. (1988) Psychological adjustment following unsuccessful in vitro fertilization. *J. Psychosom. Obstet. Gynecol.*, **9**, 181–190.
- Beaurepaire, J., Jones, M., Thiering, P., Saunders, D. and Tennant, C. (1994) Psychosocial adjustment to infertility and its treatment: male and female responses at different stages of IVF/ET treatment. *J. Psychosom. Res.*, **38**, 229–240.
- Beck, A.T., Steer, R.A. and Garbin, M.G. (1988) Psychometric properties of the Beck Depression Inventory: twenty-five years of evaluation. *Clin. Psychol. Rev.*, **8**, 77–100.
- Béran, M.D. and Germond, M. (2000) L'entretien d'évaluation des ressources psychosociales en médecine de la reproduction. Etude pilote d'une nouvelle approche: le 'bilan des ressources'. *J. Gynecol. Obstet. Biol. Reprod.*, **29**, 662–667.
- Boivin, J. (2003) A review of psychosocial interventions in infertility. *Soc. Sci. Med.*, in press.
- Boivin, J. and Kertenich, H. (eds) (2002) *Guidelines for Counselling in Infertility*. ESHRE Monographs, Oxford University Press.
- Boivin, J., Andersson, L., Skoog-Svanberg, A., Hjelmstedt, A., Collins, A. and Bergh, T. (1998) Psychological reactions during in-vitro fertilization: similar response pattern in husbands and wives. *Hum. Reprod.*, **13**, 3262–3267.
- Boivin, J., Scanlan, L.C. and Walker, S.M. (1999) Why are infertile patients not using psychosocial counselling? *Hum. Reprod.*, **14**, 1384–1391.
- Bonduelle, M., Liebaers, I., Deketelaere, V., Derde, M.-P., Camus, M., Devroey, P. and Van Steirteghem, A. (2002) Neonatal data on a cohort of 2889 infants born after ICSI (1991–1999) and of 2995 infants born after IVF (1983–1999). *Hum. Reprod.*, **17**, 671–694.
- Bryson, C.A., Sykes, D.H. and Traub, A.I. (2000) In vitro fertilization: a long-term follow-up after treatment failure. *Hum. Fertil.*, **3**, 214–220.
- Connolly, K.J., Edelman, R.J., Bartlett, H., Cooke, I.D., Lenton, E. and Pike, S. (1993) An evaluation of counselling for couples undergoing treatment for in-vitro fertilization. *Hum. Reprod.*, **8**, 1332–1338.
- Cottraux, J., Bouvard, M. and Legeron, P. (1985) Méthodes et échelles d'évaluation des comportements. *Editions d'applications psychotechniques (EAP)*. Issy-les-Moulineaux, France.
- Darwiche, J., Bovet, P., Corboz-Warnery, A., Germond, M. and Rais, M. (2002) Quelle assistance psychologique pour les couples requérant une aide médicale à la procréation? *Gynécol. Obstét. Fertil.*, **30**, 394–404.
- Demyttenaere, K., Bonte, L., Gheldof, M., Vervaeke, M., Meuleman, C., Vanderschuerem, D. and D'Hooghe T. (1998) Coping style and depression level influence outcome in in vitro fertilization. *Fertil. Steril.*, **69**, 1026–1033.
- Domar, A.D., Clapp, D., Slawsby, E., Kessel, B., Orav, J. and Freizinger, M. (2000) Impact of group psychological interventions on distress in infertile women. *Health Psychol.*, **19**, 568–575.
- Glover, L., Hunter, M., Richards, J.-M., Katz, M. and Abel, P.D. (1999) Development of the fertility adjustment scale. *Fertil. Steril.*, **72**, 623–628.
- Golombok, S. (1992) Psychological functioning in infertility patients. *Hum. Reprod.*, **7**, 208–212.
- Golombok, S. (2000) *Parenting: What Really Counts?* Routledge, Taylor & Francis, Philadelphia.
- Hammarberg, K., Astbury, J. and Baker, H. (2001) Women's experience of IVF: a follow-up study. *Hum. Reprod.*, **16**, 374–383.
- Hammer-Burns, L. and Covington, S.N. (1999) *Infertility Counseling. A Comprehensive Handbook for Clinicians*. Parthenon, London.
- Hansen, M., Kurinczuk, J.J., Bower, C. and Webb, S. (2002) The risk of major birth defects after intracytoplasmic sperm injection and in vitro fertilization. *N. Engl. J. Med.*, **346**, 725–730.
- Kee, B.S., Jung, B.J. and Lee, S.H. (2000) A study on psychological strain in IVF patients. *J. Assist. Reprod. Genet.*, **17**, 445–448.
- Klock, S.C. (1999) Psychosocial evaluation of the infertile patient. In Hammer-Burns, L. and Covington, S.N. (eds), *Infertility Counseling. A Comprehensive Handbook for Clinicians*. Parthenon, London.
- Newton, C.R., Hearn, M.T. and Yuzpe, A.A. (1990) Psychological assessment and follow-up after in vitro fertilization: assessing the impact of failure. *Fertil. Steril.*, **54**, 879–886.
- Newton, C.R., Sherrard, W. and Glavac, I. (1999) The fertility problem inventory: Measuring perceived infertility distress. *Fertil. Steril.*, **72**, 54–62.
- Slade, P., Emery, J. and Lieberman, B.A. (1997) A prospective, longitudinal study of emotions and relationships in in-vitro fertilization treatment. *Hum. Reprod.*, **12**, 183–190.
- Spielberger, C.D., Gorsuch, R. and Lushene, P.R. (1993) Inventaire d'anxiété état-trait: Forme Y. *Editions du Centre de Psychologie Appliquée (ECPA)*. Paris, France.
- Stewart, D.E., Boydell, K.M., McCarthy, K. and Swerdlyk, S. (1992) A prospective study of the effectiveness of brief professionally-led support groups for infertility patients. *Int. J. Psychiatr. Med.*, **22**, 173–182.
- Strauss, B. (ed.) (2002) *Involuntary Childlessness. Psychological Assessment, Counseling and Psychotherapy*. Hogrefe & Huber, Seattle.
- Sutcliffe, A., Taylor, B., Saunders, K., Thornton, S., Lieberman, B. and Grundzinskas, J. (2001) Outcome in the second year of life after in-vitro fertilisation by intracytoplasmic sperm injection: a UK case-control study. *Lancet*, **357**, 2080–2084.
- Syme, G.B. (1997) Facing the unacceptable: the emotional response to infertility. *Hum. Reprod.*, **12** (Natl Suppl.), JBFS 2(2), 183–187.
- Terzioglu, F. (2001) Investigation into effectiveness of counselling on assisted reproductive techniques in Turkey. *J. Psychosom. Obstet. Gynecol.*, **22**, 133–141.
- Wischnmann, T., Stammer, H., Gerhard, I. and Verres, R. (2002) Couple counselling and therapy for the unfulfilled desire for a child—the two-step approach of the 'Heidelberg infertility consultation service'. In *Involuntary Childlessness. Psychological Assessment, Counseling and Psychotherapy*. Strauss, Hogrefe & Huber, Seattle, pp. 127–149.

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