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Assessment of sexual and emotional distress in infertile couple: validation of a new specific psychometric tool

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Abstract

Background The diagnosis of infertility strongly impacts on psychological and sexological couple health. In this regard, some feelings and psychological states were demonstrated in association with reproductive problems. Depression and anxiety are the most common psychopathologies associated with infertility, although also sexuality is strongly involved in infertility conditions.

Objectives The aim of this study is to develop a tool to probe and assess the emotional aspects, sexuality, and social relationships of the couple seeking medical care for infertility.

Materials and methods A self-reported questionnaire that we will refer to as SEIq (Sexuality and Emotions in Infertility questionnaire) was constructed and developed and, consequently, administered to 162 heterosexual couples (324 subjects) seeking help for reproductive problems. Hence, we performed a specific statistical analysis to assess and validate this new psychometric tool. Results. About 60% of men and women (both partners in 43% of couples) declare that infertility has changed their life (Q10). Moreover, the incidence of sexual disorder declared by the subjects is quite rare in men (10%) but more frequent in women (29%) ($p < 0.01$).

Conclusion and discussion The results of this pilot test show that the diagnosis of infertility impacts on the couple relationship affecting the emotional area, interpersonal relationships, and sexual functions of the couples. Moreover, the SEIq appears a valuable tool to coherently probe and relate sexological, psychological, relational, and emotive aspects in partners and couples facing the infertility diagnosis. The explorative factor analysis of SEIq data allows to understand the women, men, and couples' behavior in our sample, individuating a reduced set of factors, prone to an easier evaluation. On the whole, the psychometric evaluation through SEIq might be suitable for the couples during Assisted Reproductive Technologies treatments.

Keywords Infertility · Sexuality · Emotions · Questionnaire · Distress

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Introduction

Infertility is a widespread condition among western countries, whose diagnosis dramatically irrupts on the couples' life generating a profound emotional distress. The couple inability to procreate is victim of a real trauma: the self-image often gets negative and it may be characterized by deregulated emotion and deep states of depression [1, 2]. Accordingly, infertility might represent the failure of the parental project leading couples to experience negative feelings as anxiety, solitude, and shame [3]. The psychological distress is highly amplified by the frequent failure to recognize an etiologic factor, leading to the inability to establish a targeted and resolving therapeutic approach. This has led to the development of several diagnostic tests (e.g., genetic

ones), often prolonging the diagnostic workup and enhancing couple distress [4]. Conversely, such psychological and psychopathological aspects might negatively impact on infertility treatment outcomes [5].

The diagnosis of infertility may also severely impair the couple's sexual function reducing spontaneity and increasing the risk of sexual dysfunctions in both partners [6–11]. Infertility diagnosis may also negatively impact on the couple's social relationships with family and friends, isolating it with the risk of a depressive behavior [12].

Given such an overview, evaluating and monitoring together the emotional area, interpersonal relationships and sexual function of the infertile couples represent a fundamental step during the workup of the Assisted Reproductive Technologies (ART). However, these aspects of couples seeking medical care for fertility are often underestimated in ART centers or centers of reproductive medicine [13]. Several tools to investigate and quantify the male and female sexual function have been published and validated so far [14–18]. These instruments specifically gather information on sexual function, but they do not provide information on the sexological, emotional, and relational components of the couples, especially concerning their feelings and difficulties related to infertility and infertility treatments. Out of our experience, we consider of paramount importance the evaluation of such components as an integral part of the infertility treatment using psychometric tools [14, 19]. To this aim, we developed a tool to probe and assess the emotional aspects, sexuality, and social relationships of the couple seeking medical care for infertility.

Materials and methods

Sexuality and emotions in Infertility (SEIq)

A self-reported questionnaire that we will refer to as SEIq (Sexuality and Emotions in Infertility questionnaire) was developed as a collaboration between the Pertini Hospital PRD (physiopathology of reproduction division) (Rome, Italy) and the Roma Tre University Science department (Rome, Italy). The aim was to build a tool, able to evaluate the emotional, intrapsychic, relational, and sexual aspects in infertile couples. The SEIq has been developed in male and female versions, and it is made of a short anamnestic section (age, diagnosis, and possible presence of sexual dysfunctions) and a section with 46 (for men)/43 (for women) dichotomic items (Yes/No) exploring the emotional, intrapsychic, relational, and sexual elements related to the reproductive difficulties and infertility diagnosis. The SEIq has been refined, checked, and approved by the internal consensus of clinical psychologists, sexologists, and endocrinologists of the PRD, expert in reproductive medicine.

Couples recruitment

For this pilot test, we recruited a sample composed of 162 heterosexual couples (324 individuals) participating in the psychological interview required to be admitted to ART at the PRD of Pertini Hospital. The SEIq was developed in the Italian language and administered following a psychological interview separately for each partner of the couple. The female and male sections shared a common identifier for each couple. All of the subjects participated voluntarily and data were registered anonymously. Table 1 reports age for men and women, how long they have been aware of the infertility diagnosis, if they ever suffered from sexual disorder and if they know or think the partner had some sexual disorder. The age and age difference distributions are reported in Fig. 1.

Ethical statement

This study has been approved by the SandroPertini Ethics Committee. It has been conducted in accordance with the principles expressed in the Declaration of Helsinki.

Statistical analysis

SEIq questions and results are reported in Table 2 as well as the fraction of positive answers by men and women, respectively. Moreover, to understand the behavior of the couple, we report the fraction of positive answers (couple

Table 1 Sample description and anamnesis for men and women in the interviewed couples

Sample description	Men			Women		
N, couples 162	Mean	Std. dev	Min–Max	Mean	Std. dev	Min–Max
Age (years)	38.8	5.2	21–53	36.4	4.2	21–44
How long have you been aware of the infertility diagnosis? (Years)	3.1	2.5	0–15	3.1	2.4	0–11
Have you ever suffered from sexual disorders? (%yes)	10%			29%		
Do you know or do you think your partner has suffered from sexual disorders? (%yes)	23%			11%		
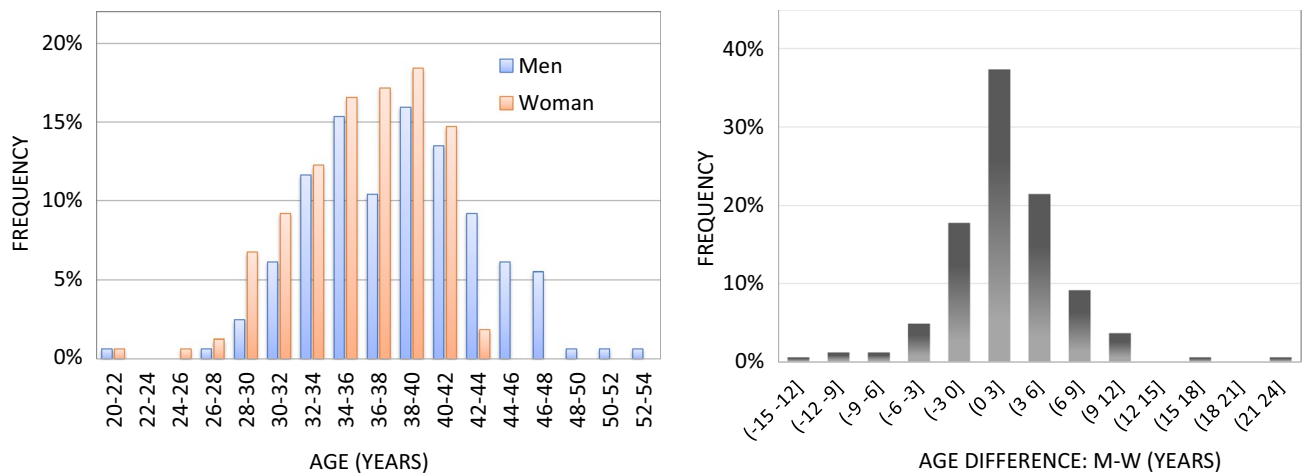
Fig. 1 Left panel reports the age distribution (years) of men and women in the couples. The right panel shows the age difference (age men–age women) in the couples

answers) given by none, only one or both partners in the couple. Standard uncertainty on the fractions ❑ is around 0.035 [20], and statistically significant differences between men and women's answers are indicated as (*) for $p < 0.05$ and (**) for $p < 0.01$.

The principal component analysis (PCA) represents a useful analytical instrument to reduce the number of items in a questionnaire like the SEIq, and allows to focus on a reduced set of factors grouping correlated variables accounting for the sample variability [21]. We performed an exploratory factor analysis (EFA) to individuate the main components underlying the emotional, sexological, and social factors contributing to individuate the psycho-physical aspect of men, women, and couples. The number of significant factors contributing to the sample variability was individuated by comparing the experimental eigen-value factors with the eigenvalues of the corresponding factors calculated from a set of random data having the same dimension (parallel analysis) [21]. For the couples, we assigned the values 0, 1, and 2, respectively, to none, only one, and both positive answers. The factor solutions were rotated using the Varimax orthogonal method [22]. We individuated four significant factors for men, women, and couple answers' data sets, the factor loading matrices (Table 3a–c) have a relatively simple structure [21]: most of the items significantly load a single factor, meaning that each factor is represented by a distinct subset of items, and common factors do not overlap or overlap weakly. Only loading factors having modulus higher than 0.4 are reported. The Kaiser–Meyer–Olkin (KMO) index [23, 24] is close to 0.8 for all the tables, indicating that sampling is adequate and the Bartlett test is significant ($p < 10-5$) for all the data sets. Data have been analyzed using the SPSS

[25] software for statistical data analysis as described below.

Results

The sample is composed by 162 heterosexual couples, aver-age men (woman) age is 38.8 (36.4) years, being women (ranging from 21 to 44 years old) slightly younger than men (ranging from 21 to 53 years old). The age difference (men age minus women age) in the couple ranges from − 15 to 23 years, on average 2.4 years (Fig. 1). The incidence of sexual disorder declared by the subjects is quite rare in men (10%) but more frequent in women (29%) ($p < 0.01$).

Data synthesis

The synthesis of SEIq answers is reported in Table 2. They provide a general description of the emotional, relational, and sexological state of the couples starting the ART route. Answers are reported as the fraction of positive answers to each item. The fraction of couples in which none, only one, or both the partners positively answered the question are also reported to disclose the comportment of the couples facing the infertility problem.

About 60% of men and women declare that infertility has changed their life (Q10) and both partners in 43% of the cou-ples. More than 40% of men and women repute that infertil-ity may affect their projects (Q11). For 43% of the women, childless life can be meaningless (Q13), and in the 20% of the couples, such a feeling is showed by both the partners.

Despite the impact of infertility declared by the part-ners, the SEIq data show a generally encouraging and

Table 2 SEIq questions and answers (fraction of positive answers %) of 162 couples: men, women, and couple responses

SEIq		Men	Women	Couple		
				None	One	Both
		%	%	%	%	%
1	In this period of your life are you sad? (*)	28	39	48	37	15
2	In this period of your life are you intolerant and irritable towards people and/or situations?	35	41	39	46	15
3	In this period of your life are you anxious? (**)	46	70	16	51	33
4	In this period of your life are you guilty?	22	28	57	35	7
5	In this period of your life are you positive?	82	77	8	25	67
6	In this period of your life are you supported by friends and/or relatives?	69	75	13	29	58
7	Do you dedicate to recreational and leisure activities?	79	71	9	33	59
8	Do you happen to imagine yourself as a father/mother?	88	90	3	15	81
9	Do you think your partner can be a good mother/father? (*)	87	95	3	33	65
10	Do you think infertility has changed your life?	62	60	22	35	43
11	Do you think infertility may affect your projects or goals?	42	45	40	33	27
12	Do you think you can deal with infertility as a problem?	82	86	4	24	72
13	Do you think that childless life can be meaningless? (**)	30	43	46	35	19
14	Are you hopeful in solving the infertility problem?	94	93	0	13	87
15	Did you share the infertility situation with your family and friends?	66	72	17	28	55
16	Do you feel lonesome due to infertility? (*)	12	20	74	21	5
17	Are you embarrassed in relationships with others? (**)	12	24	70	23	6
18	Do you find the relationship with your partner has changed due to infertility?	23	20	68	22	10
19	Are you satisfied with your partner's relationship despite infertility?	86	83	4	23	73
20	Are you guilty of your partner?	30	31	47	45	8
21	Are you understood by your partner? (**)	88	77	6	23	71
22	Are you emotionally close to your partner?	90	84	5	16	79
23	Do you think to have an effective communication with your partner?	85	79	7	23	70
24	Are you worried about infertility? (**)	51	75	14	47	40
25	Does infertility make you nervous? (**)	36	57	27	54	20
26	Does infertility make you distracted or not focused? (**)	17	33	57	38	6
27	Does infertility give you feelings of jealousy or resentment towards people with children? (*)	22	34	59	28	14
28	Infertility has affected his manhood/femaleness? (*)	19	29	63	27	10
29	Do you feel like an attractive man/woman?	77	72	8	35	57
30	Do you associate paternity/maternity with being a man/woman?	40	48	33	45	22
31	Have you thought about leaving/betraying your partner because of infertility?	18	23	68	23	9
32	Since you know about infertility, do you feel attracted to other women/men?	25	28	63	21	16
33	Infertility has changed your sexual desire? (**)	28	42	47	36	17
34	Has infertility affected your sexual habits? (*)	40	53	36	35	29
35	Are you satisfied with your partner's sexual relationship?	61	58	25	31	44
36	Do you think your partner is satisfied with your sexual relationship? (**)	82	66	12	29	59
37	Are the sexual intercourses pleasant? (**)	63	47	32	26	42
38	Do you have frequent sexual intercourse with your partner?	47	41	42	28	30
39	Does the programmed sexual intercourses lose spontaneity to the couple?	61	56	20	43	37
40$_W$	Do you have pain during intercourse ?		56			
41$_W$	Do you have difficulty reaching orgasm?		44			
42$_W$	Do you happen to be unable to complete intercourses?		44			
43$_W$	Are you satisfied with your sexuality?		46			
40$_M$	Does your partner happen to have pain during intercourses?	50				
41$_M$	Do you ejaculate during intercourses?	89				
42$_M$	Do you ejaculate inside the vagina of your partner during intercourses?	76				
43$_M$	Do you happen that you do not achieve an erection sufficient for penetration?	25				

Table 2 (continued)

SEIq		Men	Women	Couple		
				None	One	Both
		%	%	%	%	%
44_M	Do you happen to ejaculate before penetrating your partner's vagina?	14				
45_M	Do you have difficulty in penetrating your partner?	21				
46_M	Do you have difficulty reaching orgasm?	15				

optimistic backdrop, about 90% of the partners imagine himself/herself as father/mother (Q8) and are confident his/her partner will be a good mother/father (Q9). Both partners declare a positive attitude (Q5) for about 70% of the couples (M = 82%; W = 77%). Only in 15% of the couples, both of the partners declare sadness or irritability (Q1, Q2) related to infertility. In 72% of the couples, both partners are confident which they can deal with infertility (Q12) (M = 82%; W = 86%), and in 87% of the couples, both partners are hopeful in solving the problem (Q14) (M = 94%; W = 93%).

Considering the emotional sphere women are generally more anxious and worried (Q1–Q3, Q24, Q25) than men about infertility. Feeling distracted (Q26), embarrassed (Q17), or jealous toward couples with children (Q27) is rare in men (12–22%) and more frequent in women (up to 34%) ($p < 0.05$).

The relational area is generally satisfactory: both the partners dedicate their time to recreational activities (Q7) for 59% of the couples (M = 79%; W = 71%). Only in 17% of the couples, none of the partners shared the situation with family and friends (Q15), and in most cases, men and women feel supported by relatives and friends (Q6: M = 69%; W = 75%). Partners are rarely feeling lonesome (Q16: M = 12%; W = 20%) or embarrassed (Q17: M = 12%; W = 24%) due to infertility.

The quality of the couple's relationship is averagely good, for 68% of the couples, the infertility did not change their partnership (Q19) and in 73% of the couples (M = 86%; W = 83%) both the partners are satisfied with their relationship (Q19). Noticeably in 23% of the couples, this satisfaction is not shared by the partners. In more than 70% of the couples, each partner feels him/her understood by the other (Q2: M = 88%; W = 77%), emotionally close together (Q22: M = 90%; W = 84%), and declares an effective communication (Q23: M = 85%; W = 73%). About 30% of men and women are feeling guilty against the partner (Q20). We notice that in about 40% of the couples, at last one of the partners has thought about leaving/betraying the other because of infertility and he/she is attracted by other men/women (Q31, Q32).

Looking at the sexual sphere, the situation is less satisfactory: the infertility diagnosis has changed the sexual desire (Q33) and habits (Q34) for at least one of the partners in 50–60% of the couples, in women more than in men. The 30% of the women declare infertility has affected her femaleness (Q28). None of the partners in 32% of the couples find intercourses pleasant (Q37); in 42% of the couples, none of the partners declare frequent intercourses (Q38); and in 80% of the couples, one or both partners declare the programmed intercourses have lost spontaneity (Q39). Only 46% of the women are satisfied by their sexuality (Q43W). This finding is likely related to the relatively large fraction of women declaring pain during intercourses (Q40W: W = 56%), difficulty in reaching the orgasm (Q41W: W = 44%), or completing the intercourses (Q42W: W = 44%). Men's sexual difficulties are investigated by Q40M–Q46M questions: up to 25% of interviewed men declare having erection difficulties (Q43M), penetration problems (Q45M), and difficulties in having orgasms (Q46M) ejaculation problems (Q44M).

Exploratory factor analysis

We applied the PCA to women, men, and couple answers individuating four main factors for each data set. The items associated with each factor are resumed in Table 3. Only items loading factors above 0.4 (absolute value) were retained. The factor loading matrices are reported in Supporting Information (S.I. Table 1a–c). The factor scores were calculated adding (+) or subtracting (−) the positive answers to SEIq items loading the factor, and factor score distributions for women, men, and couples are reported in Fig. 2.

For the women, the main factor concerns the sexologic area grouping items Q31–Q38, Q40–Q43. This points out as the major source of variability for women answers concerns the pleasure in making sex, sexual satisfaction, frequencies of intercourses, orgasm difficulties, pain during sex, sexual desire. As a second factor, we individuated the emotive area, mainly taking into account for emotion like sadness (Q1), anxiety (Q3), nervousness (Q2, Q25), loneliness (Q16), embarrass (Q17), and jealousy (Q27). The partner-relationship area is the third most relevant factor in women answers;

Table 3 Exploratory Factor Analysis on SEIq questions for Women, Men and Couple data sets

Women's principal factors				Men's principal factors				Couple's principal factors			
Sexological	Emotive	Partner relationship	Reaction to diagnosis	Emotive relational	Sexologic	Sexual health	Reaction to diagnosis	Sexological	Couple relationship	Emotive	Diagnosis
21	7.2	5.4	4.5	22	6.9	5.1	46	15	9.7	7.3	5.9
Q31 (–)	Q1 (–)	Q08 (+)	Q09 (+)	Q1 (–)	Q31 (–)	Q25 (–)	Q4 (–)	Q23 (+)	Q14 (+)	Q1 (–)	Q10 (–)
Q32 (–)	Q2 (–)	Q19 (+)	Q13 (–)	Q4 (–)	Q32 (–)	Q36 (+)	Q10 (–)	Q28 (–)	Q16 (–)	Q2 (–)	Q11 (–)
Q33 (–)	Q3 (–)	Q21 (+)	Q14 (+)	Q5 (+)	Q33 (–)	Q41 (+)	Q11 (–)	Q31 (–)	Q17 (–)	Q3 (–)	Q13 (–)
Q34 (–)	Q11 (–)	Q22 (+)	Q15 (+)	Q12 (+)	Q34 (–)	Q43 (–)	Q20 (–)	Q32 (–)	Q18 (–)	Q4 (–)	Q24 (–)
Q35 (+)	Q16 (–)	Q23 (+)	Q18 (–)	Q14 (+)	Q35 (+)	Q44 (–)	Q24 (–)	Q33 (–)	Q19 (+)	Q5 (+)	Q30 (–)
Q36 (+)	Q17 (–)	Q31 (–)	Q29 (+)	Q16 (–)	Q36 (+)	Q45 (–)	Q25 (–)	Q34 (–)	Q21 (+)	Q6 (+)	
Q37 (+)	Q25 (–)	Q32 (–)		Q17 (–)	Q37 (+)	Q46 (–)		Q35 (+)	Q22 (+)	Q7 (+)	
Q38 (+)	Q26 (–)			Q18 (–)	Q38 (+)			Q36 (+)	Q23 (+)	Q8 (+)	
Q40 (–)	Q27 (–)			Q19 (+)	Q40 (–)			Q37 (+)	Q26 (–)	Q17 (–)	
Q41 (–)				Q21 (+)	Q42 (+)			Q38 (+)	Q27 (–)		
Q42 (–)				Q22(+)				Q.39 (–)	Q28 (–)		
Q43 (+)				Q23 (+)				Q40 (-			
				Q26 (–)							
				Q27 (–)							

Percentage of total variance assigned to each factor is reported (%)

For each factor are listed the associated items, (+)/(−) indicate the item contributing positively/negatively to the item. More details are in S.I. Table 1a–c reporting the factor loading matrices
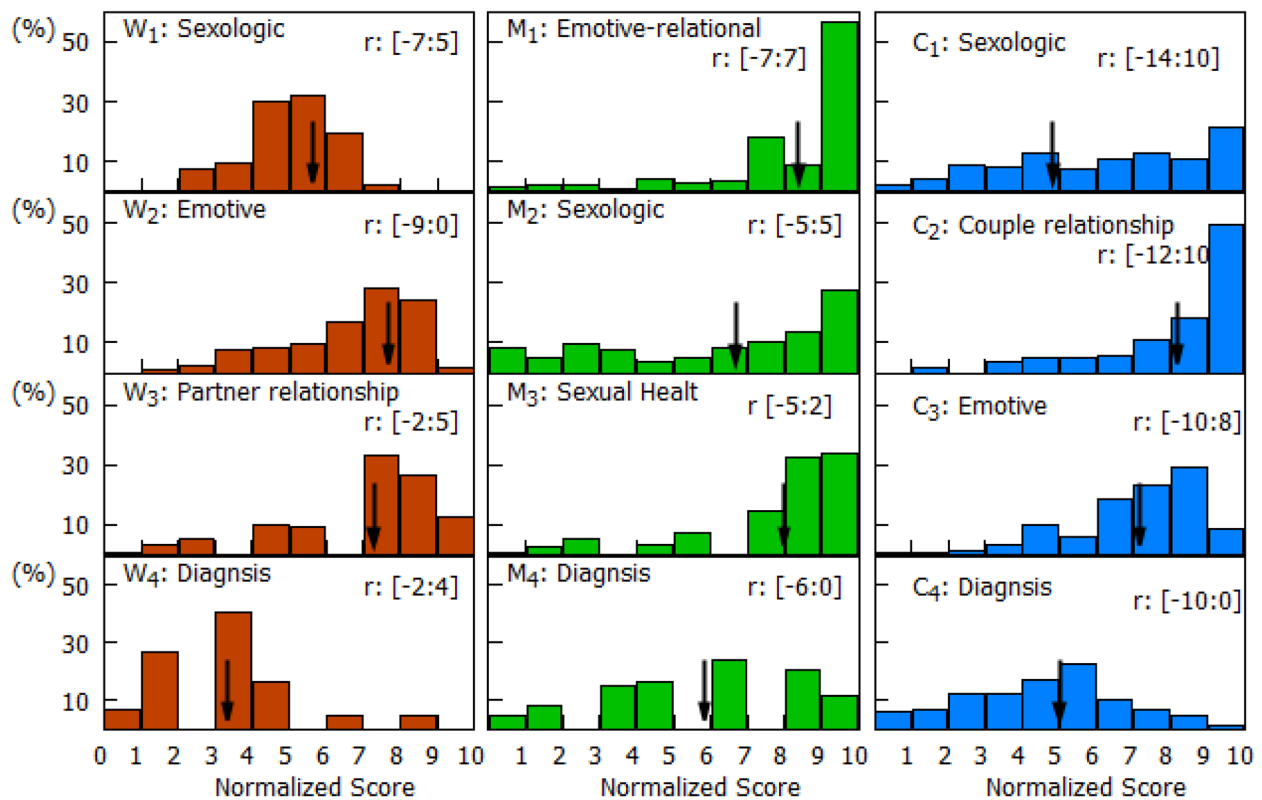
Fig. 2 Synthesis of EFA: distribution of Factors for the women (left) men (center) and couple (right) data sets. Factor scores are calculated as the sum of items loading the factor above |0.4| (absolute value). The factor scale is calculated between 0 corresponding to the minimum value of the factor (sum of only and all items contributing negatively to the factor) and 10 corresponding to the maximum value of the factor (sum of only and all items contributing positively to the factor), the factor ranges are reported in the panels for sake of completeness. The arrows point out the average score value for each factor

it groups items concerning the relationship with the partner such as reciprocal comprehension (Q21), communication (Q23), emotional closeness (Q22), and satisfaction for the couple relationship (Q19). The women reaction to the infertility diagnosis is the fourth factor which we identified, it includes items such as her confidence in solving the problem (Q14), communication with family and friends (Q15), changes within the partner's relationship (Q18), and her feeling as appealing women (Q29). Noticeably, these items are related to the importance attributed to the maternity (Q13). Figure 2a reports the distribution of women's factor scores in the range between the minimum (all answers loading negatively to the factor) and maximum (all answers loading positively to the factor) factor values.

Also, for men, the PCA individuated four principal factors. Differently from women, the main factor for men concerns the emotive-relational area; it groups items concerning emotive aspects (sadness Q1, anxiety Q2, positiveness Q5, and distraction Q26), social relationships (feeling loneliness Q16, embarrass Q17, and jalousie Q27), and partner relationship (changes Q18, and satisfaction with partner relationship Q19, comprehension from the partner Q21,

and quality of communication with the partner Q23). The second factor concerns the sexological area, similar to that individuated for women, it accounts for the effect of infertility on sexual desire and habits (Q33, Q34), sexual satisfaction (Q35), pleasure in making sex (Q37), and frequency of intercourses (Q38). The eventuality of extra-conjugal relationship (Q31, Q32) contributes (negatively) to this factor. The third factor which we individuated mainly concerns the men sexual health including problems (not necessarily pathologic) in ejaculation (Q41, Q44), penetration (Q45), erection (Q43), and orgasm (Q46), noticeably the nervousness (Q25) item contributes (negatively) to the sexual health. The fourth factor concerns the men's emotive reaction to the infertility diagnosis; it includes feeling of guilt (Q4, Q20), wariness (Q24), nervousness (Q25) related to the concerns about future project, and life (Q10, Q11). The men's factor scores, calculated as described above, are shown in Fig. 2b.

It is interesting to individuate the results of PCA for the couple answers, and here, only items common to men and women are considered: Q1–Q39, while the Q40W and Q40M are included as a single item Q40. The main factor for the couple concerns the sexological area, including the

Q31–Q40 items; it also includes the effective communication with the partner (Q23) and the possibility the infertility affected the manhood/femaleness of the partners (Q28). The couple relationship is the second factor mainly involving the quality of partnership and communication (Q19, Q19, Q21–Q23) and includes some emotive items (Q26–Q28). The third factor is mainly affected by emotive items (Q1–Q8, Q17). The fourth factor concerns the effect of diagnosis on life and future projects (Q10, Q11) probably related to the worries (Q24) due to the importance given to maternity/paternity (Q13, Q30).

Discussion

The results of this pilot test show that the diagnosis of infertility impacts on the couple relationship affecting the emotional area, interpersonal relationships, and sexual functions of the couples, and may negatively influence the ART outcome. In this view, our survey provides a useful tool to identify anomalies and sufferance in such areas.

EFA individuates the main factors that can be used to monitor the state of psychophysics health of the couples from different points of view. Figure 2 reports the normalized scores for the main factors individuated for women, men, and couples. Higher score values indicate a better state of the subject (or couple). Looking at the women factors, it is evident that the emotive and partner-relationship areas are mostly positive (average normalized score close to 7). A similar positive attitude is found for the emotive-relational area of men (average normalized score around 8.5) and the couple relationship (average normalized score around 8) and emotive (average normalized score around 7) areas of the couples. This behavior suggests an overall hopeful and optimistic attitude of the couples facing the problem of infertility but the women are emotively more suffering than men.

The women's sexological area, that includes sexual health items such as pain during intercourses and orgasm difficulty, has lower scores (the normalized score average being around 5) and a large fraction of women have scored less than 5. For men, the sexual health area is definitively positive and also the results in the sexological area are shifted toward more positive values than for women. It is to be stressed the quite broad distributions of sexual health (men) and sexological scores (men and couples) implying a fraction of critical situations to be considered. Noticeably, the reaction to the diagnosis appears to be quite negative for women but also for men, this representing a critical aspect for couples. Interestingly, the diagnosis factor for women is positively correlated ($\square$ = 0.18, $p < 0.01$) with the infertility awareness time, while for men, such a correlation is negative ($\square$ = − 0.19, $p < 0.01$) highlighting an opposite behavior for two genders. This suggests that women progressively improve their

reaction to the infertility diagnosis, while men do not. These findings highlight as sexual and sexological aspects are relevant to evaluate the psychophysical state of couples facing the infertility diagnosis, in particular for women. Furthermore, they strengthen the role of a psychological support, specifically targeted to sustain the physiological state of the couples facing an infertility diagnosis and to care sexual function, in particular for a woman.

Noteworthy, the results of our survey are partially unexpected. Indeed, the couples in our samples depict a general optimistic and hopeful attitude that is in contrast with most of the literature describing the profound negative impact of the infertility diagnosis on the couples [26]. However, this finding could be not surprising noticing that the couples that we recruited were participating in the first psychological interview required to be admitted at the ART path. Therefore, they likely are hopeful and optimistic; however, it is also plausible that they may lose such initial impetus during the ART procedure, especially in the case of long times and/or failures. In that, the SEIq may provide an instrument to evaluate and monitor the psychophysical state of the couples during the ART procedures. Finally, the general discrepancy between self-perception of a sexual disorder and the real diagnosis has been ascertained, thus somewhat limiting the couple's feelings of reliability [27].

Last but not least, this was a pilot study aimed at assessing the sexual and emotional distress in infertile couples using a new specific psychometric tool. The absence of a group which may serve for the tool validation could be considered a limitation of the study. Therefore, further studies with a validation sample are warranted.

Conclusions

This pilot study suggests that the SEIq may represent a valid and original tool designed to evaluate the psycho-sexological and relational aspects related to infertility in the couple. It can be used to detect the status of couples during ARTs, providing a quantitative psychometric assessment that represents an important practice in the care of infertility. Studies demonstrated the sexological assessment is often inadequate in the centers for assisted reproductions and also that the attention to the female psycho-sexological is lacking [13]. Moreover, traditional psychometric questionnaires and protocols used to probe the psychological and sexological state of infertile couples may require a long time for compilation, resulting in annoying to the patient and not appreciated for the clinical practice [28]. The same limitation regards the sexological assessment with the traditional psychometric tools as FSFI or IIEF, being addressed to the specific sexual situation but less in the ART field. The SEIq appears a valuable tool to coherently probe and relate sexological,

psychological, relational, and emotive aspects in partners and couples facing the infertility diagnosis. It could be a valid psychometric instrument for the ART centers. Our data individuate the reactions of women, men, and couples as a whole to the infertility diagnosis, highlighting differences in the reactions that are valuable details to tailor treatments targeted to optimize the ART outcomes. The sexual and emotive spheres are more affected in women [29] than in men. The explorative factor analysis of SEIq data allows understanding the women, men, and couple's behavior in our sample, individuating a reduced set of factors, prone to an easier evaluation. Our findings suggest a certain optimism, a good partnership, and a positive attitude, probably linked to the fact that the subjects were about to be admitted to the ART. Therefore, our data represent the baseline for establishing how the sexological and psycho-emotional status of the couples evolves during procedures, especially in the case of long times or failures.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

Informed consent None.

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