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ABSTRACT

Aims: In the last decades, the number of infertile males increased worldwide which gained more focus. The extent to which a person or a couple is able to cope adaptively with the problem of infertility depends on the combined effect of several variables. Our aim was to apply counselling among males suffering from infertility problems. During the therapy – besides providing information – we aim to elaborate the effects of the treatment and experiences, to process information, to develop adaptive coping strategies against stress and to indirectly or directly change health behaviours influencing reproduction.

Methods: Only patients with male factor infertility were involved. They were divided into an observed group (n = 57) and a control (n = 51) group after a thorough physical examination and assessment of their reactions to, and awareness of, the disease.

Results: The group that received the interventions had an intense awareness of the diagnosis and aims and nature of the indicated treatment. They employed purposeful problem-solving coping strategies, reported being satisfied with the infertility treatment.

Conclusions: The counselling of clients with infertility problems a more favourable mental well-being can be established by the active participation of professional helpers. Patients might receive effective, targeted and problem-specific help.

Abbreviations: ART: Assisted Reproductive Technology

Introduction

Reproduction is essential, both individual and social difficulties in this area place an immense psychological burden on the infertile couple (Chiaffarino et al., 2011;

Kahyaoglu & Balkanli, 2015). Almost 15–20% of couples in developed countries face the problem of infertility (A Policy Audit on Fertility, 2017). According to European data, the number of couples receiving infertility treatment is increasing. Studies have shown that in 50% of infertile couples, only the male partner or both partners are affected (Jungwirth et al., 2017).

The branch of andrology has described several aetiological factors of male infertility. Possible causes include morphological or positional alterations of the reproductive organs. After excluding these factors, an alteration in the parameters of the sperms (concentration, motility, and morphology) often persists although its cause is not entirely clear yet. Consequently, the role of endocrinological disruptors due to pollution and relative oxygen species is assumed (Schill, Comhaire, & Hargreave, 2006).

Being able to reproduce is an important part of one's identity. Consequently, patients experience infertility as a major stressful life event. Being unwillingly child-less increases the occurrence of anxiety and depression and concurrently, decreases the quality of life (Cserepes, Kőrösi, & Bugan, 2014; El Kissi et al., 2013). Males experience significant distress when they experience infertility. Furthermore, anxiety, a decrease in self-esteem and stigmatisation may be more prominent in male factor infertility than in idiopathic or female factor infertility (Furman, Parra, Fuentes, & Devoto, 2010; Petok, 2015; Throsby & Gill, 2004).

Reactions to male infertility

Literature differentiates between crises caused by unsuccessful reproduction and other stressful life events. The former is referred to as infertility distress. Facing the diagnosis, medical treatments and other difficulties associated with a life without children may be the couple's most stressful life event. The degree of infertility distress may vary individu-ally and in relation to the time elapsed since the diagnosis. During the first year of treatment, patients tend to report high levels of stress, which is normalised during the second year and significantly increased from the third year (Martins, Costa, Peterson, Costa, & Schmidt, 2014; Pook & Krause, 2005).

The most studied question in relation to male infertility is how stress and emotional tension affect the chances of reproduction. An increase in the desire to have a child may cause negative mental, physical and social effects. The primary questions when studying the relationship between stress and infertility are whether stress causes infertility, whether it contributes to its occurrence, whether the fact and knowledge of infertility cause stress and whether the infertility treatment acts as a stress factor. Increasing evidence has supported the notion that stress is an important risk factor in the develop-ment of infertility. Infertility increases distress, which by endocrinological pathways by increasing serum prolactin levels further decreases the chances of conception (Greil, Slauson-Blevins, & McQuillan, 2010; Martins et al., 2014). Accepting examinations and infertility treatment may also place a significant burden on both the individual and couple. During the examinations and treatment for assisted fertility, their mental burden is likely to increase and 14% of couples separate (Martins et al., 2014). Emphasis has been placed on professional psychological assistance during the treatment of infertile couples (Boivin & Gamerio, 2015; Hakim, Newton, MacLean-Brine, & Feyles, 2012).

Coping strategies

It is imperative to apply adaptive coping strategies in this markedly stressful situation in order to try to alleviate the negative effects of stress. How the individual or the couple copes adaptively with the problem of infertility and/or childlessness is dependent on various factors. These factors include the cause and nature of the infertility, the available individual's mental resources, the extent of available social support and the applied coping strategies. Knowledge about the psychology of coping leads to more possibilities to develop a person-centred and effective supporting programme. The method of help should be adjusted to the nature of the problem and the individual's needs and expectations (Furman et al., 2010; Peterson et al., 2012; Petok, 2015; Van den Broeck, Emery, Wischmann, & Thorn, 2010).

Infertility is a chronic state of stress, which causes difficulties in adaptation (Peterson, Newton, Rosen, & Skaggs, 2006). Lazarus and Folkman (1984) cognitive coping model proposes that successful coping in a stressful state depends on how the person assesses their own situation and whether they are able to choose appropriate coping strategies.

Two main strategies can be identified in Lazarus and Folkman (1984) classic model: Problem-focused and emotion-focused coping. Following this model, several studies confirmed that in infertility, emotion-focused coping tends to be adaptive because it is a low-control stressor for the person (Faramarzi et al., 2013; Peterson et al., 2006).

Terry and Hynes (1998) emphasised that problem-solving may also be effective. Planful problem-solving, that is, a problem-focused strategy and distancing were found to be the most effective in males (Farmarzi et al., 2013; Peterson et al., 2006). Planful problem-solving may be adaptive because modelling a strategy to solve the problem and planning the steps to reach the purpose increases feelings of control and competence and further helps the couple in their joint effort to solve the problem (Peterson et al., 2006).

The findings noted reveal that exchanging maladaptive coping strategies for adaptive strategies should be an important aim of infertility treatments.

Infertility counselling: providing help during assisted reproductive treatment

Menning (1980) was the first to draw attention to the importance of providing psycho-social support during infertility treatment. Infertility counselling is a multidimensional task with three pillars: Support, providing information about the treatment and evaluation, which entails screening psychological vulnerability (Covington & Burns, 2006; Petok, 2015; Stammer, 2002).

The main aim of assistance is emotional support. Several studies have revealed that infertility treatment may be likened to an emotional roller coaster (Verhaak, Lintsen, Evers, & Braat, 2010; Wischmann, 2013). Consequently, it is imperative to provide possibilities for emotional ventilation and adjusting appropriate support during the phases of treatment. Mobilising coping strategies are also important in many instances, counselling is the time to address the losses that the patients have experienced during unsuccessful treatments.

To involve a patient in decision-making enhances personal control and feelings of self-efficacy and thus, frustration during the treatment may be decreased. Furthermore, it is crucial that professionals providing help emphasise adaptive health behaviours (O'Donnell, 2007; Randi, Fürbringer, Schmidt, & Pinborg, 2016; Van den Broeck et al., 2010).

During the evaluation, while screening psychological vulnerability, the professional providing help should monitor the patient's level of distress, emotional state, level of anxiety, depression and stress (Boivin, Takefiman, & Braverman, 2011; Domar, 2015; Van den Broeck et al., 2010; Verhaak et al., 2010). Several infertility distress studies emphasise (Wischmann et al, 2013) that a smaller subgroup can clearly be identified among those who suffer from infertility, these persons are significantly more vulnerable psychologically, especially they are more prone to depression and anxiety. This subgroup is the most endangered when assessing mental coping. When developing preventive psychological help the identification of this subgroup should be paid special attention in order to yield appropriate psychological treatment to those who are more sensitive to stress (Darwiche et al., 2002; Emery, Béran, Darwiche, Oppizzi, & Germond, 2003).

Besides a general person-centred approach, more focused psychosocial support is also required during the entire period of treatment. Infertility counselling could be conducted by professional helpers such as mental hygienists and nurses who are familiar with psychology, infertility and assisted reproductive treatment. The infertility professional should use the parameters described previously for individuals or couples and should be available during the entire treatment (Covington & Burns, 2006; Domar, 2015; Furman et al., 2010; Stevenson, Hershberger, & Bergh, 2016).

Several lifestyle factors might underlie infertility issues. Body mass problems, smoking and drinking excessive amounts of alcohol decrease fertility (Du Plessis, Cabler, McAlister, Sabanegh, & Agarwal, 2010; Kort et al., 2006; Waylen, Metwally, & Jones, 2009). Furthermore, an unhealthy diet, lack of physical activity and environmental harmful factors are associated with the unfavourable functioning of the reproductive organs. The outlined empirical findings suggest that infertility treatments can be augmented with lifestyle programmes that can enhance fertility effectively and in which patients can participate during medical treatment (Wise, Cramer, & Hornstein, 2011).

Thus, it is important to develop complex programmes that respect the integrity of the body and the soul, that consider infertility problems to be a relationship issue and that suit the requirements of the patients perfectly (Brucker & McKenry, 2004; Domar, 2015; Randi et al., 2016; Stevenson et al., 2016; Szatmári, Fejes, & Király, 2018; Van den Broeck et al., 2010).

Material and methods

During the first phase of the study, between 2017 and 2018, we collected information about the psychosocial characteristics of Hungarian males suffering from infertility or decreased reproductive capacity by employing general psychological questionnaires. The test battery was completed in three locations by conducting face-to-face interviews: An infertility centre, an andrology clinic and an andrology out-patient unit. Criteria to participate in the study included male factor infertility and participation in infertility treatment in the same clinic.

The aim of this study was to assess the efficacy of the method of paramedical counselling provided by professional helpers such as nurses, mental hygienists, doctors during the treatment period for male factor infertility by employing the used patient conducting model developed during the last decade (Helembai, 2019). Furthermore, the impact of the counselling on the development of infertile males' adaptive health

behaviours that influence reproduction by broadening the knowledge of the patients during the treatment process and promoting positive change based on satisfaction rates was assessed.

Study population

The participants included 108 individuals who were suffering from infertility or decreased reproductive capacity. Their ages ranged between 26 and 49 years (average = 35.18, standard deviation = 4.92). The involved patients were from the Department of Obstetrics and Gynaecology, the Department of Urology and the Infertility Centre of Kaáli Institute. Ethics approval was obtained from the medical directors of the infertility and andrology clinics. All the participants volunteered, they received written information about the study and they signed a declaration of consent prior to completing the questionnaires (Human Investigation Review Board, Albert Szent-Györgyi Clinical Centre 82/2017-SZTE).

I divided the patients into two groups: The observed group that received infertility paramedical counselling (n = 57) and the control group (n = 51). The inclusion criterion for both groups was male factor infertility or decreased reproductive capacity. During the evaluation, we assessed vulnerability in both groups. The results of psychological questionnaires, the level of depression, anxiety and perceived stress, indirectly refer to vulnerability.

According to clinical diagnoses, there were three subgroups: (1) azoospermia (n = 24); (2) OAT syndrome (oligoasthenoteratozoospermia) (n = 51), oligoasthenozoospermia (n = 4) and oligozoospermia (n = 19); and (3) unexplained infertility (of unknown origin) (n = 10).

Relevant demographic data of the control (n = 51) and observed (n = 57) groups that were related to the study hypothesis were compared; frequencies and averages are presented in Table 1. There was no difference in the demographic characteristics of the two groups despite the significant difference between the two groups in relation to the time elapsed from the diagnosis of infertility; the observed group was diagnosed earlier (t = 3,1; DF = 82,457; p = 0,003; mean difference = 11.33; CI- = 3.82; CI+ = 18.84; Cohen's d = 0.59). There was also a significant difference in the period of family planning. On average, patients in the observed group had been trying to start a family for longer (t = 2.48; DF = 90.89; p = 0.02; mean difference = 9.73; CI- = 1.74; CI+ = 17.72; Cohen's d = 0.47).

Materials

The questionnaires were employed to assess the distress accompanying infertility as well as the coping and communication strategies the patients suffering from infertility used. In accordance with the literature, we used general test batteries to assess distress, which measured the occurrence of depressive symptoms and level of anxiety. These questionnaires had all been widely employed in studies examining groups of patients suffering from other diseases, healthy populations and infertile patients. The short version of the Beck Depression Inventory (Beck & Beck, 1972; Rozsa, Szadoczky, & Füredi, 2001) was used to measure depression. The State-Trait Anxiety Inventory (STAI) originally developed by Spielberger (1970) was employed to measure trait anxiety. Other measures employed included the Rosenberg Self-Esteem Scale (Sallay, Martos, Földvári, Szabó, & Ittzés, 2014) to measure self-esteem; Caldwell's

Table 1. Demographic characteristics (n = 108).

	Group			
	Observed group		Control group	
	n	%	n	%
Education				
Vocational school	10	17.54%	6	11.76%
High school	18	31.58%	19	37.25%
College or university degree	29	50.88%	26	50.98%
Marital state				
Married and living together	37	64.91%	36	70.59%
Married and living separately	4	7.02%	4	7.84%
Civil partnership	15	26.32%	11	21.57%
Living alone	1	1.75%	0	0%
Activity				
Active financially. public servant	17	29.82%	17	33.33%
Active financially. employed	28	49.12%	24	47.06%
Active financially. entrepreneur	11	19.3%	9	17.65%
Active financially. works temporarily	1	1.75%	1	1.96%
Type of work				
Manual labour	13	22.81%	10	19.61%
White-collar job	15	26.32%	13	25.49%
Manual and intellectual work	17	29.82%	15	29.41%
Sitting job	12	21.05%	12	23.52%
Type of residence				
Capital city	0	0%	1	1.96%
City	22	38.6%	29	56.86%
Shire-town	20	35.09%	10	19.61%
Village	15	26.32%	10	19.61%
Ranch	0	0%	1	1.96%
Diagnosis				
Azoospermia	38	66.7%	37	72.5%
Oligozoospermia	13	22.8%	10	19.6%
Idiopathic	6	10.5%	4	7.8%
	Mean	Standard deviation	Mean	Standard deviation
Age (years)	35.47	±5.56	34.84	±4.1
Marital state (months)	7.63	±4.19	7.14	±4.74
Date of diagnosis of infertility (months)	26.14	±24.63	14.8	±11.83
Family planning (months)	36.12	±25.31	26.39	±14.49

Social Support Questionnaire (Caldwell, Pearson, & Chin, 1987) to assess social support; the Perceived Stress Scale (Stauder & Konkoly-Thege, 2006) to measure perceived stress; the satisfaction with life subscale of the Rahe Stress and Coping Inventory (Rozsa et al., 2005) to identify coping strategies and the Conflict Resolution Questionnaire (Rozsa et al., 2008). The participants also answered short questions on health behaviours including smoking, alcohol intake, healthy diet, physical activity and environmental harmful factors.

Questionnaires to assess psychological vulnerability were completed in the first phase of treatment after being diagnosed with (1) or with a previously known and treated infertility (2), but prior to any operation, insemination or ART.

In the observed group, the validated questionnaires were completed at the start of medical interventions, in the first phase of counselling and after counselling at the end of the four months period. The control group only completed the validated questionnaires at the beginning and end of the medical treatment, they did not receive infertility counselling. After a thorough examination of the patients and after their reactions to, and awareness of the disease were assessed, the observed group during a four-month

period received counselling and support altogether five times at three weeks intervals. Patients suffering from infertility or decreased fertility were involved in both groups (observed and control). They were provided counselling after randomisation.

Sixty patients entered the observed group, 3 dropped-out after the start of the programme, because they also ceased reproductive therapy due to poor prognosis (due to age) or financial reasons. Two persons refused counselling due to lack of time.

Fifty-eight patients entered the control group, 7 dropped-out because of the pre-term cessation of reproductive therapy due to personal reasons like unpredictable treatment planning, long waiting list and poor prognosis (several unsuccessful previous treatments).

The final sample consisted of altogether 108 male patients receiving assisted reproductive treatment, randomised to observed group (n = 57) and control group (n = 51).

Infertility counselling there are three pillars: (1) emotional support, (2) providing information about the treatment (3) and evaluation which entails screening psychological vulnerability.

On the first occasion, an interview to evaluate their emotional condition, anxiety, self-esteem, stress, depression, satisfaction with life, social support and coping strategies was conducted. The patients' expectations of the treatment were also assessed.

During the following intervention, the second pillar of the counselling, information about the treatment was provided; specifically, about the results of examinations and treatment alternatives. We encouraged the expression of emotions in relation to a potential operation, the identification of personal causes of distress, the mobilising and development of coping strategies and skills and the exploration of the personal meaning of the infertility problem. In addition, emotional support was provided. After the psychoeducational compound of the consultation, we discussed healthy behaviours, lifestyle and stress issues. Counselling also functions as psychoeducation as it deals with the life event of being infertile and the psychological difficulties of the examinations. Special support may also be needed in decision situations and to understand findings.

We adjusted the timing of the consultation to the exact state of the patients. In many instances, counselling is the time to address the losses that the patients have experienced during unsuccessful treatments. During the first phase, we provided them with the opportunity to ventilate freely about their infertility problem. Accordingly, professionals should be provided with the opportunity to learn different skills such as communication strategies.

The psychoeducational part increased and deepened the patients' knowledge about decision-making. The importance of the positive aspects of extreme hardship was emphasised. Furthermore, monitoring and reflecting resources such as the cohesion of relationships and family support and increasing the patients' activities and competence were stressed.

The applied method relies on cognitive behavioural therapy combining it with facilitative and supportive techniques, which support the mobilisation and concentration of inner resources, the acceptance of new knowledge and the development of new skills and habits. They also promote the elaboration of emotions and decision-making.

Facilitative techniques are e. g. paraphrasing, reflecting, summing up and clarifying emotions, confronting, questioning, providing information. Supportive techniques are e. g. the method of stopping thoughts, strategies supporting interpersonal efficacy, practicing assertiveness. Other techniques are strategies to change behaviour, gradual

recognition and alteration of emotions and behaviour, habituation of situations. The interventions were standardised based on pre-set programmes (Table 4). Consultations were conducted following the pre-set topics. Also in Tables 3 and 4 (Table 3 The components of infertility counselling, Table 4 Standardised programs of providing information and psychoeducation). The above-described program can be inserted into the applied medical treatment protocols.

The aims of the consultation were adapted to the mental state of each patient. This meant that we emphasised the 'topic' in which the actual patient showed the key problem, e. g. among those patients who showed more severe symptoms of anxiety, or elevated levels of stress, or decreased social support we emphasised these fields during counselling in order to facilitate them to use more adaptive coping mechanisms required in their specific situation.

We hypothesised that counselling as a method of the patient conducting process due to supporting the coping strategies of the observed group will become more problem-focused and there will be an improvement in the indicators of well-being.

Statistics

Data processing and evaluation were conducted by employing SPSS version 23. We performed descriptive statistics, a chi-squared test, Fisher's exact test, two sample t-test, Welch's t-test, repeated measures multivariate analysis of covariance and Spearman's rank correlation to evaluate the demographic characteristics and data of the clinical scales.

In the repeated measures multivariate analysis of covariance, the observed group was the interpersonal independent grouping variable, the two times of the measurement were personal grouping variables and time elapsed from the diagnosis and with family planning were covariates. Thus, the differences and bias in these variables between the two groups were controlled. The scales of the WCQ and the results of the STAI, BDI, RSES and Holmes-Rahe tests were the dependent variables. Statistical significance was defined as $p < 0.05$. In accordance with the consensus, 95% confidence intervals are shown in the figures.

Results

To test the hypothesis of the study, we first examined the clinical characteristics of the control and observed groups at the start so as to reduce bias due to potential differences (Table 2). According to statistics in WCQ's problem analysis (t = 0.47; DF = 106; p = 0.64; mean difference = −0.06; CI- = −0.33; CI+ = 0.2; Cohen's d = 0.09), emotionally motivated action (t = 0.25; DF = 106; p = 0.81; mean difference = −0.02; CI- = −0.2; CI+ = 0.15; Cohen's d = 0.05), purposeful action (t = 0.18; DF = 106; p = 0.86; mean difference = 0.018; CI- = −0.19; CI+ = 0.23; Cohen's d = 0.03), adaptation (t = −1.36; DF = 106; p = 0.18; mean difference = −0.17; CI- = −0.43; CI+ = 0.08; Cohen's d = 0.26), asking for help (t = −0.64; DF = 106; p = 0.52; mean difference = −0.09; CI- = −0.36; CI+ = 0.19; Cohen's d = 0.12), seeking emotional balance (t = −0.89; DF = 106; p = 0.38; mean difference = 0.21; CI- = −0.26; CI+ = 0.68; Cohen's d = 0.18), scales in the STAI result (t = −0.05; DF = 106; p = 0.96; mean difference = −0.03; CI- = −1.44; CI+ = 1.37; Cohen's d = 0.01), in the BDI result (t = −0.07; DF = 106; 0.94; mean difference = −0.06; CI- = −1.57; CI+ = 1.46; Cohen's d = 0.01), in the RSES result (t = 0.14; DF = 106; p = 0,89; mean difference = 0.01; CI- = −0.16; CI+ = 0.18; Cohen's

Table 2. Psychodiagnostic tests.

		WCQ Problem analysis at start	WCQ Problem analysis at end	WCQ Emotionally motivated action at start	WCQ Emotionally motivated action at end	WCQ Purposeful action at start	WCQ Purposeful action at end	WCQ Adaptation at start	WCQ Adaptation at end	WCQ Asking for help at start	WCQ Asking for help at end	WCQ Emotional balance at start
Observed group	Mean	1.92	02.02	0.6	0.52	1.3	1.63	1.27	1.22	1.18	1.32	1.29
	St. dev.	±0.62	±0.56	±0.48	±0.4	±0.58	±0.61	±0.68	±0.64	±0.76	±0.66	±1.59
Control group	Mean	1.98	1.97	0.62	0.51	1.28	01.02	1.45	1.43	1.26	1.39	01.08
	St. dev.	±0.76	±0.68	±0.43	±0.36	±0.5	±0.42	±0.64	±0.64	±0.67	±0.73	±0.61
All	Mean	1.95	1.99	0.61	0.52	1.29	1.34	1.35	1.32	1.22	1.36	1.19
	St. dev.	±0.69	±0.62	±0.45	±0.38	±0.54	±0.61	±0.67	±0.65	±0.72	±0.69	±1.23

		WCQ Emotional balance at end	WCQ Withdrawal at start	WCQ Withdrawal at end	STAI at start	STAI at end	BDI at start	BDI at end	RSES at start	RSES at end	Holmes-Rahe at start	Holmes-Rahe at end
Observed group	Mean	1.18	1.32	1.41	47.95	47.19	3.47	2.28	3.39	3.47	11.25	11.3
	St. dev.	±0.8	±0.83	±0.84	±3.78	±3.41	±4.17	±3.18	±0.49	±0.45	±2.49	±2.82
Control group	Mean	1.45	1.7	1.69	47.98	47.84	3.53	2.9	3.38	3.41	11.22	10.67
	St. dev.	±0.72	±0.9	±0.9	±3.54	±3.25	±3.72	±3.12	±0.4	±0.39	±2.68	±3.1
All	Mean	1.31	1.5	1.54	47.96	47.5	3.5	2.57	3.39	3.44	11.23	11
	St. dev.	±0.77	±0.88	±0.88	±3.65	±3.33	±3.94	±3.15	±0.45	±0.43	±2.57	±2.95

Table 3. The components of infertility counselling.

Exploration	Assessment of anxiety, self-esteem, depression, satisfaction with life, stress reactivity, social support and the applied coping strategies
Support	Emotional support, providing space for ventilation; Exploration of the personal understanding of the infertility problem; Mobilisation of coping strategies; facilitation of coping with distress; Increasing self-competence and activity (involving the client in decision making); Elaborating guilt and shame; Emphasising the positive aspects of the difficult life situation, Assessment and support of the cohesion between the couple and the family.
Counselling	Psychoeducation; discussion of health behaviour, life-style and stress. Providing information on the course of examinations, possible surgical interventions and therapeutic alternatives. Answering questions. Interpreting results. Providing help in decision making.

Table 4. Standardised programs of providing information and psychoeducation.

Session 1	*Program (1)*; Describing the course of required examinations for infertility. The knowledge regarding examinations: what, when and how. *Program (2)*; Assessment and review of the importance and the results of examinations. *Program (3)*; Describing the diagnosed disease (decreased fertility/infertility) and assessment of the client's knowledge of the disorder. *Program (4)*; Clarification and emphasising the role of the partner.
Session 2	*Program (5)*; Assessment of the key risk factors; (smoking, alcohol intake, stress, environmental risk factors) *Program (5.1)*; Reviewing the significance of lifestyle. Pathologically elevated chronic stress, smoking, alcohol intake, environmental risk factors. Life-style counselling.
Session 3	*Program (6)*; Evaluation, interpretation and review of the results of examinations. *Program (7)*; Assessment of knowledge of and compliance with medicines. *Program (7.1)*; Discussion of the significance and mechanisms of action of medicines and therapy settings (hormonal therapy). *Program (7.2)*; Describing the appropriate way of taking medicines. Program (8); Providing information to improve health (diet, lifestyle, physiology). Answering questions.
Session 4	*Program (9)*; Describing surgical interventions to increase fertility/treat infertility. Answering questions (Micro-TESE, TESA, MESA, DESA) *Program (9.1)*; Providing further information on assisted reproductive treatment (e. g. IUI, IVF, ICSI).
Session 5	Program (10); Summary. Program (10.1); How the knowledge of the patient changed. Discussion of the use of counselling in the patient's experience at the end of the programs. Program (10.2); The summary of the therapist at the end of the program.

d = 0.03) and in the results of Holmes-Rahe test (t = 0.06; DF = 106; p = 0.95; mean difference = 0.03; CI- = −0.96; CI+ = 1.02; Cohen's d = 0.01), there was no difference at the start. The withdrawal scale of the WCQ showed a difference at the start (t = −2.26; DF = 106; p = 0.03; mean difference = −0.37; CI- = −0.71; CI+ = −0.05; Cohen's d = 0.44).

According to the evaluation, the time elapsed during the examination (F = 3.2; DF = 12–93; p = 0.001; partial eta squared = 0,29) had a significant main effect. Furthermore, the interaction between the elapsed time and the intervention was also significant (F = 7.53; DF = 12–93; p < 0.001; partial eta squared = 0,49).

When comparing the data of the tests at the two occasions of measurement, a significant change in the BDI results (F = 10.44; DF = 1–104; p = 0.002; partial eta squared = 0,09; Figure 1), in the STAI results (F = 8.82; DF = 1–104; p = 0.004; partial eta squared = 0,08; Figure 2), in the emotionally motivated action scale of WCQ (F = 7.89; DF = 1–104; p = 0.006; partial eta squared = 0,07; Figure 3) was evident; all three decreased. The interaction capturing the effect of the intervention was significant in the withdrawal (F = 3.96; DF = 1–104; p = 0.049; partial eta squared = 0,04; Figure 4), purposeful action (F = 58.75; DF = 1–104; p < 0.001; partial eta squared = 0,36; Figure 5) and seeking emotional balance (F = 4.68; DF = 1–104; p = 0.033;
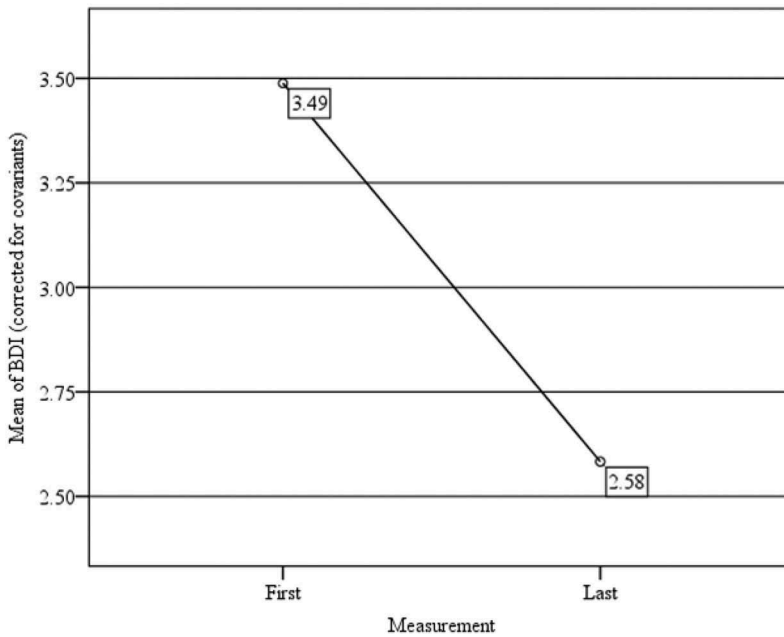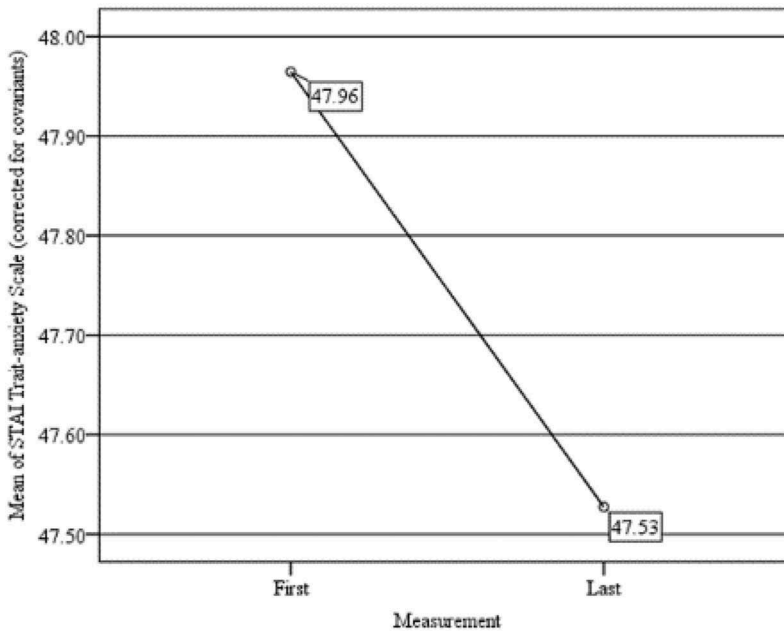
Figure 1. BDI results

Figure 2. STAI results

partial eta squared = 0,043; Figure 6) scales of WCQ and in STAI results (F = 4.33; DF = 1–104; p = 0.04; partial eta squared = 0,04; Figure 7) (Table 2). The withdrawal and purposeful action results of WCQ increased in the observed group while they decreased in the control group.
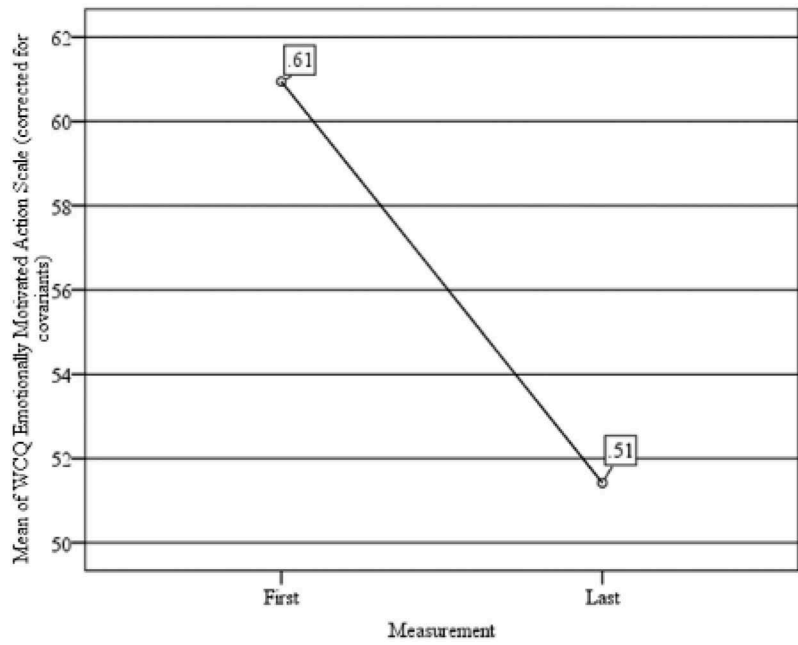
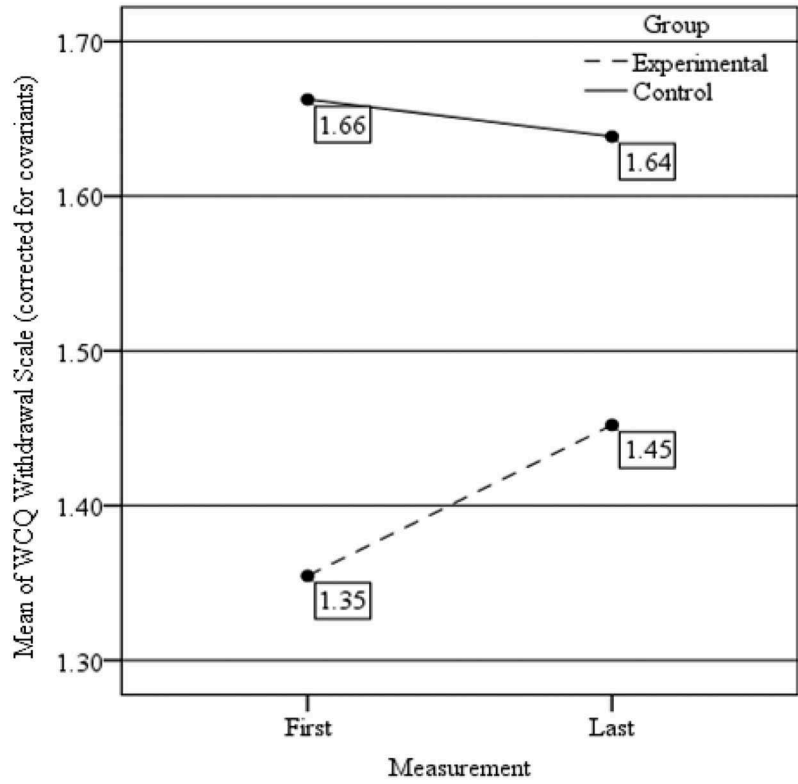**Figure 3.** The emotionally motivated action scale of WCQ
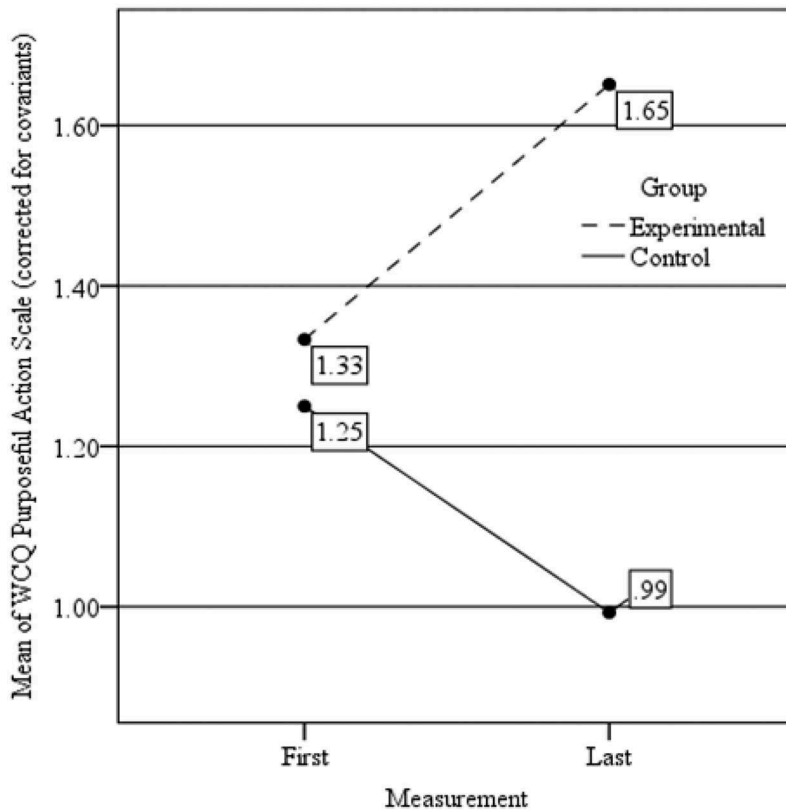

Figure 4. The withdrawal scale of WCQ

Figure 5. The purposeful action scale of WCQ

Seeking emotional balance and trait anxiety of the STAI results decreased in the observed group and trait anxiety of the STAI results did not change with time in the control group.

Discussion

Our study highlighted how the group that received interventions had an intense awareness of the diagnosis and the aims and nature of the indicated treatment. This group used purposeful problem-solving coping strategies during the infertility treatment. As a result of the interventions during the fourth and fifth meeting the persons in the observed group used adaptive coping strategies, e. g. problem analysis and purposeful action more frequently. While infertility treatments can be exhaustive, the person's sense of security was increased by the transparency of examinations, by the predictability of the treatment and by the thorough knowledge of the clinic and its staff. According to the cognitive model long-term adaptation is facilitated by problem analysis, since the person makes efforts in stressful situations with low control. Those persons who re-evaluate childlessness experience a significant decrease in stress levels when coping with infertility (Gameiro & Boivin, 2015; Terry & Hynes, 1998; Van den Broeck et al., 2010). The patients reported they were satisfied with the intervention. Their levels of depression and anxiety
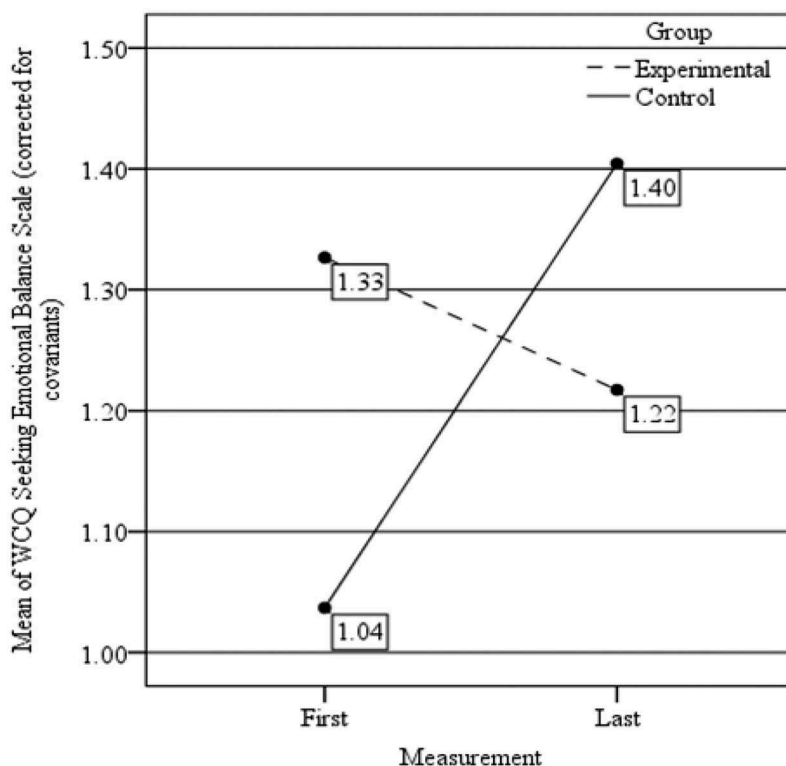
Figure 6. The seeking emotional balance scale of WCQ

decreased from those observed at the start of the interventions and differed from the control group's results.

Male infertility affects an increasing number of males in the reproductive stage of their lives. This challenges professionals working with reproductive technologies and paramedical helpers. Males' coping strategies may differ from those of females. Their attitude towards diseases and frequency of seeking medical assistance also differs in comparison to females (Nikoloudakis et al., 2018). Previous studies have revealed that infertility as a mental problem affects both members of the couple. Although several studies have examined the anxiety and coping associated with female infertility, studies of male infertility are uncommon and usually only assess their knowledge (Cserepes & Bugan, 2015; Lakatos, Szigeti, Ujma, Sexty, & Balog, 2017).

Infertility clinics should provide their clients with more apparent and traceable treatment in order to enable them to apply more coping strategies during difficult times and to support both partners. Studies were conducted in 2010 to explore how males appreciate a supportive group during assisted reproductive treatment. The participants showed a positive reaction towards the counselling and believed they could talk about their problem in an accepting environment. It is noteworthy that those males who sought counselling suffered primarily from male factor infertility. This guided us in choosing the target group. We were curious about the patients' conditions after diagnosis and how supportive therapy could help them. Decreasing depression and anxiety is not only
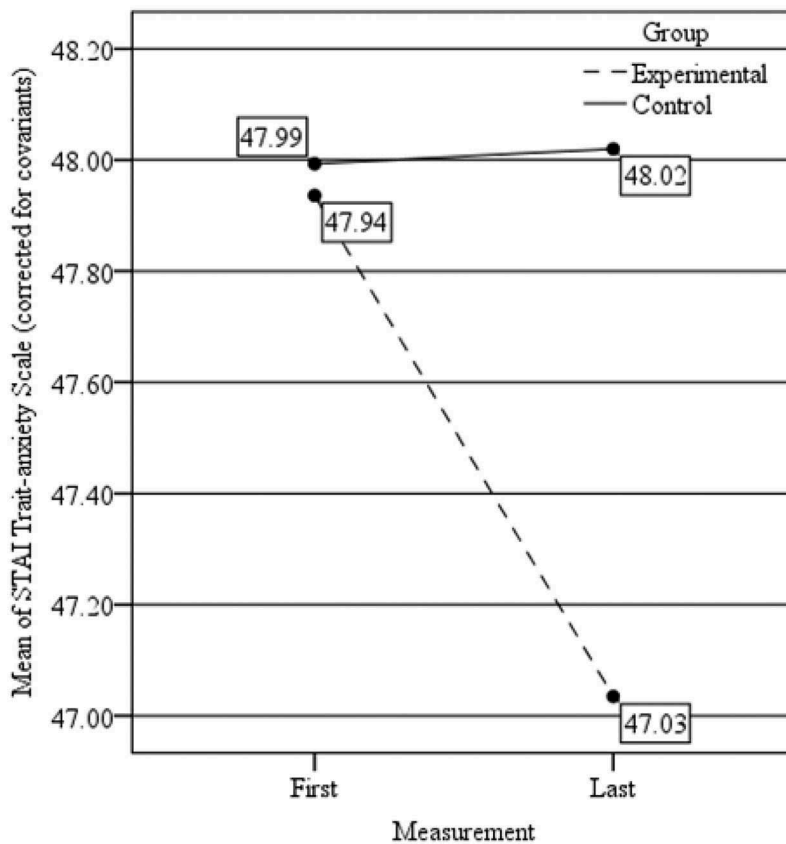
Figure 7. STAI Trait-anyiety scale

important for their relationship, but clinical findings also verified that there is an inverse relationship between psychological stress and the parameters of the sperms even though its effect is mainly measurable in the group of patients with decreased fertility (Nargund, 2015; Wdowiak, Bien, Iwanowicz-Palus, Makara-Studzinska, & Bojar, 2017) and it can also lead to leaving the treatment. Therefore, a non-pharmaceutical decrease in anxiety and stress and providing information and coping strategies may be crucial.

Because this study was limited by the number of participants, we did not evaluate the characteristics of coping strategies in the different subgroups so as to apply personalised therapies according to their diagnosis. Consequently, this remains a goal for further studies.

In summary, with the paramedical counselling of clients with infertility problems a more favourable mental well-being can be established with the active participation of professional helpers. Patients may receive effective, targeted and problem-specific help. The main task of patient-focused counselling is to assure that patients understand the consequences of their choice of treatment, provide sufficient emotional support and cope with the consequences of experiencing infertility in a healthy way.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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References

Beck, A. T., & Beck, R. W. (1972). Shortened version of BDI. *Postgraduate Medicine*, *52*, 81–85.

Boivin, J., & Gamerio, S. (2015). Evolution of psychology and counseling in infertility. *Fertility and Sterility*, *104*(2), 251–260.

Boivin, J., Takefiman, J., & Braverman, A. (2011). The fertility Quality of Life (FertQoL) tool: Development and general psychometric properties. *Fertility Sterility*, *96*, 409–415.

Brucker, P. S., & McKenry, P. C. (2004). Support from health care providers and the psychological adjustment of individuals experiencing infertility. *Journal of Obstetric, Gynecology & Neonatal Nursing*, *33*, 597–603.

Caldwell, R. A., Pearson, J. L., & Chin, R. J. (1987). Stress moderating effects: Social support in the context of gender and locus of control. *Personality and Social Psychology Bulletin*, *13*(1), 5–17.

Chiaffarino, F., Baldini, M. P., Scarduelli, C., Bommarito, F., Ambrosio, S., Dorsi, C., … Ragni, G. (2011). Prevalence and incidence of depressive and anxious symptoms in couples undergoing assisted reproductive treatment in an Italian infertility department. *European Journal Obstetrics Gynecology and Reproductive Biology*, *158*, 235–241.

Covington, S. N., & Burns, L. H. (2006). Infertility counseling. In S. N. Covington & L. H. Burns (Eds.), *Infertility counseling in practice* (pp. 493–558). New York, NY: Cambridge University Press.

Cserepes, R. E., & Bugan, A. (2015). Impact of depressive symptomatology in Hungarian infertile couples. *Psychiatria Hungarica*, *30*(1), 50–59.

Cserepes, R. E., Kőrösi, T., & Bugan, A. (2014). A meddőséggel összefüggő életminőség jellemzői magyar pároknál. [Characteristics of infertility specific quality of life in Hungarian couples]. *Orvosi Hetilap*, *155*, 783–788.

Darwiche, J., Bovet, P., Corboz-Warnery, A., Germond, M., Rais, M., Del Sarte, R., & Guex, O. (2002). Psychological support for couples seeking medically assisted procreation: Room for their narratives? *Gynécology, Obstétrics and Fertility*, *30*, 394–404.

Domar, A. D. (2015). Creating a collaborative model of mental health counseling for the future. *Fertility and Sterility*, *104*(2), 277–280.

Du Plessis, S. S., Cabler, S., McAlister, D. A., Sabanegh, E., & Agarwal, A. (2010). The effect of obesity on sperm disorders and male infertility. *Nature Reviews Urology*, *7*, 153–161.

El Kissi, Y., Romdhane, A. B., Hidar, S., Bannour, S., Ayoubi, J. K., Khairi, H., & Ben Hadj, A. B. (2013). General psychopathology, anxiety, depression and self-esteem in couples undergoing infertility treatment: A comparative study between men and women. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *167*, 185–189.

Emery, M., Béran, M. D., Darwiche, J., Oppizzi, L., & Germond, M. (2003). Results from a prospective, randomized, controlled study evaluating the acceptability and effects of routine pre-IVF counselling. *Human Reproduction*, *18*, 2647–2653.

Faramarzi, M., Pasha, H., Esmaelzadeh, S., Jorsarai, G., Aghajani, M. R., & Abedi, S. (2013). Is coping strategies predictor of anxiety and depression in couple infertile? *Health*, *5*, 643–649.

Furman, I., Parra, L., Fuentes, A., & Devoto, L. (2010). Men's participation in psychologic counseling services offered during in vitro fertilization treatments. *Fertility and Sterility*, *94*(4), 1460–1464.

Gameiro, S., & Boivin, J. (2015). An evidence-based approach to counseling for fertility treatment compliance. In S. Covington (Ed.), *Fertility counseling: Clinical guide and case studies* (pp. 265–280). Cambridge, UK: Cambridge University Press.

Greil, A. L., Slauson-Blevins, K., & McQuillan, J. (2010). The experience of infertility: A review of recent literature. *Sociology of Health & Illness*, *32*, 140–162.

Hakim, L. Z., Newton, C. R., MacLean-Brine, D., & Feyles, V. (2012). Evaluation of preparatory psychosocial counselling for medically assisted reproduction. *Human Reproduction*, *27*, 2058–2066.

Helembai, K. (2019). Patient conducting model for nursing care. *Madridge Journal of Nursing*, *4*(1), 139–144.

Jungwirth, A., Diemer, T., Dohle, G. R., Kopa, Z., Krausz, C., & Tournaye, H. (2017). Guidelines on male infertility. *European Association of Urology European Urology [Online]*. Retrieved from https://uroweb.org/guideline/male-infertility/

Kahyaoglu, S. H., & Balkanli, K. P. (2015). Quality of life in women with infertility via the FertiQoL and the hospital anxiety and depression scales. *Nursing Health Sciences*, *17*, 84–89.

Kort, H. I., Massey, J. B., Elsner, C. W., Mitchell-Leef, D., Shapiro, D. B., & Witt, M. A. (2006). Impact of body mass index values on sperm quantity and quality. *Journal of Andrology*, *27*, 450–452.

Lakatos, E., Szigeti, F. J., Ujma, P. P., Sexty, R., & Balog, P. (2017). Anxiety and depression among infertile women: A cross-sectional survey from Hungary. *BMC Women's Health*, *17*(1), 48.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal and Coping. In R. S. Lazarus & S. Folkman (Eds.), *The concept of coping* (pp. 215–238). New York, NY: Springer.

Martins, M. V., Costa, P., Peterson, B. D., Costa, M. E., & Schmidt, L. (2014). Marital stability and repartnering: Infertility-related stress trajectories of unsuccessful fertility treatment. *Fertility and Sterility*, *102*, 1716–1722.

Menning, B. E. (1980). The emotional needs of infertile couples. *Fertility and Sterility*, *34*, 313–319.

Nargund, V. H. (2015). Effects of psychological stress on male fertility. *Nature Reviews Urology*, *12*, 373–382.

Nikoloudakis, I. A., Vandelanotte, C., Rebar, A. L., Schoeppe, S., Alley, S., Duncan, M. J., & Short, C. E. (2018). Examining the correlates of online health information–seeking behavior among men compared with women. *American Journal of Men's Health*, *12*(5), 1358–1367.

O'Donnell, E. (2007). Making room for men in infertility counseling. *Sexuality, Reproduction and Menopause*, *5*(3), 28–32.

Peterson, B. D., Boivin, J., Norre, J., Smith, C., Thorn, P., & Wischmann, T. (2012). An introduction to infertility counseling: A guide for mental health and medical professionals. *Journal of Assisted Reproduction and Genetics*, *29*(3), 243–248.

Peterson, B. D., Newton, C. R., Rosen, K. H., & Skaggs, G. E. (2006). Gender differences in how men and women who are referred for IVF cope with infertility stress. *Human Reproduction*, *21*, 2443–2449.

Petok, W. D. (2015). Infertility counseling (or the lack thereof) of the forgotten male partner. *Fertility and Sterility*, *104*(2), 260–266.

Policy Audit on Fertility. (2017, November 30). Analysis of 9 EU Countries 2017 [Online]. Retrieved from http://PolicyAuditonFertilityAnalysis9EUCountriesFINAL16032017-3.pdf

Pook, M, & Krause, W. (2005). Stress reduction in male infertility patients: A randomized, controlled trial. *Fertility and Sterility*, *83*(1), 68-73. doi:10.1016/j.fertnstert.2004.06.053

Randi, S., Fürbringer, K. J., Schmidt, L., & Pinborg, A. (2016). Infertile men's needs and assessment of fertility care. *Upsala Journal of Medical Sciences*, *21*(4), 276–282.

Rozsa, S., Kő, N., Csoboth, C. S., Purebl, G. Y., Beöthy-Molnár, A., Szebik, I., . . . Kopp, M. A. (2005). Rahe-féle Stressz és Megküzdés Kérdőívvel szerzett hazai eredmények ismertetése [Presenting the results of Rahe's stress and combat questionnaire]. *Mentálhigiene És Pszichoszomatika*, *6*(4), 275–294.

Rozsa, S., Purebl, G. Y., Susánszky, E., Kő, N., Szadoczky, E., Rethelyi, J., … Kopp, M. (2008). A megküzdés dimenziói: A konfliktusmegoldó kérdőív hazai adaptációja. [Dimensions of coping: The domestic adaptation of the conflict resolution questionnaire]. *Mentálhigiéné és Pszichoszomatika*, 9(3), 217–241.

Rozsa, S., Szadoczky, E., & Füredi, J. (2001). A Beck Depresszió Kérdőív rövidített változatának jellemzői hazai mintán [Psychometric properties of the Hungarian version of the shortened Beck depression inventory]. *Psychiatria Hungarica, [The Journal of the Hungarian Psychiatric Association]*, 16(4), 379–397.

Sallay, V., Martos, T., Földvári, M., Szabó, T., & Ittzés, A. (2014). A Rosenberg Önértékelés Skála (RSES-H): Alternatív fordítás, strukturális invariancia és validitás [The Rosenberg Self-Assessment Scale (RSES-H): Alternative translation, structural invariance and validation]. *Mentálhigiene és Pszichoszomatika*, 15(3), 259–275.

Schill, W. B., Comhaire, F. H., & Hargreave, T. B. (2006). Andrology for the clinician. In F. Comhaire & A. Mahmoud (Eds.), *Oligo-Astheno-Teratozoospermia with no demonstrable cause* (pp. 77–84). Berlin: Springer-Verlag.

Spielberger, C. D. (1970). The development and validation of the Hungarian form of the STAI. In C. D. Spielberger & G. Diaz (Eds.), *Cross-cultural anxiety* (pp. 51–61). Washington-London: Hemispeher Publishing Corporation.

Stammer, H., Wischmann, T., & Verres, R. (2002). Counselling and couple therapy for infertile couples. *Family Process*, 41, 111–122.

Stauder, A., & Konkoly-Thege, B. (2006). Az észlelt stressz kérdőív (PSS) magyar verziójának jellemzői [The perceived stress questionnaire (PSS) is Hungarian version's features]. *Mentálhigiene és Pszichoszomatika*, 7(3), 203–216.

Stevenson, E. L., Hershberger, P. E., & Bergh, P. A. (2016). Evidence-based care for couples with infertility. *Journal of Obstetric, Gynecology & Neonatal Nursing*, 45, 100–110.

Szatmári, A., Fejes, Zs., & Király, I. (2018). A férfiak férfimeddőséggel kapcsolatos ismeretei és a támogatás lehetőségei: Kockázati tényezők és egyéni válaszreakciók. [Men's knowledge of male infertility and the possibilities for supporting therapy: Risk factors and individual responses]. *Orvosi Hetilap*, 159(31), 1263–1269.

Terry, D. J., & Hynes, G. J. (1998). Adjustment to a low-control situation: Reexamining the role of coping responses. *Journal of Personality Social Psychology*, 74(4), 1078–1092.

Throsby, K., & Gill, R. (2004). It's different for men: Masculinity and IVF. *Men and Masculinities*, 6, 330–348.

Van den Broeck, U., Emery, M., Wischmann, T., & Thorn, P. (2010). Counselling in infertility: Individual, couple and group interventions. *Patient Education and Counseling*, 81(3), 422–428.

Verhaak, C. M., Lintsen, A. M., Evers, A. W., & Braat, D. D. (2010). Who is at risk of emotional problems and how do you know? Screening of women going for IVF treatment. *Human Reproduction*, 25, 1234–1240.

Waylen, A. L., Metwally, M., & Jones, G. L. (2009). Effects of Cigarette smoking upon clinical outcomes of assisted reproduction: A meta-analyses. *Human Reproduction Update*, 15, 31–44.

Wdowiak, A., Bien, A., Iwanowicz-Palus, G., Makara-Studzinska, M., & Bojar, I. (2017). Impact of emotional disorders on semen quality in men treated for infertility. *Neuro Endocrinology Letters*, 38(1), 50–58.

Wischmann, T. (2013). 'Your count is zero'-Counselling the infertile man. *Human Fertility*, 16(1), 35–39.

Wise, L. A., Cramer, D. W., & Hornstein, M. D. (2011). Physical activity and semen quality among men attending an infertility clinic. *Fertility and Sterility*, 95, 1025–1030.