Effectiveness of Nursing Counseling Guided by BASNEF Model on Stress, Anxiety, Marital and Sexual Satisfaction among Infertile Women

1 Zamzam Ahmed Ahmed, 2Mirfat Mohamed Labib Elkashif, 3 Hanan Kheir Abd Ellatif Elmowafi, 4 Manal Ahmed Mohamed Ismail, 5 Sahar Abd El Mohsen Mosa

1Assistant Professor of Psychiatric and Mental Health Nursing Department, Faculty of Nursing, Assiut University

2Department of Maternity, Obstetrics and Gynecology, Faculty of Nursing, Port Said University, Egypt

3Lecturer of Community Health Nursing- Faculty of Nursing – Mansoura University, Egypt

4Lecturer at Psychiatric Nursing and Mental Health, Faculty of Nursing, Sohag University

5Lecturer Psychiatric Nursing, Faculty of Nursing, Modern University for Technology and Information

Abstract

Background: Infertility in women is on the rise, affecting every aspect of their lives. The impact of infertility on sexual and marital functioning is one of the most significant. Infertility's psychological effects may have a detrimental influence on marital and sexual fulfillment. One can observe an improvement in women's marital and sexual functioning by using educational models. **Aim:** to investigate the effectiveness of nursing counseling guided by BASNEF model on stress, anxiety, marital and sexual satisfaction among infertile women. **Design**: A quasi-experimental study design was used (pre and post-intervention). **Setting:** The study was carried out at the outpatient clinic of the Obstetrics and Gynecology Department in Sohag University Hospital. **Sampling**: A convenient sample of one hundred infertile women was included in the study. Tools: To gather the data, five tools were employed: a structured interview questionnaire; the perceived stress scale, the Arabic version of the Tylor anxiety scale; the female sexual function index; and ENRICH marital satisfaction index. **The results**: The results of the study showed a very significant difference in the study of Infertile women's stress, anxiety, marital and sexual satisfaction pre and post-nursing counseling guided by BASNEF model implementation. **Conclusion**: Implementation of nursing counseling guided by BASNEF model significantly improved the Stress, Anxiety, Marital and Sexual Satisfaction among Infertile Women. **Recommendation:** It's suggested to use a BASNEF counseling model to improve stress, anxiety, and marital and sexual satisfaction.

Keywords: Anxiety, BASNEF model, Infertile women**,** Marital and sexual satisfaction**,** Nursing Counseling**, &** stress

Introduction:

The failure to achieve a clinical pregnancy after 12 months or more of regular, unprotected sexual activity is the definition of infertility given by the World Health Organisation. There are an increasing number of infertile women. Worldwide, the number of infertile women is estimated to be 72.4 million. Two Over 25 million women in Egypt are between the ages of 15 and 49, which implies that at least 3 million of them are infertile Zegers-Hochschild et al., **2019*).***

The sexual life of infertile women is a very important point for research as infertility is accompanied by disruption of a woman's sexual function, including sexual desire, arousal, orgasm, sexual satisfaction, and other areas of sexual life. Therefore, infertile couples are more likely to suffer from sexual disorders and psychological imbalances ***(Sene et al., 2021).***

Infertility is the absence of a couple's ability to conceive after one year of regular intercourse without using any method of family planning. Infertility is considered one of the risk factors that affect sexual life, as 71.8% of infertile women have sexual dysfunction. Infertility not only affects the patient's self-esteem but also increases the monetary and psychological loads hence; infertility may impact the relationship of couples and satisfaction with intercourse ***(Azarbayjani et al., 2021).***

The sexual lives of couples may suffer as a result of the diagnosis and treatment of

infertility, which includes a thorough laboratory workup, repeated follow-up ultrasonography, stringent coital regulations, and failed cycles. Infertility has been linked to health issues, low self-esteem, feeling like grieving, sexual discomfort, depression, guilt, anxiety, frustration, emotional distress, and marital issues, according to reports. Six Both men and women are emotionally impacted by infertility, but women appear to be more stressed, under pressure and have higher rates of anxiety and depression (**Schweiger et al., 2018).** Fifty to sixty percent of couples report significantly less sexual satisfaction while receiving infertility treatment. Studies have indicated a strong correlation between poor sexual health and numerous social issues, including rape, mental illness, divorce, and criminality **(Eren et al., 2018).**

A vital aspect of health and life satisfaction is sexual function. While sexual issues are a problem for both partners, women are more likely to experience them than men; roughly 95% of women report having at least one sexual issue **(Petraten et al., 2019).** Psychosocial, neurological, and hormonal processes are all involved in the complex multifaceted nature of female sexual function. Many women's quality of life is disrupted by female sexual dysfunction, a continuum of psychosexual disorders focused on sexual desire with related issues of arousal, orgasm, and sexual pain **(Edelmann & Connolly, 2019).**

Counseling is very important for the systematic evaluation of individuals' sexual life, as well as the prevention of sexual dysfunction. About 80% of sexual problems can be solved if proper and adequate sexual health counseling is given **(Bakhtiar et al., 2022).** Nurses' psychosexual counseling significantly improves marital harmony, sexual dysfunction, and sexual issues. According to **Taylor and Davis (2011**), nurses are among the medical professionals whom women find easiest to communicate with and who can help ease their concerns regarding sexual matters.

According to John Hubley, The beliefs, attitudes, subjective norms, and enabling factors (BASNEF) model is one of these models which consists of beliefs about the consequences of behavior, attitudes towards behavior, subjective norms, and enabling factors. This model combines the expectancy-value theory with the Precede–Proceed model (**Hubley, 1993**). The behavior change is the most important BASNEF model construct. Nineteen Culture, values, traditions, education, the media, and individual experiences all have an impact on beliefs and attitudes. Peer pressure, social media, family, and society are examples of subjective norms. Time, abilities, women's status, and income are examples of enabling variables (**Reimers, 2020).**

One new teaching strategy that could be suggested is this model. (**Hazavehei et al., 2018**), The BASNEF model is used in developing nations to address the societal need for health education. It is important to consider the connection between marital satisfaction and happy emotions, though, as infertility is one of the main causes of sexual dysfunction and marital dissatisfaction **(Sooky et al.,2019).**

Effective health education places a special emphasis on having a capable and appropriate model for behavior change (**Arlinghaus & Johnston, 2017**). The process of creating an educational program also begins with selecting a health education model (**Roden et al., 2020**). The BASNEF model is currently one of the most useful educational frameworks for influencing behavior globally, particularly in developing nations (**Hubley, 1988**). This model is used to research behavior, make plans to modify it, and identify the variables that affect people's decisions to engage in certain behaviors (**Shahnazi et al., 2019**).

According to this model, beliefs, attitudes, subjective norms, and enabling factors, all influence behavior. The initial letters of these words are combined to form the word BASNEF (**Arlinghaus & Johnston, 2017).** Despite the significance of promoting sexual health, particularly for women, there is currently a lack of comprehensive, organized, or model- and pattern-based educational programs and the majority of women are unable to comprehend the information they are taught during these programs. Thus, it would seem imperative to develop a comprehensive program centered on an educational model to promote sexual health.

The assessment of sexual problems is a vital role for nurses to provide guidance related to treatment and improvement of sexual activity. Some sources make it clear that this

aspect of care is not appropriately handled by nurses, due to communication gaps that usually exist among nurses and suffering women. To provide women the chance to speak effectively and resolve difficulties relating to their sexual well-being, nurses should include pertinent questions in their assessments ***(Shahin et al., 2021).***

Effective communication techniques are essential for nurses working in infertility clinics to ensure that infertile women feel comfortable during their treatment. However, several stressors that deplete infertile women's motivation can occur ***(Fata and Aluş Tokat., 2021)***. In the course of infertility treatment, the goal of nursing care is to assess couples using a bio-psychosocial approach and to provide a double-specific strategy after assessing the couple's needs ***(Çambel and Akköz Çevik., 2022).***

To prevent acquired female infertility, nurses must identify interventions for maintaining a healthy lifestyle and provide ongoing support. These interventions include eating a well-balanced, nutritious diet that includes plenty of fresh fruits and vegetables, maintaining a normal weight, and helping women who already have metabolic syndrome prevent many serious health problems. Additionally, the nurse needs to counsel infertile women For women with type 2 diabetes, atherosclerotic cardiovascular disease, and metabolic syndrome and its consequences, physical activity is typically a safe and helpful treatment. Exercise, both aerobic and resistance, is a useful treatment(***Mohammed and El-Asary., 2022)***.

It is advised that women engage in moderately intense physical activity for 30 minutes each day on average. It is recommended to engage in aerobic activity in 10-minute or longer bursts, ideally distributed throughout the week. Healthcare professionals should be aware of women who may have metabolic syndrome when they visit doctors, clinics, and hospitals for any reason. Therefore, some medical professionals advise measuring blood pressure, blood lipid levels, blood glucose, and waist circumference (**Rostami Moez et al., 2020**).

Significance of the study:

Geographically, infertility affects couples differently; eight to twelve percent of couples worldwide are thought to be affected. Infertility has been reported to affect one in four couples in developing nations (**Sayed, 2020**). Infertility affects 12% of Egyptian couples; of these, 7% experience secondary infertility, and 4.3% experience primary infertility. Of these, 64% of cases are caused by the female partner, 20% by the male partner, 12.2% by causes affecting both partners, and 3.3 percent go undiagnosed. Over 25 million women in Egypt are between the ages of 15 and 49, which implies that at least 3 million of them are infertile (**Moustafa et al., 2020**).

According to **Salman et al. (2022**), the prevalence of infertility varies between 3.5% and 16.7% in industrialized countries and 6.9% to 9.3% in impoverished countries. Furthermore, based on their clinical experience, the researchers discovered that infertile women had inadequate knowledge about sexual function and fertility. Thus, the researcher conducted this study to investigate the effectiveness of nursing counseling guided by BASNEF model on stress, anxiety, marital and sexual satisfaction among Infertile Women.

Research Hypothesis

Infertile women who received nursing counseling guided by BASNEF model would have improved stress, anxiety, and marital and sexual satisfaction among infertile women post-intervention than before the intervention.

Aim of the study:

To investigate the effectiveness of nursing counseling guided by BASNEF model on stress, anxiety, marital and sexual satisfaction among infertile women

Study Hypotheses:

- Infertile women who receive nursing counseling guided by the BASNEF model will have lower stress and anxiety levels after the intervention than before the intervention.
- Infertile women who receive nursing

counseling guided by the BASNEF model will have an enhanced level of marital and sexual satisfaction after the intervention than before the intervention.

Subjects and Methods

Study Design: A quasi-experimental study design was used (pre and post-intervention).

Study Setting: The study was carried out at the Outpatient Clinic of Obstetrics and Gynecology Department in Sohag University Hospital. It provides free and paid services during pregnancy, labor, postpartum, and miscarriage. It also provides fertility treatment and gynecological care for public clients.

Sample: A convenient sample of one hundred infertile women was included in the study.

Data Collection Tools:

The following five tools were used for data collection:

Tool I: A structured interviewing sheet: It was developed by the researchers and involved three parts:

Part I: General characteristics of the studied women as (age, residence, level of education, and occupation).

Part II: Infertility history of the studied women as (marriage duration, duration of infertility, attempting to initiate pregnancy, causes of infertility, previous evaluation for infertility, and type of treatment)

Part III: included the sexual history of the studied women (Presence of problems related to erection, use of lubrication during intercourse, timing intercourse with ovulation, and frequency of intercourse).

Tool II: Perceived Stress Scale (PSS) (State of New Hampshire Employee Assistance Program, 2019): It is a well-known tool for evaluating stress. The respondent gave the following responses to its ten questions: 0 for never, 1 for rarely, 2 for occasionally, 3 for often, and 4 for very often. A higher PSS score denotes more felt stress, whereas a lower score on the PSS suggests less perceived stress. The total score on the PSS was between 0 and 40. A score of 0 to 13 indicates low felt stress, a score of 14 to 26 indicates moderate felt stress and a score of 27 to 40 indicates severe felt stress.

Tool III: The Arabic version of the Tylor Anxiety Scale (Taylor,1953): Mostafa Fahmi and Mohamed Ahmed (2010) translated and verified it, after Tylor's original work. There are fifty items on the Likert scale, with 1 representing "yes" and 0 representing "no." The total score is divided into five categories: mild anxiety (17–20), moderate anxiety (21–26), severe anxiety (27–29), and extremely severe anxiety (30–50). The total score ranges from 0 to 50.

Tool IV. Female Sexual Function Index (FSFI) (Anis et al., 2011).

Rosen et al. (FSFI) adopted the female sexual function index. There are six components to the assessment of the sexual experience: pleasure, discomfort, orgasm, and lubrication. It consists of nineteen questions. Twelve questions covering all aspects of sexual function comprise the redesigned FSFI scale, which measures the extent of women's sexual function and was tailored to fit Egyptian cultural norms. Overall, the following is the score for the female sexual function index: What happens is determined by how the woman answers twelve questions on a three-point Likert scale. A total of 36 were assigned to the female sexual function index. The score was calculated using the following categories: The average sexual function is 50%, or 18–26 out of a possible 40, while 75% of the sample is sexually active, or 27–36 out of the total score. Of the total, 17 or fewer are thought to have sexual dysfunction, which is less than 50%.

Tool V: ENRICH Marital Satisfaction Scale (Blaine and David, 1993):

An accurate tool for assessing marital satisfaction is the ENRICH Marital Satisfaction Scale (Blaine and David, 1993). Each item on the Likert scale, which ranges from 1 to 5, is totaled fifteen. opposes (1) strongly, opposes (2) somewhat, opposes (3), agrees with (4) moderately, and opposes (5) strongly. Complete answers to the questions were scored between 15 and 75, and the results were split into three categories: partial answers (between 37 and 56; between 50 and 75%), high answers (between 57 and 75; over 75%), and low answers (below 37; less than 50%).

Validity of the tools:

To confirm the validity of the tool, a team of experts—including medical and nursing specialists with expertise in the field of obstetrics and gynecology nursing—verified the accuracy and completeness of the tool. They were asked to score the items' clarity and thoroughness as well. No change was made.

Reliability of the tools:

Reliability was determined by the study's tools to be 0.81 for Tools I, 0.78 for Tools II, 0.92 for Tools III, 0.77 for Tools IV, and 0.79 for Instrument V.

Ethical Considerations:

After receiving approval from Sohag University's Faculty of Nursing Ethical Committee, this study was carried out. After receiving an official letter from the dean of Sohag University's College of Nursing, the necessary approval for the research setting was secured. The women gave their informed consent to participate in the study after being made fully aware of its objectives. The women in the study do not face any medical, social, or psychological risks, and their rights have all been upheld. The confidentiality of the data collected was assured, as was the privacy of the women. Before beginning, each woman received details about the intervention as well as information about her right to withdraw at any time.

Administrative approval

Official permission was obtained from the directors of the pre-mentioned setting at Sohag University Hospital to conduct the study after explaining its purpose, study sample, and timeframe of the study.

Pilot Study

A pilot study was carried out with 10 women, or 10% of the total sample, before data collection. It was done to find out how long it would take to complete the tools and to make sure they were appropriate, applicable, and clear. The necessary adjustments were made in light of the results of the pilot study. Since no changes were made, the women from the pilot study were also included in the main study sample.

Fieldwork

Starting from July 2023 to the beginning in late December 2023, The fieldwork was finished. The researchers collected the data in the mornings twice a week. The medical and nursing staff members were introduced to the researchers in this setting. The nature and goal of the study were explained in detail. Four stages comprised the implementation of the study: interviewing and data collection planning, intervention, and evaluation.

Interviewing and data collection phase: After receiving informed consent, researchers enlist women who meet the inclusion criteria toparticipate in the study.

Planning Phase:

General goal: to improve stress, anxiety, and marital and sexual satisfaction among infertile women using nursing counseling guided by the BASNEF model.

At this point, the researchers are choosing the educational components of the nursing intervention. Many successful teaching methods were employed, such as role-playing, discussion, demonstration, and the use of simple Arabic. Educational media, including laptops, videos, images, and written materials (booklets), are created and made available with the purpose of spreading knowledge and promoting discussion. To guarantee adherence to the selected therapies, the researchers also ascertained the duration and frequency of counseling sessions for each of the selected women.

The implementation phase:

The counseling sessions were conducted in an academic environment. At this stage, women attended individual counseling sessions. The researchers made sure the meeting space was secure. The phases of the BASNEF counseling model were applied in four counseling sessions. Every week, there is just one 2-hour session. First, the research tool was used to administer a pretest to the intervention and control groups. The intervention group received the sexual health education materials based on the BASNEF model following the pretest.

Intervention: Using verified scientific sources and pretesting as a basis, the intervention's content was created. The women's attitudes towards these issues, as well as their knowledge of infertility, were taken into consideration during the first session. Subjective norms, or social pressures, were the topic of discussion at the second session. In the third session, we talked about introducing and enabling factors like marital counseling. In the last meeting, the material was gone over and condensed.

During four two-hour sessions per week, the educational content based on the BASNEF model was presented as part of the counseling intervention.

Counseling program Sessions

1. Beliefs: defining sexual health, how it affects married women's quality of life, sexual skills, personal beliefs about the consequences of unhealthy sexual behavior, the significance of sexual skills for marital satisfaction, and the advantages of safe sex

2- Attitudes correcting misconceptions about sexual issues; creating realistic, positive, and healthy expectations about sex, the attitude one has towards the positive and respectful approach to sexuality and sexual relationships importance of misconceptions and the role of positive.

3-Subjective norms assess the significance of endorsing or disapproving significant referents regarding conduct and strategies for overcoming social pressures related to sex, STIs, unintended pregnancies, unsafe abortions, etc. Pelvic exercise and a variety of body positions during intercourse are methods for improving sexual performance.

Stress and anxiety are managed and reduced by using relaxation techniques like breathing exercises, guided visualization, and recreation. Additionally, educate people about frequent exercise, like walking for at least 30 minutes a day, and food therapy like a high-fruit diet.

4-Enabling factors Educating individual and environmental factors that facilitate the improvement of sexual behavior teaching the correct sexual communication techniques, and helping people understand the need for consultation with experienced professionals**.** Also, evaluating characteristics of the environment that facilitate or impede healthy behavior and behavioral intention dressing attractively, reconstructingbreast cosmetics, and using specialized undergarments.

The evaluation phase:

One month after applying counseling guided by BASNEF model, all four tools perceived stress scale, Tylor anxiety scale, marital satisfaction scale, the female sexual function index (FSDI), and—were measured.

Statistical Analysis

Version 22 of the SPSS (Statistical Package of Social Science) program was used to organize, tabulate, and statistically analyze the collected data. Fisher's Exact Test and the Chi-square test (2) were used to compare quantitative data before and after the intervention. A significance threshold of $p = 0.05$ was applied.

Results:

Table (1) shows that the mean age of the studied infertile women was 32.77±2.11 years. Concerning residence, 56 % of them live in urban places. As regards level of education, 50% of the studied infertile women had secondary education. Moreover, 63% of them were employees.

Table (2) shows that the marriage duration of infertile women was 1<10 years. As regards duration of infertility, 50% of the infertile women didn't have pregnancy for ≥ 4 years and 52% of the infertile women attempted to initiate pregnancy for ≥ 3 years. Also, 43% of the infertile women had male factors of infertility and 72% of infertile women were evaluated for infertility previously. According to the type of infertility treatment 58 % of the infertile women used medications (fertility drugs).

Figure (1) displays that 70% of the studied infertile women had primary infertility meanwhile 30% of them had secondary infertility.

Table (3) illustrates that 60% of the studied infertile women didn't have problems

with erection. Also, 70% of them didn't use lubricants during intercourse. Also, 45% of them timing intercourse with ovulation, and 75% practiced intercourse twice per week.

Table (4) Shows that there was a statistically significant difference and improvement in infertile women 's stress levels as 52% of infertile women had a low level of stress after counseling guided by the BASNEF model compared to 25% of them pre-intervention.

Table (5) reveals a statistically significant difference and improvement in infertile women's anxiety levels as 50% of infertile women had a mild level of anxiety post-counseling guided by the BASNEF model compared to 22.0% of them pre-intervention.

Table (6) shows the sexual dysfunction among infertile women pre- and post-application of counseling guided by BASNEF model. The table shows that every element of sexual function showed a statistically significant improvement, as 33.0%, 40.0%, 42.0%, 41.0%, 55.0%, and 52% of infertile women, respectively, had decreased desire, decreased arousal, decreased lubrication, Orgasm failure, sexual dissatisfaction, and dyspareunia post-intervention.

Table (7) shows the infertile women's sexual functioning before and after applying counseling guided by BASNEF model. Sexual functioning improved statistically significantly after the intervention, with 25.0% of infertile women becoming sexually active, compared to only 13% of infertile women before the intervention, and with 30% of infertile women experiencing sexual dysfunction, compared to 57% ofthem before theintervention.

Figure (2) showed that there was an improvement in the degree of infertile women's marital satisfaction after intervention as 20% of the infertile women reported a low level of marital satisfaction post-intervention compared to 50% of the study participants pre-intervention.

Table (1): General characteristics of the studied infertile women (n=100).

General characteristics	No	%
Age (years)		
• less than 30	42	42.0
• 30 < 35	38	38.0
• 35 < 40	20	20.0
Mean ±SD	32.77±2.11	
Residence		
• Rural	44	44.0
• urban	56	56.0
level of education		
• Primary education	14	14.0
• Secondary education	50	50.0
• University education	36	36.0
Occupation		
• Housewife	37	37.0
• Employee	63	63.0

Table (2): Fertility history of the studied infertile women (n=100).

Items	No	%
Marriage duration (years)		
• 1<10	55	55.0
• 10 < 20	40	40.0
• 20 ≤ 30	5	5.0
Infertility duration (years)		
• 2 <3	27	27.0
• 3 <4	22	22.0
• ≥ 4	50	50.0
Attempting to initiate pregnancy		
• < 1 year	12	12.0
• 2 < 3 years	36	36.0
• ≥ 3 years	52	52.0
Infertility causes		
• Female factors	35	35.0
• Male factors	43	43.0
• Unknown cause	22	22.0
Previous evaluation for infertility		
• Yes	72	72.0
• No	28	28.0
Type of infertility treatment		
• Medications (fertility drugs)	58	58.0
• Surgical procedures	32	32.0
• Assisted conception as (IUI) or (IVF).	10	10.0

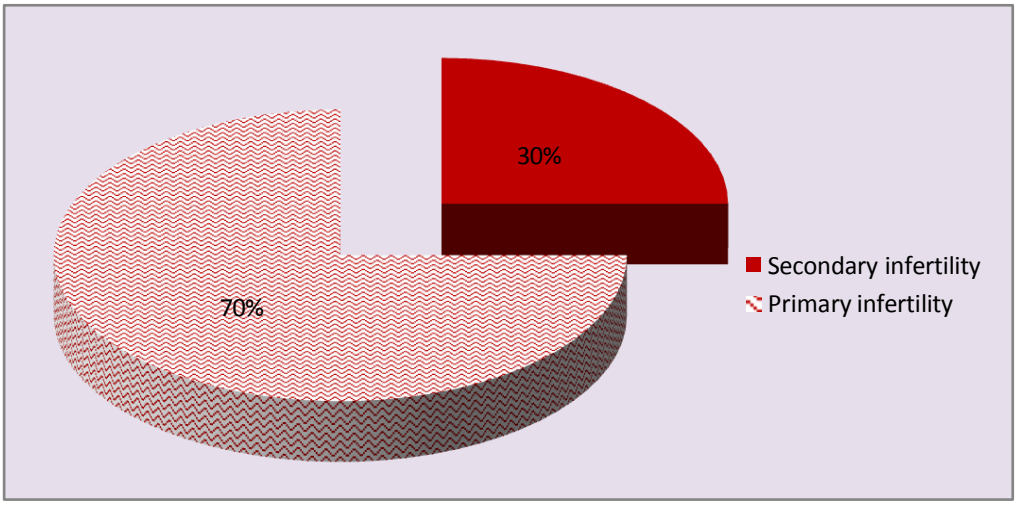

Figure 1: Infertile women distribution concerning types of infertility (n=100)

Table (3): Sexual history of the studied infertile women (n=100).

Items	No	%
The presence of problems related to erection		
• Yes	40	40.0
• No	60	60.0
Use of lubricants during intercourse		
• Oil-based lubricants	13	13.0
• Water-based lubricants	15	15.0
• Silicone-based lubricants	2	2.0
• None	70	70.0
Timing intercourse with ovulation		
• Yes	45	45.0
• No	55	55.0
Frequency of intercourse		
• Once per week	8	8.0
• Twice per week	75	75.0
• Three days per week	17	17.0

Table 4: Stress levels pre and post-counseling guided by BASNEF model among infertile women (n=100)

Stress level	Pre-counseling guided by BASNEF model	Post-counseling guided by BASNEF model	X^2 P -value
	%	%	
• Low stress	25.0	52.0	12.45- .003
• Moderate stress	58.0	35.0	
• High stress	17.0	13.0	

Table 5: Anxiety levels pre and post-counseling guided by BASNEF model among infertile women (n=100)

Anxiety **level**	Pre-counseling guided by BASNEF model	Post-counseling guided by BASNEF model	X^2 P -value
	%	%	
• Mild anxiety	22.0	50.0	8.89- .008
• Moderate anxiety	56.0	40.0	
• Severe anxiety	22.0	10.0	

Table 6: Sexual Dysfunction among the studied infertile women pre and post-counseling guided by BASNEF model (N=100)

Variable value	Pre-intervention		Post intervention		Fisher's Exact Test	P –P-
	No	%	No	%		
Decrease desire	58	58.0%	33	33.0%	7.65	.007
Decrease arousal	57	57.0%	40	40.0%	5.34	.022
Decrease lubrication	66	66.0%	42	42.0%	7.88	.006
Orgasm failure	62	62.0%	41	41.0%	5.92	.006
Sexual dissatisfaction	77	77.0%	55	55.0%	5.63	.017
Dyspareunia	83	83.0%	52	52.0%	13.22	0.001

Table 7: Sexual Functioning Score among the infertile women pre and post-counseling guided by BASNEF model (N=100)

Variable	Pre intervention		Post intervention		X^2	P-value
	No	%	No	%		
Sexually active	11	13.0%	20	25.0%		
Average sexual function	26	30.0%	40	45.0%	13.32	.002
Sexual dysfunction	50	57.0%	27	30.0%		

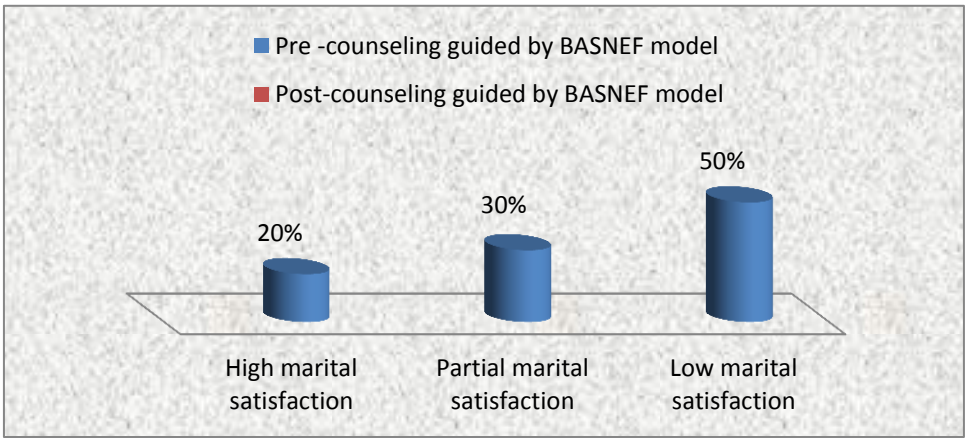

Figure 2: Marital satisfaction among the infertile women pre and post-counseling guided by BASNEF model (N=100)

Discussion:

According to **Shahbazi et al. (2020**), the BASNEF model is a helpful framework for modifying attitudes and beliefs in general. The goal of the current study was to determine how well nursing counseling for infertile women affected stress, anxiety, marital satisfaction, and sexual satisfaction using the BASNEF model as a guide. This goal was greatly accomplished by the current study's findings, which supported the hypothesis that infertile women receiving counseling under the direction of the BASNEF model would experience better stress, anxiety, marital satisfaction, and sexual satisfaction after the intervention than they would have before.

Regarding the general characteristics of the infertile women under study, the most recent research revealed that the mean age of these women was 32.77±2.11 years; over half of them resided in urban areas; over half had completed secondary education; and over three-quarters of them held a job. According to a study by **Yazdani et al. (2019**), the control and intervention groups' mean ages were 31.03±3.6 and 30.05±3.2, respectively, and more than two-thirds of both groups held a diploma. These results were consistent with our own. Furthermore, **Masoumi et al. (2017**) showed that over two-thirds of the study and control groups resided in urban areas, and over half of the intervention and control groups were employed. **Mohamed et al. (2020**), in contrast, showed that only 25% of the study group had completed secondary education, over half of them resided in rural areas, and over 75% of them were housewives.

The current study showed that the marriage duration of infertile women was 1<10 years. In the same line ***Marvi et al., (2019)*** illustrated that the mean duration of marriage of intervention and control groups was 8.52±4.65

and 8.77±4.76 years respectively. The results of our study weren't the same as ***Shalamzari et al., (2022)*** who illustrated that "the mean of the duration of marriage was 18.8±6.8 and 19.8±6.8 years.

The present study showed that less than three-quarters of the sample of infertile women with primary infertility and more than one-quarter of them with secondary infertility. This finding disagrees with Jamali et al., (2018) who reported the same results among the infertile women, respectively. This could be explained by the infertile women with primary and secondary infertility might not have been ready to disclose their sexual problems to other people because sexuality is still considered a taboo subject to discuss openly in Egyptian culture.

As regards the sexual history of the studied infertile women, the findings of the current study represented that three-fifths of the studied infertile women didn't have problems with erection. Also, less than three-quarters of them didn't use lubricants during intercourse. Also, less than half of them timing intercourse with ovulation, three quarters practiced intercourse twice per week. These findings do not agree with ***Mohamed et al., (2020)*** who demonstrated that about one-quarter of the study group's partners had premature ejaculation, more than half of the study group practiced sexual intercourse from 3-4 times weekly, more than two-thirds of them take Fertility drugs and more than half of them suffered from infertility from more than 3 years.

About infertile women's stress levels, the findings of the current study showed that there was a statistically significant difference and improvement in infertile women 's stress levels after counseling guided by BASNEF model compared to pre-intervention. From the researchers' point of view, it confirmed the positive effects of counseling guided by BASNEF model.

About infertile women's anxiety levels, the findings of the current study revealed a statistically significant difference and improvement in infertile women's anxiety level post-counseling guided by BASNEF model compared to pre-intervention. This agreement shows the benefit of counseling guided by BASNEF model on anxiety and marital satisfaction.

The findings of the present study showed that there was an improvement in the degree of infertile women's marital satisfaction after counseling guided by BASNEF model intervention. The lack of marital satisfaction pre-intervention can be related to many factors as shame, embarrassment, and lack of infertile women's knowledge to discuss these issues with other people, many people consider talking about such issues as taboo however, after attending the counseling guided by BASNEF model application that involved different teaching methods and by using simple clear Arabic language a significant improvement in the study group's marital satisfaction had occurred.

The results of ***Masoumi et al., (2017)*** agree with our findings as showed that, the application of the Enrichment Program on Marital and Sexual Satisfaction improved marital and sexual satisfaction immediately after the post-program and eight weeks after the intervention. This result highlights the positive effect of counseling guided by BASNEF model application in enhancing infertile women's sexual function reflected in improving their marital satisfaction.

The current results can be related to the fact that sexual relationship helps to stabilize marital life, but it may be difficult to practice intimacy with any imbalance in sexual desire, arousal, lubrication, orgasm, satisfaction, or even pain. This certainly has implications for both couples, especially on their psychological health. The results of the current study demonstrated a marked improvement in sexual function following counseling guided by BASNEF model, and demonstrating the success of the intervention.

The results of **Shahbazi et al. (2020**) demonstrated that the educational intervention based on the BASNEF model can improve women's beliefs and attitudes regarding sexual health, even though in the current study the

educational intervention did not make any statistically significant change in the participants' scores of attitudes. The variations in the participants may account for the discrepancies in the attitudes test results. The subjects' mean subjective norm scores in the intervention group were considerably higher following the education than they were initially.

They demonstrated how education improved women's subjective norms around sexual health. Of course, there was no discernible difference between the two groups' subjective norms following the intervention in a study designed to assess the impact of sex education based on the theory of planned behavior on sexual function in women. Additionally, the study's findings demonstrated that the intervention group's referral rate to sexual counseling centers was significantly higher than that of the control group following the education. Studies have demonstrated that behavior modification through educational programs utilizing the BASNEF model is typically successful (**Shahbazi et al., 2016, Barimani Aboksari et al., 2020).**

According to the BASNEF model, when attitudes and subjective norms are effective for a particular behavior, if the enabling factors act as mediators, the behavioral intention leads to the desired behavior (**Bandehelahi et al., 2020**). Indeed, if a woman has a positive attitude toward sexual health and the important people in life encourage her in this regard, she can be remarkably successful in sexual function (**Behboodi Moghadam et al., 2019**). In some countries, sexual issues face cultural resistance and are taboo, and negative attitudes toward sexual issues are considered shameful in women (**Ebrahimipour et al., 2019**).

The results of the current study showed the sexual dysfunction among the infertile women pre- and post-application of counseling guided by BASNEF model. The table shows that every element of sexual function showed a statistically significant improvement, such as decreased desire, decreased arousal, decreased lubrication, Orgasm failure, sexual dissatisfaction, and dyspareunia post-intervention.

These findings were supported by **Jahanfar & Molaeenezhad (2019**) who concluded that sexual activity is one of the most important parts of women's life. In addition, various factors, including physiological factors, psychological factors, medications, infertility, lifestyle, and relationships, are effective in the occurrence and progress of sexual disorders in infertile women In addition **Shir Mohammadi, (2020**) stated that female sexual desire was not affected by organic factors; but, it was influenced by self-confidence, previous sexual experiences, strong emotional relationships, hormones, and psychological diseases. And also, agree with **Jindal & Dhall (2018**) who evaluated 200 Indian infertile women and showed that decreased frequency of intercourse and - orgasm were the most common problems. This could be explained by infertile women with sexual dysfunction did not seek any help or advice for their sexual problems. When a physician asked about the reason for not consulting linked it to embarrassment.

However, this finding was contrary to **Jamali et al., (2019)** who mentioned that the prevalence of sexual dysfunction was all in primary infertile women, respectively. This could be explained by which might be due to the lack of knowledge about marital issues and the lack of training in society.

Also, **Shufelt & Braunstein (2019**) reported that counseling, books, and health educational programs help couples communicate better about their sexual needs & differences, understand the causes of their difficulties, and provide treatment suggestions. Increasing novelty often sparks sexual desire and enhances sexual response.

Concerning the infertile women's sexual functioning the results showed that before and after applying counseling guided by BASNEF model. Sexual functioning improved statistically significantly after the intervention.

In general, the BASNEF model is a useful framework for change in beliefs and attitudes also found that the educational intervention based on the BASNEF model increased belief and attitude scores. Perhaps

these occurred because, during the sessions, we discussed topics that changed attitudes toward sexual health and altered thoughts about infertility (**Ebrahimipour et al., 2019**).

Concerning subjective norms, the results were promising. However, based on the observations of the main investigator in the educational sessions, infertile women had problems with sexual self-regulation and sexual self-efficacy. Because of feeling deficient, these women stayed away from sexual relationships. It has been argued that individual factors, such as stress, false beliefs, and self-blame, have various effects on sexual health that in turn can affect sexual activity (**Zareipour et al., 2018**).

Enabling factors were assessed about seeking sexual counseling. The two groups were homogeneous before the study. However, after the intervention and understanding of subjects about the need to seek help from experienced experts, the intervention group showed significant improvement. We think this happened because of improvements in their capacity for effective communication with their partner as a powerful factor. Similar observations have been reported by other investigators (**Shahnazi et al., 2016**).

Conclusion

In light of the current study findings, it can be concluded that implementation of nursing counseling guided by BASNEF model significantly improved the stress, anxiety, marital and sexual satisfaction among infertile Women

Recommendations:

Depending on the research findings, the following recommendations are suggested:

- It's suggested to use a BASNEF counseling model to improve stress, anxiety, marital and sexual satisfaction
- In-service training programs related to sexual function and satisfaction must established to develop women's knowledge, practices, and attitudes to fit newly developed concepts for adaptation.
- Replication of the current study with a larger sample of patients in different settings is required to generalize the results.

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