Effect of Teach-Back Instructional Sessions on Severity of Sheehan's Syndrome Sequelae

Doaa Lotfi Afifi Alqersh[1], Amany M. Ahmed[2]

(1) Lecturer of Maternal and Newborn Health Nursing, Faculty of Nursing, Menoufia university, Egypt.

(2) Assistance professor of Woman's Health and Midwifery Nursing, Faculty of Nursing, Kafrelsheikh University, Egypt

ABSTRACT

Background: Sheehan's syndrome is a consequence of ischemic necrosis of pituitary gland following a significant intra and/or post-partum hemorrhage. It is a well-known cause of hypopituitarism and causes physical, psychological, and sexual problems. **Aim:** The aim of the current study was to examine the effect of teach-back instructional sessions on severity of Sheehan's syndrome sequelae. **Methods**: A quasi-experimental design (one-group pretest-posttest) was employed. A purposive sample of 30 women was enrolled. Data were collected using five tools: Structured interviewing questionnaire schedule; The 6-item female sexual function index (FSFI-6); Hot Flushes Index (HFI); Hot Flash Related Daily Interference scale (HFRDIS); and perceived stress scale (PSS). **Results**: Regarding sexual function, the mean score of the total female sexual function was increased significantly from 12.2±3.29 at pre-intervention to 14.2±4.05 at post-intervention (p=0.002). Concerning the effect of hot flushes on daily living activities, there was a highly significant difference between pre- and post-intervention where the mean score was decreased from 60.3±12.8 at pre-intervention to 25.6±9.06 at post-intervention (p<0.001). In relation to stress level, 20.0% of women reported high stress level at pre-intervention which significantly decreased to 8.5% at post-intervention (p<0.001). **Conclusion**: Teach-back instructional sessions was effective in reducing the severity of Sheehan's syndrome sequelae. **Recommendation:** Women with Sheehan's syndrome should be equipped with adequate knowledge through teach-back instructional sessions to enhance their self-care efficacy and therefore, reduce their suffering.

Key words: Teach-back, Instructional sessions, Sheehan's syndrome sequelae

Introduction:

Sheehan's syndrome (SS), a potentially fatal endocrine emergency in postpartum women, is brought on by ischemic pituitary necrosis (**Laway & Baba, 2017**). Amenorrhea, vaginal atrophy, and early senility are its hallmarks (**Gibbins et al., 2013**). In poorer countries, it is a major cause of hypopituitarism. When women experience

postpartum hemorrhage and lose up to 1-2 liters of blood, Sheehan's syndrome can develop in 1-2% of them, leading to hypotension (**Jose et al., 2019**). It was first described in 1937 by British pathologist Harold Leeming Sheehan (**Karaca et al., 2016**).

Its incidence has currently decreased due to contemporary effective obstetric care, especially in developed countries (**Matsuzaki et al., 2017**). It affects up to five patients per 100,000 births (**Karaca et al., 2016**), with SS being responsible for 5.1% of hypopituitarism cases. The mean age of diagnosis for SS is 41.1 years, and it is more prevalent in older women than in younger women (**Diri et al., 2016**).

The pathogenesis of SS occurs due to vasospasm and ischemia of the enlarged anterior pituitary gland as a result of massive blood loss during labor. The pituitary gland enlarges physiologically throughout pregnancy, growing to 120–136% of its initial size due to lactotroph hyperplasia. There is no increase in vascular supply in conjunction with this pituitary hyperplasia. Pituitary hypertrophy may also result in compression of the superior hypophyseal artery. Additionally, thrombosis and hypercoagulation in the pituitary arteries may be a factor (**Diri et al., 2016**).

According to **Karaca et al. (2019)**, depending on the extent of blood loss, the clinical signs of the resulting hypopituitarism might start developing as early as the postpartum period or years after the first episode of hypovolemia and shock. Patients may therefore arrive with either an acute or a chronic SS manifestation. More people have a chronic disorder than an acute one. Although uncommon, acute Sheehan's syndrome after labor can be reasonably dangerous if not identified and managed as early as possible (**Karaca et al., 2016; Olmes et al., 2021**). According to **Tikir et al. (2015)**, the mother's inability to breastfeed or agalactorrhea are typical signs of the acute presentation.

Chronic Sheehan syndrome is diagnosed by symptoms of pituitary gland hormone depletion, such as amenorrhea or oligomenorrhea, hot flushes, reduced sex drive, and infertility (**Karaca et al., 2019; Snyder, 2019; Thompson et al., 2019**). Months later, along with the axillary and pubic hair loss, hypothyroidism symptoms like fatigue, bradycardia, hypotension, weight gain, and constipation may also manifest. Additionally, there are early aging indicators such little wrinkles around the lips and eyes. Hyponatremia, anemia, and hypoglycemia are a few examples of laboratory results that may indicate secondary adrenal insufficiency brought on by SS (**Munoz et al., 2022**). Spontaneous pregnancy is rarely occurring in women with SS because 67%–100% of them have hypogonadotropic hypogonadism (**Diri et al., 2014**).

Sheehan's syndrome can be prevented through timely treatment of postpartum hemorrhage and prevention of shock (**Gao et al., 2023**). Deficient hormones are replaced permanently as part of the

treatment. These patients require ongoing care and close hormone level monitoring. As well, they must be informed about treatment compliance and the possibility of potentially fatal hormonal crises by the nurse (**Zhang et al., 2019; Pfäffle et al., 2018**).

Utilizing the teach-back method is one of the simplest ways to bridge the communication gap between a health practitioner and a client. Teach-back is a technique for getting the patient to verbally confirm what they comprehend. It is a technique that fosters communication in which the health care provider provides information and then requests a response and confirmation from the client before continuing with any further details. If a client is unable to precisely repeat the information, the health care provider may then rephrase it. The healthcare provider may then request that the patient repeat the facts in their own words until patient understanding is ensured (**Yen & Leasure**, **2019**).

Significance of the study

Sheehan's syndrome is a considerable factor in maternal morbidity and mortality in developing countries. It is frequently mistaken for other pituitary disorders, which causes treatment to be postponed (**Joseph, 2017**). In this context, **Gokalp et al. (2016)** conducted a retrospective study to analyze the demographic, clinical, imaging, and hormonal characteristics of patients with Sheehan's syndrome. They reported that the mean diagnostic delay was 20 ± 8.3 years, with a range of 2-36 years. Therefore, an inter-professional team composed of

an endocrinologist, neurologist, obstetrician, primary care physician, nurse practitioner, and radiologist is the most effective way to manage it (**Joseph, 2017**).

Patients sometimes struggle to understand or remember information provided to them by their healthcare providers. Although it has been demonstrated that using "teach-back" can increase patients' knowledge and self-care skills, there is little advice for healthcare facilities looking to implement teach-back in their setting (**Talevski et al., 2020**). Additionally, **Dinh et al. (2016)** suggested that further larger randomized controlled trials are required to reinforce the evidence on the effects of the teach-back strategy in terms of quality of life, readmission reduction, and hospitalizations period.

The nurse-midwife works as an interdependent health-team member in a setting that provides consultation and referrals for complications. Nurses should be able to give health education for women regarding coping with sequelae of SS. Unfortunately, nursing researches that examine the effect of teach-back instructional sessions on severity of Sheehan's syndrome sequelae are lacking in Egypt. Consequently, the researchers were motivated to conduct this study aiming to increase the body of evidence-based nursing knowledge.

Aim of the study:

The current study aimed to examine the effect of teach-back instructional sessions on severity of Sheehan's syndrome sequelae

Operational definition

In this study, Sheehan's syndrome sequelae refer to sexual function, hot flushes, and stress level and were measured using the 6-item female sexual function index (FSFI-6); Hot Flushes Index (HFI); Hot Flash Related Daily Interference scale (HFRDIS); and perceived stress scale (PSS).

Research hypotheses
Main hypothesis

Women who receive teach-back instructional sessions experience less sever Sheehan's syndrome sequelae than before

Sub-hypotheses

H.1. Women who receive teach-back instructional sessions exhibit a significant improvement in sexual function than before

H.2. Women who receive teach-back instructional sessions experience fewer frequency and less severity of hot flushes and lower hot flushes daily interference score than before

H.3. Women who receive teach-back instructional sessions experience a lower stress level than before

Subjects and Method:

Research design

To investigate the proposed hypotheses, a quasi-experimental design (one-group pretest-posttest) was employed. In this design, all participants have their baseline measurements of the dependent variables evaluated. The suggested intervention is then given to the entire participants. After then, all participants are post-tested to gauge how much the dependent variables have changed (**LoBiondo-Wood & Haber, 2018**).

Setting

The study was carried out at two health care settings: Obstetrics and Gynecology Outpatient Clinic at Kafrelsheikh General Hospital, Kafrelsheikh Governorate, Egypt and Menofia University Hospital, Shebinelkom, Menofia Governorate, Egypt. The Obstetrics and Gynecology Outpatient Clinic of Kafrelsheikh General Hospital is situated on the ground floor of the hospital and involves three rooms. The 1st room is prepared for history taking and diagnosis for every woman who visits the clinic. The 2nd room is prepared to perform ultrasound examination for obstetrics and gynecology reasons. The 3rd room is designed for gynecological and obstetrical clinical examinations. The Obstetrics and Gynecology Outpatient Clinic of Menofia University Hospital is situated on the first floor and entails of two rooms. The fist room for history taking, diagnosis, and ultrasound examination while the second room for gynecological and obstetrical clinical examination.

Sample

A purposive sample of 30 Sheehan's syndrome women experiencing hot flushes, stress, and impaired sexual function. While, women who had undergone radical hysterectomy, polycystic ovarian syndrome, or oophorectomy as well as, those with other medical or psychiatric disorders were not included in the study.

Sample size calculation

Based on data from earlier literature (**Ramiandrasoa et al., 2013**), considering a significance level of 5% and a study power of 80%, the required sample size can be determined using this calculation: $n = [2(Z_{\alpha/2} + Z_\beta)^2 \times p\,(1-p)]/(d)^2$, in which, p = pooled proportion from preceding research; d = expected difference; $Z_{\alpha/2}$ (=1.96, for 5% significance level) and Z_β (equivalent to 0.84 for 80% study power). So that, n= $[2(1.96 + 0.84)^2 \times 0.092 \times (1\text{-}0.092)]/(0.181)^2$ =29.9. Thus, the needed sample size is 30.

Tools of data collection:

To collect data relevant to the current study, five tools were used: Structured interviewing questionnaire schedule; The 6-item female sexual function index (FSFI-6); Hot Flushes Index (HFI); Hot Flash Related Daily Interference scale (HFRDIS); and Perceived Stress Scale (PSS).

1.Structured interviewing questionnaire schedule

This tool was constructed by the researchers after revising the relevant literatures. It entailed two parts: *a) Socio-*demographic *data:* This part encompassed data regarding age, education, occupation, and place of residence; *b) Obstetrical history*: This part included data related to para, gravida, mode and complications of previous delivery.

2. The 6-item female sexual function index (FSFI-6)

It is a short, self-administered instrument that measures female sexual function and consists of only six items, derivative from the original 19-items FSFI. It consists of six questions, each of which addresses a different aspect of sexual domains: libido, arousal, orgasm, dyspareunia, lubrication, and satisfaction. On a 5-point Likert scale, ranging from 1 ("poor function") to 5 ("optimal function"), libido and satisfaction items are rated. While the rating for arousal, orgasm, dyspareunia, and lubrication items ranged from 0 ("no sexual activity in the past month") to 5 ("optimal function") on a 6-point Likert scale. The scores of all questions are summed up to produce a final FSFI-6 score, which ranges from 2 to 30. Better sexual functioning is indicated by a high FSFI-6 score. A cut-off value of 19 or less has been suggested by **Isidori et al. (2010)** to recognize women who are at risk for female sexual dysfunction.

3. Hot Flushes Index (HFI)

This instrument, which assesses the frequency and severity of hot flushes, was adopted from the Kupperman Index (**Ehsanpour et al., 2012**). Women recorded the number of their daily hot flushes as well as the severity of each one on a scale ranging from zero to three. The severity score was multiplied by the daily frequency of hot flushes in order to obtain the hot flush daily score. The hot flush severity index is then calculated by adding up the daily severity and frequency scores over the course of a week and then divided by 7 to obtain the average of hot-flushes for a week.

4. The Hot Flash Related Daily Interference scale (HFRDIS)

Carpenter's (2001) Hot Flash Related Daily Interference Scale (HFRDIS) is a 10-items self-report questionnaire that measures how hot flushes affected a woman's life activities over the previous week. The scale measures the woman's self-perceived interference on ten aspects of her life such as work, social life, sexuality, sleep, mood, and concentration. Each item is evaluated on a scale ranging from 0 (none) to 10 (extremely). The total score is than obtained by adding the scores of all items together, which ranges from 0 to 100. Higher scores indicate greater interference with daily activities. To obtain the average score for the week, the total score of each day is summing up and divided by seven. Then the average score is divided into three levels: mild interference (score 0-33), moderate interference (score 34-67), and severe interference (score 68-100).

5. Perceived stress scale (PSS) (Cohen et al., 1983)

PSS is a popular psychological tool for assessing how stressed a person is, which was first constructed by **Cohen et al.** (1983**).** It entails ten questions regarding emotions and thoughts throughout the previous month. For example, in the previous month, how often have you been upset because of something that happened unexpectedly? how often have you felt that you were unable to control the important things in your life? how often have you felt nervous and "stressed"?......etc. Each question is rated using a 5-point Likert scale ranged from 0 ("never"); 1 ("almost never"); 2 ("sometimes"); 3 ("fairly often"); to 4 ("very often"). The over-all score of PSS ranging from 0 to 40. Higher PSS score indicate greater stress perceived by respondent. The over-all score was divided into three levels: low perceived stress (scores from 0 to 13), moderate perceived stress (scores from14 to 26), and high perceived stress (scores from 27 to 40).

Tools validity:

Five academic nursing experts in the field of midwifery and women's health were given the tools to test its face and content validity. The tools' contents were examined for completeness, relevance, and clarity. Based on the

recommendations of the experts, the necessary modifications were carried out.

Tools reliability:

The Cronbach's alpha coefficient test was used to assess the reliability of the suggested tools. With a Cronbach's alpha of 0.85, the structured interviewing questionnaire schedule revealed a strong positive association among included items. With a Cronbach alpha value of 0.84, the FSFI-6 was found to have good reliability. Alpha scale reliability was calculated for PSS at 0.86, established for HFI at 0.82, and for HFRDIS at 0.89.

Ethical Considerations:

Ethical approval to carry out this study was taken from the Scientific Research Ethics Committee at the faculty of nursing, Menoufia University. Each woman who agreed to take part in this study gave an informed written consent after being informed about its purpose and importance. The researchers stressed that participation in the study was completely voluntary and that any woman had the right to leave the study at any time without having to offer any justification. Data coding was made to ensure anonymity and confidentiality and women were informed that collected data would only be used for research purposes.

Pilot Study

A 10% of the predetermined sample size (3 women) who met the inclusion criteria were subjected to a pilot study. It sought to determine the feasibility of the research process. Additionally, to test the relevancy, clarity, adequacy, applicability, and to determine the time needed to complete the study tools. No necessary changes were made to the tools in response to the pilot study's findings. Women participated in the pilot study were involved into the study sample.

Procedure

Data collection was carried out over a one-year period between the beginning of April 2022 and the end of April 2023. The study site was visited by the researchers three days a week from 9:00 am to 2:00 pm. The study was conducted through four phases which are preparation, assessment, implementation, and evaluation.

Preparation for data collection: A thorough review of relevant literature was performed in order to create the study instruments as well as the contents of the instructional sessions. An official approval from the authorities of the aforementioned settings was obtained in order to carry out the study. After that, each individual woman who met the inclusion criteria was then interviewed by the researchers in a calm apartment within the previously mentioned settings. Through this interview, the researchers familiarized themselves to the woman and described the aim, importance,

nature, and timeline of the research process. After that, woman who approved to take part in the study was asked to provide an informed written consent.

Assessment: Following enrollment, the researchers conduct a one-on-one meeting with each woman to collect baseline information about her sociodemographic characteristics, obstetric history, sexual function, hot flushes, and level of stress using the suggested study tools. The researchers asked the questions in Arabic and documented the woman's replies. The time needed to conduct this assessment was around 20-30 minutes for every individual woman.

Implementation: Each woman attended two sessions of approximately 30-45 minutes each. In order to attain the aim of each session, the researchers employed a teach-back strategy, asking the woman to repeat in her own words what she had learned. The researchers encouraged woman to actively participate throughout the session by asking questions and being receptive to feedback. After the two sessions had been ended, each woman received an Arabic booklet comprising summaries of the main topics that had been covered during the instructional session.

Frist session: The aim of this session was to help women in handling issues related to their sexual function. The researchers educate women about the various stages of the sexual response cycle, encourage them to adopt various positions during sexual relation, inspire regular sexual

stimulation to increase vaginal blood flow and subsequently vaginal lubrication, and emphasize the value of applying water soluble lubricants during sexual intercourse to alleviate dyspareunia and irritation. Additionally, women were also taught and trained how to carry out Kegel exercise in order to enhance the pelvic floor and vaginal muscles strength.

Second session:

This session aimed to instruct woman regardi ng methods for lowering stress level and reducing the frequency and severity of hot flushes. The researchers emphasize the benefits of Benson's Relaxation Response in minimizing stress level, demonstrate the steps of the technique, and then re-demonstration by each woman to ensure understanding and correct application. In addition, woman was informed about phytoestrogen-containing foods and herbs to reduce the frequency and severity of hot flushes.

Evaluation: One month following the last instructional session, an evaluation of the three main outcomes; sexual function, hot flashes, and stress level was conducted. The three main outcomes were assessed using the data collection tools that were used for baseline data assessment.

Statistical Analysis

An IBM personal computer running the Statistical Package of Social Science (SPSS) version 26.0 (SPSS, Inc., Chicago, Illinois, USA) was used for statistical analysis. Quantitative

variable was displayed as mean, standard deviation, and range while qualitative date was displayed as frequency and percentages. To investigate the associations between two related quantitative variables that were not normally distributed, inferential statistics like the Wilcoxon test were applied. Marginal homogeneity test (MH) is a test of significance used for related qualitative variables. The p-value $\leq$ 0.05 was considered significant, and less than 0.001 as highly significant.

Results

Regarding sociodemographic data, the current study reveals that 63.3% of the women's age ranged between 30 and 34 years, 56.7% of the women completed their secondary education, 87.7% of them were house wives, and 70.0% of them lived in rural areas **(Table, 1)**.

Table (2) represents the obstetrical history of the women. It reveals that, 70.0% of women had delivered one child (para 1). Regarding mode of previous delivery, the majority of women (90.0%) delivered vaginally. All of the women experienced complications during their previous deliveries in form of postpartum hemorrhage (93.3%) and abortion (6.7%).

In relation to female sexual function index, there was a statistically significant difference between all sexual function domains and total female sexual function index (FSFI-6) at post-intervention compared to pre-intervention. The total mean score of female sexual function index was significantly increased from 12.2±3.29 at pre-intervention assessment to 14.2±4.05 at post-intervention (p=0.002) **(Table, 3)**.

Table (4) reveals that, the mean frequency and severity of hot flushes were significantly decreased from 3.12±0.96 and 2.57±1.00 respectively at pre-intervention assessment to 1.80±0.91and 1.01±0.99 respectively at post-intervention (p<0.001). Regarding mean score of hot flash related daily interference scale, finding of the current study shows that, the mean score was decreased from 60.3±12.8 at pre-intervention to 25.6±9.06 post-intervention (p<0.001) **(Table, 5)**. As well as, at pre-intervention 63.10% of the women had moderate level of interference as compared to 18.50% at post-intervention and the difference between the levels of the total hot flash related daily interference was highly statistically significant (p<0.001) **(Figure, 1).**

Figure (2) illustrates that, 27.0%, 53.0 %, 20.0% of women experienced low, moderate, and high stress level respectively at pre-intervention assessment compared to 67.0%, 24.5%, and 8.50% respectively at post- intervention evaluation. As well, the difference between stress levels at pre-intervention and post-intervention was highly statistically significant (p<0.001).

Table (1): Frequency and percentage distribution of studied women according to their Socio-demographic characteristics (N= 30)

Studied variables	Freq.	%
Age		
25 – 29 years	8	26.7
30 – 34 years	19	63.3
35 – 40 years	3	10. 0
Educational level		
Primary	4	13.3
Secondary	17	56.7
University	9	30.0
Occupation		
House wife	26	87.7
Employee	4	13.3
Place of residence		
Urban	9	30.0
Rural	21	70.0

*Freq.= frequency

Table (2): Frequency and percentage distribution of studied women according to their obstetric history (n = 30)

Studied variable	Freq.	%
Gravidity		
2	21	70.0
≥3	9	30.0
Parity		
1	21	70.0
≥2	9	30.0
Mode of previous delivery		
Vaginal delivery	29	90.0
Cesarean section	3	10.0
Complications during previous deliveries		
Yes	30	100.0
No	0	0.0
Type of complications		
Abortion	2	6.7
PPH	28	93.3

Table (3): Comparison of sexual function among studied women pre-intervention and post-intervention (N= 30)

Studied variables	Pre-intervention	Post-intervention	Wilcoxon test	*P*- value
	Mean ±SD	Mean ±SD		
Libido	2.73±1.22	3.26±1.46	2.21	**0.029**
Arousal	1.75±1.22	2.29±1.59	2.62	**0.010**
Orgasm	1.03±1.10	1.60±1.42	2.54	**0.012**
Dyspareunia	3.21±1.61	2.38±1.53	3.00	**0.003**
Lubrication	1.60±1.36	2.24±1.36	2.16	**0.032**
Satisfaction	1.98±1.21	2.55±1.71	2.18	**0.031**
Total Female Sexual Function Index	12.2±3.29	14.2±4.05	3.08	**0.002**

Table (4): Comparison of hot flushes frequency and severity among studied women pre-intervention and post-intervention (N= 30)

Studied variables	Pre-intervention	Post-intervention	Wilcoxon test	P-value
	Mean±SD	Mean±SD		
Frequency	3.12±0.96	1.80±0.91	5.90	**<0.001**
Severity	2.57±1.00	1.01±0.99	5.37	**<0.001**

Table (5): Comparison of the mean score of hot-flush related daily interference among studied women pre-intervention and post-intervention (N= 30)

| Studied variables	Pre-intervention Mean±SD	Post-intervention Mean±SD	Wilcoxon test	P-value
Work	5.96±3.04	2.64±2.80	5.92	**<0.001**
Social activities with family and friends	5.67±2.95	2.67±2.65	5.65	**<0.001**
Sexuality	6.70±3.14	2.27±2.18	7.08	**<0.001**
Sleep	6.03±3.32	3.32±2.88	4.51	**<0.001**
Mood	5.24±2.62	2.75±2.69	5.12	**<0.001**
Concentration	6.58±3.14	1.46±1.06	8.27	**<0.001**
Relation with others	6.15±3.23	2.16±2.02	6.41	**<0.001**
Leisure activities (time of relaxing and hopes)	6.10±2.84	2.62±2.58	5.33	**<0.001**
Enjoyment of life	6.30±2.96	1.95±1.75	7.53	**<0.001**
Overall Quality of life	5.50±2.78	3.09±2.98	4.73	**<0.001**
Total score	**60.3±12.8**	**25.6±9.06**	**9.46**	**<0.001**
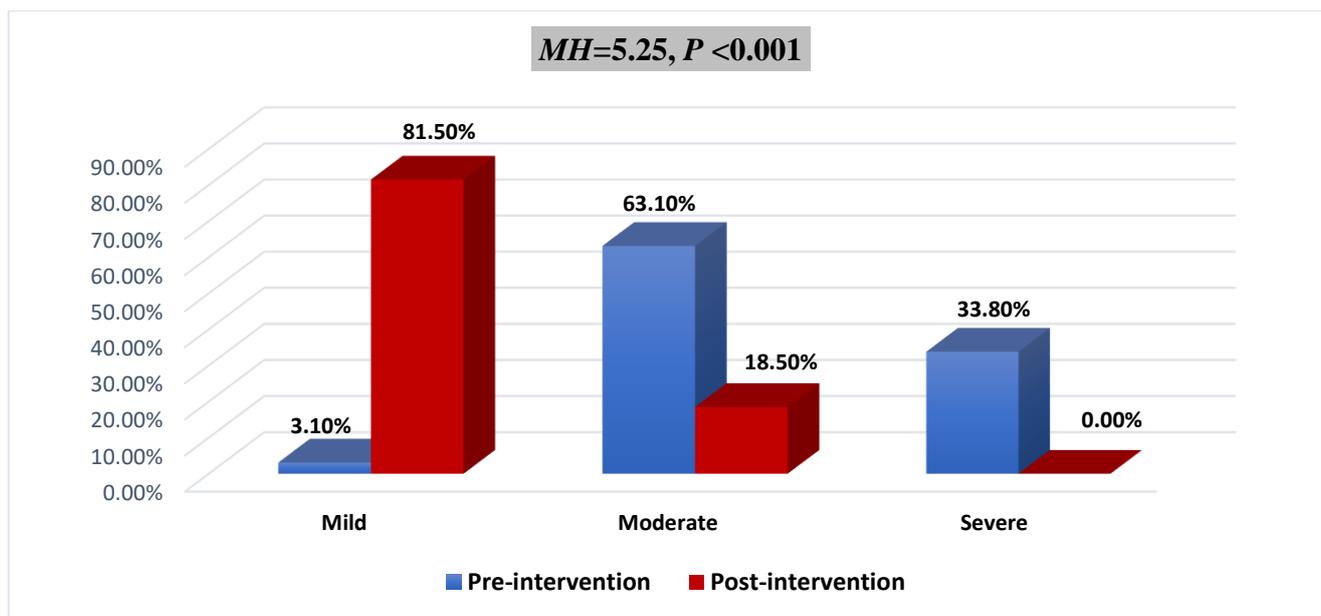
Figure (1): Comparison of the total hot flash related daily interference score levels among studied women pre-intervention and post-intervention (N= 30)
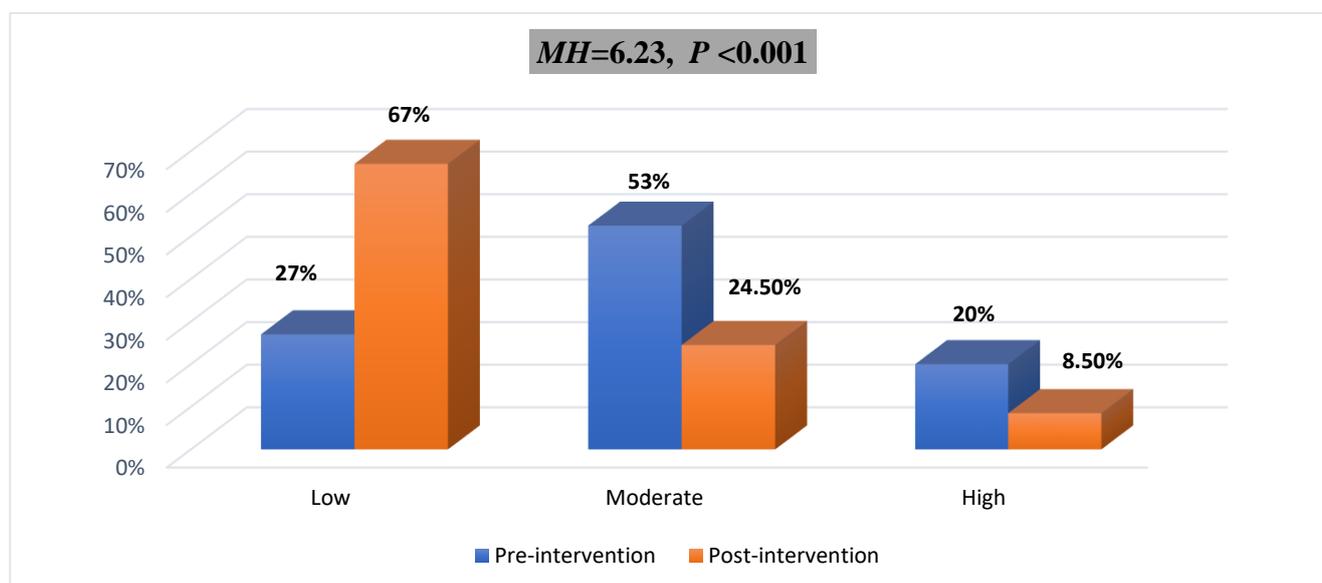

Figure (2): Comparison of stress levels among studied women pre-intervention and post-intervention (N= 30)

Discussion

Sheehan's syndrome, which develops after severe blood loss and is caused by postpartum pituitary ischemia necrosis, is a well-known consequence of postpartum hemorrhage. (**Gibbins et al., 2013**). Sheehan's syndrome is a rare disorder but causes several morbidities. So, it should be managed by an inter-professional team including an

endocrinologist, neurologist, obstetrician, nurse practitioner, and radiologist. Therefore, the aim of current study was to examine the effect of teach-back instructional sessions on severity of Sheehan's syndrome sequelae.

Regarding sexual function, the present study's results showed that, post-intervention the mean scores of female sexual function index showed a statistically significant improvement as compared to pre-intervention scores either in the total female sexual function index score or in each individual domain (p<0.05). Therefore, the first research hypothesis was supported. These findings could be accounted for by the improvement in genital symptoms observed following consumption of foods rich in phytoestrogen, which in turn enhance vaginal lubrication and reduce dryness, a typical cause of dyspareunia. Additionally, it might be due to Kegel exercises, that assist weak muscles to become stronger and constricted muscles to be relaxed, allowing the vagina to be more open and therefore, reducing discomfort during sexual relation. Kegel exercises also increase blood flow to the vulva and vagina and therefore, enhance sexual desire and vaginal lubrication.

In accordance with this explanation, **Nazarpour et al. (2017)** conducted a randomized clinical trial to investigate the impact of Kegel exercises on postmenopausal women's sexual function. According to their study, the Kegel exercises group had a significantly higher arousal scores compared to the controls (3.15 vs 2.77, respectively). In addition, the Kegel group's orgasm and satisfaction scores were significantly higher

than those of the control group (4.43 and 4.88 vs. 3.95 and 4.39, respectively). Similarly, **Lolowang et al. (2019)** conducted a study aimed at determining the impact of Kegel exercise on sexual self-efficacy. They concluded that Kegel exercise over a period of 6 weeks was accompanying by a significant improvement in the sexual self-efficacy (p=0.001; CI 95% 10.53–14.18). Furthermore, **ABADI et al. (2021)** in their study about the impact of Benson relaxation on menopausal complications reported that, a statistically significant differences were proven between the experimental and control groups in term of sexual function scores after receiving the intervention (p = 0. 021)

Concerning hot flushes, the present study's findings revealed that, there were a highly statistically significant differences in the mean frequency and severity of hot flushes between pre-intervention and post-intervention (p<0.001). Additionally, post-intervention women experienced a significant reduction in the impact of hot flushes on daily activities compared to pre-intervention. The second research hypothesis is therefore supported by these findings. This study's findings may be explained by the fact that hot flushes become less frequent and less severe when women have more knowledge and understanding after teach-back session and therefore, complying with diet containing phytoestrogen.

The present study findings was in agreement with the study of **Fadel et al., (2019)** who carried out a study to assess the impact of an educational intervention regarding phytoestrogen food on hot-flushes among menopausal women and reported

that, both the frequency and the severity of hot flushes were significantly decreased after implementation of the planned intervention. Additionally, **ABADI, et al. (2021)** reported that a highly statistically significant difference was found between the study and control groups after receiving the proposed intervention in term of the severity of hot flushes score (p <0. 001).

In term of stress level, the present study revealed that, pre-intervention more than one-half of women experienced moderate stress level and one-fifth of them conveyed high stress level. The higher stress level revealed by women at pre-intervention assessment may be attributed to a variety of reasons, including unpleasant symptoms brought on by low estrogen levels, negative body image, reduced fertility, and lack of social support. In contrast, after receiving the proposed intervention the stress level among women was significantly decreased in which less than one-third of them experienced moderate stress level and a tiny fraction of them conveyed high stress level. Moreover, the difference between pre-intervention and post-intervention stress levels was highly statistically significant (p <0. 001). Thus, the third research hypothesis is supported by the results of the current study. The reduction in stress levels after receiving the study intervention can be attributed to the effects of Benson relaxation, which decreases catecholamine release, sympathetic activity, and muscular tension. Thus, reducing tension and stress.

These findings are agreed with the findings of **Abd El Rahman et al. (2022)** who carried out a study aimed at evaluating the impact of Benson relaxation therapy on post-operative pain and stress level. They stated that, there was a statistically significant differences between the study and the control groups in relation to stress levels (p< 0.05). Likewise, **Regi Viniciya (2019)** examined the effect of Benson's relaxation technique on stress level among postmenopausal women. According to the study, the mean stress score was 30.26 + 10.57 in the pre-test and 16.4 + 10.72 in the post-test. With a p-value of 0.05, the mean difference between the pre-test and post-test was statistically significant. Another study conducted by **Mohamady et al. (2022)** on the impact of Benson relaxation technique on reducing pain and stress revealed that, the mean scores of the perceived stress following the application of Benson relaxation technique showed a statistically significant difference between the study and the control groups (p< 0.001).

Finally, the current study's findings declared that conducting teach-back instructional sessions is effective in reducing the severity of Sheehan's syndrome sequelae. This is because the teach-back strategy guarantee that the women fully comprehend the information conveyed in the instructional sessions. Consequently, their health literacy regarding the topic being taught is improved. Therefore, their compliance and application of knowledge into practice were enhanced.

This finding was approved by other studies, such as the study of **Rahmani et al. (2020)** on the impact of the teach-back method on knowledge,

performance, readmission, and quality of life in patients with heart failure. The researchers concluded that patients experienced a better quality of life as a result of their improved capacity for self-care following teach-back instruction. Moreover, as a patient-centered and participatory teaching method, the teach-back strategy improves patient self-management through bridging the communication gap between patients and nurses. In this context, numerous systematic reviews have been conducted to examine the effectiveness of the teach-back strategy in improving patient teaching and health outcomes. These systematic reviews concluded that, teach-back has been shown to be effective in enhancing or confirming patient education across a wide range of settings, populations, and outcome measures (**Yen & Leasure**, **2019; Talevski et al., 2020).**

Conclusion

In conclusion, the findings of the current study declared that teach-back instructional sessions were effective in decreasing the severity of Sheehan's syndrome sequelae.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Teach-back instructional sessions should be conducted in order to empower women with Sheehan's syndrome sequelae to take an active role in self-care and therefore, reduce their suffering.
- Simple Arabic brochures or pamphlets containing updated evidence-based guidelines regarding Sheehan's syndrome should be available for women.
- Indorse evidence-based nursing knowledge and practice for managing Sheehan's syndrome sequelae in nursing curricula.
- In-service training programs for nurses in gynecological units about non-pharmacological approaches for Sheehan's syndrome sequelae.
- Further research is recommended about the effect of other non-pharmacological modalities for Sheehan's syndrome sequelae.

References

ABADI, B. D., SHARIAT, M. S., Rashidpour, M. H., & JAMALI, J. (2021). The effectiveness of Benson relaxation methods on menopausal complications in postmenopausal women. *IRANIAN JOURNAL OF OBSTETRICS, GYNECOLOGY AND INFERTILITY, 24 (6), 58-68.*

Abd El Rahman, W.K., Ahmed, A.A., El-Saye, A. (2022). Effect of Benson Relaxation Therapy on Post-Operative Pain and Stress among Nulliparus Women undergoing Cesarean Section. *Egyptian Journal of Health Care*, *13*(3), 2053-2064.

Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior,* 24, 386-396.

Diri, H., Karaca, Z., Tanriverdi, F., Unluhizarci, K., &Kelestimur, F. (2016). Sheehan's syndrome: new insights into an old disease. *Endocrine*, *51*, 22-31.

Diri, H., Tanriverdi, F., Karaca, Z., Senol, S., Unluhizarci, K., Durak, A. C., ... &Kelestimur, F. (2014). Extensive investigation of 114 patients with Sheehan's syndrome: a continuing disorder. *European journal of endocrinology*, *171*(3), 311-318.

Fadel, E. A., Moustfa, S. A., Mohammad, H. H., & Elhofi, M. (2019). Effect of Educational Intervention regarding Phytoestrogen Food on Hot-Flushes among Menopausal Women. *International Journal of Novel Research in Healthcare and Nursing*, 6, (3), 296-306.

Gao, X. H., Wang, Y., Wang, R. C., -Yuan, J., Yang, J., Zhang, X. X., & Li, J. (2023). A rare case of pancytopenia causing-Sheehan's syndrome: Case report and literature review. *Clinical Case Reports*, *11*(1), e6827.

Gibbins, K. J., Albright, C. M., & Rouse, D. J. (2013). Postpartum hemorrhage in the developed world: whither misoprostol?. *American journal of obstetrics and gynecology*, *208*(3), 181-183.

Gokalp, D., Alpagat, G., Tuzcu, A., Bahceci, M., Tuzcu, S., Yakut, F., & Yildirim, A. (2016). Four decades without diagnosis: Sheehan's syndrome, a retrospective analysis. *Gynecological Endocrinology*, *32*(11), 904-907.

Isidori, A. M., Pozza, C., Esposito, K., Giugliano, D., Morano, S., Vignozzi, L., ... & Jannini, E. A. (2010). Outcomes assessment: Development and validation of a 6-item version of the Female Sexual Function Index (FSFI) as a diagnostic tool for female sexual dysfunction. *The journal of sexual medicine*, *7*(3), 1139-1146.

Jose, M., Amir, S., & Desai, R. (2019). Chronic Sheehan's Syndrome - A Differential to be Considered in Clinical Practice in Women with a History of Postpartum Hemorrhage. Cureus, 11(12):e6290.

Joseph, L. (2017). A Study to Assess the Knowledge Regarding Sheehan's Syndrome among Staff Nurses in Selected Hospitals at Tumkur. *IJNS*, *6*(1), 17-21.

Karaca, Z., Hacioglu, A., &Kelestimur, F. (2019). Neuroendocrine changes after aneurysmal subarachnoid haemorrhage. *Pituitary*, *22*, 305-321.

Karaca, Z., Laway, B.A., Dokmetas, H.S., Atmaca, H., & Kelestimur, F. (2016). Sheehan syndrome. Nat Rev Dis Primers, 22;2:16092.

Laway, B.A. & Baba, M.S. (2021). Sheehan syndrome. J Pak Med Assoc, 71(4):1282-12568.

LoBiondo-Wood, G. & Haber, J. (2018). Nursing research: methods and critical appraisal for evidence based practice (9th ed.) Elsevier Pp 179-184.

Lolowang, N. L., Afiyanti, Y., & Ungsianik, T. (2019). Kegel's exercise to improve sexual self-efficacy in primiparous women. *Enfermeria clinica*, *29*, 535-540.

Matsuzaki, S., Endo, M., Ueda, Y., Mimura, K., Kakigano, A., Egawa-Takata, T., ... & Kimura, T. (2017). A case of acute Sheehan's syndrome and literature review: a rare but life-threatening complication of postpartum hemorrhage. *BMC Pregnancy and Childbirth*, *17*(1), 1-10.

Mohamady, S. H., Abd Elmoniem, S. O., Araby, O. A. W. A., Elrefaeys, S. R., & Nageeb, S. M. (2022). Effect Of Benson Relaxation Technique On Reducing Pain And Stress Among Post Cesarean Section Mothers. *Journal of Positive School Psychology*, *6*(8), 6820-6848.

Munoz, A. C., Vohra, S., & Gupta, M. (2022). Orthostasis. In *StatPearls [Internet]*. StatPearls Publishing.Treasure Island (FL).

Nazarpour, S., Simbar, M., Tehrani, F. R., & Majd, H. A. (2017). Effects of sex education and Kegel exercises on the sexual function of postmenopausal women: a randomized clinical trial. *The journal of sexual medicine*, *14*(7), 959-967.

Olmes, G. L., Solomayer, E. F., Radosa, J. C., Sklavounos, P., Agne, P., Schunk, S. J., & Haj Hamoud, B. (2021). Acute Sheehan's syndrome manifesting initially with diabetes insipidus postpartum: a case report and systematic literature review. *Archives of Gynecology and Obstetrics*, 1-8.

Pfäffle, R., Land, C., Schönau, E., Holterhus, P. M., Ross, J. L., Piras de Oliveira, C., ... & Blum, W. F. (2018). Growth hormone treatment for short stature in the USA, Germany and France: 15 years of surveillance in the Genetics and Neuroendocrinology of Short-Stature International Study (GeNeSIS). *Hormone research in paediatrics*, *90*(3), 169-180.

Rahmani, A., Vahedian-Azimi, A., Sirati-Nir, M., Norouzadeh, R., Rozdar, H., & Sahebkar, A. (2020). The effect of the teach-back method on knowledge, performance, readmission, and quality of life in heart failure patients. Cardiology research and practice, 2020.

Ramiandrasoa, C., Castinetti, F., Raingeard, I., Fenichel, P., Chabre, O., Brue, T., & Courbiere, B. (2013). Delayed diagnosis of Sheehan's syndrome in a developed country: a retrospective cohort study. *European Journal of Endocrinology*, *169*(4), 431-438.

Regi Viniciya, V. *(2019). Study to assess The Effectiveness of Benson's Relaxation Therapy on Stress Reduction Among Postmenopausal Women at Selected Community Area at Kanyakumari District* (Doctoral dissertation).

Skorupska, K., Wawrysiuk, S., Bogusiewicz, M., Miotła, P., Winkler, I., Kwiatkowska, A., &Rechberger, T. (2021). Impact of hysterectomy on quality of life, urinary incontinence, sexual functions and urethral length. *Journal of Clinical Medicine*, *10*(16), 3608.

Snyder, P. J. (2019). Causes of hypopituitarism. Cooper, DS, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com.

Talevski, J., Wong Shee, A., Rasmussen, B., Kemp, G., & Beauchamp, A. (2020). Teach-back: A systematic review of implementation and impacts. *PloS one*, *15*(4), e0231350.

Thompson, C. J., Costello, R. W., & Crowley, R. K. (2019). Management of hypothalamic disease in patients with craniopharyngioma. *Clinical endocrinology*, *90*(4), 506-516.

Tikir, B., Göka, E., Aydemir, M. Ç., &Gürkan, Ş. (2015). Psychotic Disorder and Sheehan's Syndrome: Etiology or Comorbidity?: A Case Report. *Turk PsikiyatriDergisi*, *26*(2).

Yen, P. H., & Leasure, A. R. (2019). Use and effectiveness of the teach-back method in patient education and health outcomes. Federal practitioner, 36(6), 284.

Zhang, Z., Wang, P., Feng, S., & Yu, X. (2019). Endocrinological Outcomes of Intraoperative MRI-Guided Endoscopic Transsphenoidal Surgery for Non-Functioning Pituitary Adenoma. *Turk Neurosurg*, *29*(5), 635-642.