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Nurse's role in the management of hyperprolactinemia: a prospective randomized controlled trial

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Abstract
Background: Hyperprolactinaemia is the presence of abnormally high levels of prolactin in the blood. Normal levels are [20-25 ng/mL or µg/L] for women; Hyperprolactinaemia can also be a part of normal body changes during pregnancy and breastfeeding. **Aim:** To evaluate the impact of the nurse's role on the management of hyperprolactinemia, **Sampling:** convenient sample included 100 women started from April 2019 to March 2020. **Research design:** A Prospective study (randomized controlled trial) was utilizied in this study. **Setting:** The study was conducted at the laboratory (Woman's Health Hospital lab, Assiut University). **Results:** It is illustrated that there is statistical significant difference between the study and the control groups regarding prolactin value, as the majority of studied women have a normal value in the study and abnormal value in the control groups p-value 0.001. **Conclusion:** The nurse carry a vital role for hyperprolactinemia through health education including (feeding habits, Life style and sexual behaviors). in assessing and managing hyperprolactinemia. and thus increase the quality of life. **Recommendations:** support the nurses's role in assessing and managing hyperprolactinemia through providing a counseling that needed to women

Keywords: Hyperprolactinaemia & Prolactin.

Introduction
Hyperprolactinemia is a disorder characterized by the overproduction of prolactin hormone from the anterior pituitary gland in both men and women. women are more sensitive than men to the hyperprolactinemia effect. **(Simeon, 2011).**

The effect of hyperpolactinemia on women with high prolactin levels may have infertility, decreased libido, and decreased bone mass). Also, women may have: No menstrual periods or irregular periods, galactorrhea, vaginal dryness, making painful sex, Breast discharge when not pregnant or nursing, Adolescent girls may also have menstrual problems and breast discharge. Some people with hyperprolactinemia have no symptoms**. (Capozzi et al , 2015)**

Diagnosis of hyperprolactinemia**:** Patient history and physical examination (including an evaluation of thyroid- kidney and liver function). Blood tests to measure elevated levels of prolactin. MRI (magnetic resonance imaging) to detect a pituitary tumor. Thyroid test to diagnose thyroid disorders. Computerized Tomography (CT) to determine the presence of a tumor or another abnormality. **(Simeon, 2011).**

Problem in diagnosing and treating hyperprolactinemia is the occurrence of the 'big big molecule of prolactin' that is biologically inactive (called macroprolactinemia), but detected by the same radioimmunoassay as the biologically active prolactin. This may explain many cases of very high prolactin levels sometimes found in normally ovulating women and do not require any treatment. **(Abha & Nisha 2013).**

Normal results usually look like the following (ng/mL = nanograms per milliliter): (Simeon Margolis, 2011). Women who are not pregnant < 25 ng/mL, Women who are pregnant 34 to 386 ng/Ml, Males < 15 ng/Ml

Treatment of hyperprolactinemia depends on the cause and the severity of the disorder. In some patients, prolactin levels spontaneously revert to normal. Some pituitary tumors may be small enough that treatment is not required, although regular follow-up evaluations are necessary. When the disorder is caused by a tumor, the first line of treatment is medication, Dopamine agonists such as bromocriptine (Parlodel and Cycloset) are the most common treatment for high levels of prolactin. These medications help the brain produce dopamine to control high prolactin levels.

They can also shrink prolactinoma tumors. **(Andrew et al, 2011)**

Role of nurses in the management of hyperprolactinemia**:** including (feeding habits , Life style and sexual behaviors) to improve in the management of hyperprolactinemia: feeding habits include changing diet (avoid food that causes hyperprolactinemia: Like sweets ,Fats , oils ,Seeds , nuts and advice food that treat hyperprolactinemia, women should focus on some types of foods. A whole foods diet rich in fruits and vegetables, especially dark, leafy greens, Fish, vit omega 3 plus, zink,vit B16 and Protein is thought to optimize anyone's health. Behaviors of woman (sexual behaviors ;avoid breast stimulation during SI ,No touch breast Direct ,Avoid pressure on chest or (trauma) other Life style that includ daily behaviors increase milk secretion (Avoid See of other women breast feeding ,Avoid Handling children on your chest ,Avoid not enough Sleep ,Avoid excessive exercise ,Avoid Stress ,Avoid tight Clothes). **(Sturate et al ,2013)**

Significance of the study:

Many women may not respond to different types of prolactin normalising medicines despite being well-treated in the right dose, with the right drug, and for the right length of time. This will result in the treatment being extended for months or even years. Doctors frequently increase the drug's dose, despite the considerable risk of side effects and even complications. Some doctors switch drugs without even seeing a significant improvement in hyperprolactinemia. Hyperprolactinemia is a condition in which the body produces too much prolactin. It affects roughly 10% of the population **(Abha et al, 2013).**

Role of nurses are generally not included in the management protocols of hyperprolactinemia **.**to improve in the management of hyperprolactinemia: feeding habits include changing diet (avoid food that causes hyperprolactinemia: Like sweets, fats, oils, Seeds, nuts and advice food that treat hyperprolactinemia, women should focus on some types of foods. A whole foods diet rich in fruits and vegetables, especially dark, leafy greens, Fish, vit omega 3 plus, zink, vit B16 and Protein is thought to optimize anyone's health. Behaviors of woman (sexual behaviors; avoid breast stimulation during SI, No touch breast Direct, Avoid pressure on chest or (trauma). other Life style that includ daily behaviors increase milk secretion (Avoid See of other women breast feeding, Avoid Handling children on your chest, Avoid not enough Sleep, Avoid excessive exercise, Avoid Stress ,Avoid tight Clothes). **(Sturate et al , 2013)**

Aim of the study

This study aimed to:

To evaluate the impact of the nurse's role in the management of hyperprolactinemia.

Hypothesis of the study

H1- Role of nurses for women under drugs of hyperprolactinemia is beneficial in lowering prolactin levels.

H0- Role of nurses for women under drugs of hyperprolactinemia isn't beneficial in lowering prolactin levels.

Subjects and Method:

Subjects and methods of this study were displayed into four designs technical, operational, administrative, and statistical.

Technical Design:

This covered the study design, setting, study sample, and tools of data collection

Study design:

Prospective study (randomized controlled trial) was carried out in this study.

Setting:

The current investigation was carried out at the Women Health Hospital of Assuit University in Egypt (Woman's Health Hospital lab) That involved one room, for take blood sample and examination.

Research sample:

The study included a convenient sample (100 women) started from April 2019 to March 2020. All women diagnosed with hyperprolactinemia by (Woman's Health University Hospital's lab).

Inclusion criteria:

1. Pathologic hyperprolactinemia due to any cause.
2. Non-pregnant.
3. Not lactating.

Exclusion criteria:

1- Physiologic hyperprolactinemia.
2- Women who refuse to be followed up on.

The sample size was calculated using the Epi info program with a 95 percent confidence coefficient, 10% tolerable error, 50 percent predicted frequency. The sample was divided into two groups study and control group and each group consisting from 50 women with hyperprolactinemia.

Tools for data collection:

The following tools were used to obtain data from the participants:

Structured interview questionnaire tool: The researchers created it after conducting a review of the relevant literature.

Part1: Involved questions related to personal characteristics as Name, age, place of residence, educational level, period of marriage, phone number and working condition.

Part2: Included obstetrics and medical history as gravidity, parity, abortion, number of children, time since last delivery or abortion, suffer from chronic diseases.

Part3: Included Infertility history as years of infertility, type of infertility, causes.

Current hyperprolactinemia data including:

Part 1: Pathological causes of hyperprolactenimia including: (Hypothalamic-pituitary disease ,Non-hypothalamic-pituitary disease).

Part 2: Drugs induced hyperprolactinemia

Part 3: Other causes **(**Life style factor ,Sexual behaviors **,**Feeding habits).

Follow up sheet that involved (second visit after a month, return for another measurement of serum prolactin (at Woman's Health Hospital lab).

Supportive materials: The researchers created it after doing a literature review. It was created in the form of a booklet, with simple and clear Arabic language and photos to facilitate health education on hyperprolactinemia for women. The definition, causes, signs, and symptoms of hyperprolactinemia, how to control hyperprolactinemia, advice for women with hyperprolactinemia were all covered in the instructions.

Tools Reliability: Cronbach Alpha done for the both tools used, and founded that Cronbach Alpha was 0.731 and 0.825for questionnaire follow up sheet

Ethical consideration:

This study was carried out under the approval of faculty of nursing's Ethical committee, Assiut University, also The head of the Woman Health Hospital granted official authorization and informed consent was taken from each woman involved in the study.

Operational design

It was presented into two phases, pilot study and field work.

Pilot study:

A pilot research was conducted on 10% (10 women) of the sample to check that the tools were clear and thorough, as well as to calculate the amount of time needed to complete the questionnaire. The pilot study's findings indicated that no more improvements or modifications were required; hence the pilot study's women were included in the final sample.

Field work

This study's data collecting took twelve month, commencing in April 2019 and ending in March 2020. This was divided into three stages: pre-intervention, intervention, and follow-up.

Pre intervention phase: An official letter from Assuit University's Faculty of Nursing was sent to the appropriate authorities at Women's Health Hospital, requesting permission to gather data after describing the study's goal. Before data collection, prepared to use the tools of data collection by explanation and clarification of all items of the tools and participated in pilot study to ensure the perfect using of the tools. Obtaining the oral consent before the enrollment in the study and Women who agree to participate in the study and meeting inclusion and exclusion criteria were recruited in the study then introduced myself to each woman and explained the aim of the study to the woman. The researcher interviewed each participant individually in a separate room to maintain confidentiality. Data pertinent to the study variables were collected from the study sample through questionnaire sheet provided by the researchers to collect the basic data (Personal data that include; Name,Age,place of residence,Education, marital status, Employment, period of marriage, telephone number, Weight, Height, Smoking consumption). Obstetric history (gravidity, parity, No of live birth ,No of abortion ,history of still births ,Time since last delivery or abortion). Infertility history: History of infertility, Type of infertility, cause of infertility. Medical history, Family history, Medication history, Causes of hyperprolactinemia, Investigations: (within examination of breast by health care provider, MRI, CT scan , prolactin level at first visit at clinic). all data recorded in the sheet

Intervention phase: the investigator applied the participant's randomised selection is as follows: Give the participant an envelope with two choices of (A or B) labelled papers, and she was participated in the group based on her choice: Group A was gave hyperprolactinemia medicines along with nurse health education. Group B was gave hyperprolactinemia medicines but wasn't receive nurse health education.. Medication received for current hyperprolactinaemia after investigation are bromocritine 0.5 mg, carbergoline 0.5 mg ,take women half of tablet after dinner all three days for one month are free samples from (company of Health Well Egypt). Also an instructional supportive booklet was distributed among women who participated in the study. health education given to study group took the form of lecture, discussion, demonstration and. The session were applied for studied women after laboratory examination for prolactine level was high. The health education content was designed based on review of relevant recent literature. Health education including: Behaviors of woman (Sexual behavior; Breast stimulation during Sexual intercourse, No touch breast direct, Avoid pressure on chest or (trauma). Nutritional habits (Avoid some foods like sweets, Fats, oils, Seeds, nuts and Advice Vegetables, fruits, Fish, vit omega 3 plus, zink, vit B16 and Protein). Daily behaviors increase milk secretion (Avoid See of other women breast feeding, Avoid Handling children on the chest, Avoid not enough Sleep ,Avoid

excessive exercise, Avoid Stress and Avoid tight Clothes).

Post intervention: The studied women was followed by telephone every week to follow their implementation of instructions given in the session. After 4 weeks of Medication come to clinic to retest prolactine hormone. to identify outcomes in the study and the control groups. Prolactine value at second visit after receiving health education behavior of women response or not response and without nurse health education

Administrative design:

Informed oral consent was taken from each woman involved in the study, confidentiality was assured. The woman was freely to withdraw from the study at any stage.

Statistical design:

Statistical analysis was performed using SPSS for windows version 20.0. All variables with continuous data showed normal distribution and were measured in terms of mean and standard deviation (SD). Numbers and percentages were used to present the categorise data. For variables with continuous data, the comparisons were made using the t test. For comparing variables using categorised data, the Chi-square and McNemar tests were used. P-values less than 0.05 were considered statistically significant.

Results

Table (1):- Distribution of the studied women according to sociodemographic characteristics in the study and the control groups:

Sociodemographic characteristics	Study(n=50)		Control(n=50)		P. value
	No	%	No	%	
Age group					
Less than 30 year	21	42.0	25	50.0	0.627
From 30-40 years	24	48.0	22	44.0	
More than 40 years	5	10.0	3	6.0	
Mean ±SD	**31.58±6.83**		**30.74±6.79**		**0.539**
Residence					
Urban	23	46.0	28	56.0	0.317
Rural	27	54.0	22	44.0	
Marital status					
Single	6	12.0	4	8.0	0.494
Married	41	82.0	40	80.0	
divorced/widowed	3	6.0	6	12.0	
Woman's education					
Illiterate	4	8.0	5	10.0	0.556
basic education	6	12.0	11	22.0	
Secondary school	23	46.0	20	40.0	
University	17	34.0	14	28.0	
Woman 's Occupation					
House wife	20	40.0	24	48.0	0.420
Employed	30	60.0	26	52.0	
Duration of marriage					
Less than 3 year	18	36.0	19	38.0	0.652
from 3-5 year	16	32.0	12	24.0	
More than 5 year	16	32.0	19	38.0	
Mean ±SD	5.86±5.54		5.84±4.9		0.985
Prolactin value at first visit					
Mean ±SD	**75.9±38.1**		**77.16±26.9**		**0.849**

Chi square test for qualitative data between the two groups
Independent T-test for quantitative data between the two groups
**Significant level at P value < 0.05*

Table (2): Distribution of the studied women according to their obstetrical history in the study and the control groups:

Obstetrical history	Study (n=50)		Control (n=50)		P. value
	No	%	No	%	
Gravidity					
None	22	44	25	50.0	0.629
1-3 gravidity	20	40	14	28.0	
4-5 gravidity	6	12	8	16.0	
More than 5 Parity	2	4	3	6.0	
Mean ±SD	**1.64±1.83**		**1.96±2.79**		**0.499**
Parity					
None	22	44	25	50.0	0.749
1-3 Parity	19	38	14	28.0	
4-5 Parity	7	14	8	16.0	
More than 5 Parity	2	4	3	6.0	
Mean ±SD	**1.62±1.84**		**1.96±2.79**		**0.474**
No of live births					
None	24	48.0	27	54.0	0.491
1-3 birth	24	48.0	19	38.0	
More than 3 birth	2	4.0	4	8.0	
Mean ±SD	**1.04±1.24**		**1.16±1.65**		**0.682**
No of abortions					
None	31	62.0	29	58.0	0.240
1-2 abortion	18	36.0	16	32.0	
More than 2 abortion	1	2.0	5	10.0	
Mean ±SD	**0.6±0.86**		**0.8±1.31**		**0.368**

Chi square test for qualitative data between the two groups
Independent T-test for quantitative data between the two groups

Table (3): Distribution of the studied women according to infertility history in the study and the control groups:

Infertility history	Study(n=50)		Control(n=50)		P. value
	No	%	No	%	
History of infertility					
Yes	37	74.0	40	80.0	0.476
No	13	26.0	10	20.0	
Duration of infertile					
from 1-3 years	13	35.1	1	2.5	<0.001**
from 3-5 years	14	37.8	13	32.5	
More than 5 years	10	27.0	26	65.0	
Mean ±SD	**4.35±1.9**		**6.55±1.99**		**<0.001****
Type of infertility					
Primary	20	54.1	25	62.5	0.452
Secondary	17	45.9	15	37.5	

Chi square test for qualitative data between the two groups
Independent T-test for quantitative data between the two groups
***Significant level at P value < 0.01*

Table (4): Distribution of the studied women according to their medical history in the study and the control groups:

	Study (n=50)		Control (n=50)		P. value
	No	%	No	%	
Medical diseases					
Diabetes mellitus	1	2.0	6	12.0	0.095
Hyperthyroidism	8	16.0	8	16.0	
Hypertension	9	18.0	5	10.0	
Psychiatric disease	5	10.0	10	20.0	
Cardiovascular disease	22	44.0	13	26.0	
None	5	10.0	8	16.0	
Drugs used					
BusPirone	8	16.0	9	18.0	<0.001**
Opitaes	1	2.0	9	18.0	
Sumatriptan	2	4.0	5	10.0	
Depakene	0	0.0	4	8.0	
Aldomet	3	6.0	5	10.0	
Reserpine	4	8.0	0	0.0	
Verapamil	7	14.0	0	0.0	
Estrogen	0	0.0	5	10.0	
Zantac	5	10.0	3	6.0	
None	20	40.0	10	20.0	
Are there any hormonal disorders in your family					
Yes	14	28.0	8	16.0	0.148
No	36	72.0	42	84.0	
Are there any psychiatric disorders in your family					
Yes	7	14.0	14	28.0	0.086
No	43	86.0	36	72.0	

Chi square test for qualitative data between the two groups
Independent T-test for quantitative data between the two groups
***Significant level at P value < 0.01*

Table (5): Distribution of the studied women regarding current hyperprolactinemia data:

Current hyperprolactinemia data	Study(n=50)		Control(n=50)		P. value
	No	%	No	%	
Pathological causes hyperprolactenimia					
Hypothalamic-pituitary disease	17	34.0	14	28.0	0.689
Non-hypothalamic-pituitary disease	16	32.0	15	30.0	
Drugs induced hyperprolactinemia	17	34.0	21	42.0	
Other causes					
Life style factors	19	38.0	17	34.0	0.885
Sexual behaviors	17	34.0	17	34.0	
Feeding habits	14	28.0	16	32.0	
Symptoms before diagnosis and treatment of hyperprolactinemia					
Headaches	9	18.0	5	10.0	0.001**
Galactorrhea	0	0.0	7	14.0	
Weight gain	11	22.0	1	2.0	
Sleep disorders	7	14.0	10	20.0	
Fatigue	8	16.0	9	18.0	
Dizziness	0	0.0	4	8.0	
Anxiety	4	8.0	0	0.0	
Irregular periods	11	22.0	14	28.0	

Chi square test for qualitative data between the two groups
Independent T-test for quantitative data between the two groups
***Significant level at P value < 0.01*

Table (6): Distribution of studied women regarding mean and standard deviation of prolactin value before (1rst visit) and after (2nd visit) receiving health education for Study and control group:

	Study(n=50)		P value1	Control(n=50)		P value2
	1rst visit	2nd visit		1rst visit	2nd visit	
	Mean±SD	Mean±SD		Mean±SD	Mean±SD	
Prolactin value	75.9±38.1	22.34±10.39	<0.001**	77.16±26.9	46.22±32.09	<0.001**

Chi square test for qualitative data between the two groups
- Independent T-test quantitative data between the two groups
***Significant level at P value < 0.01*

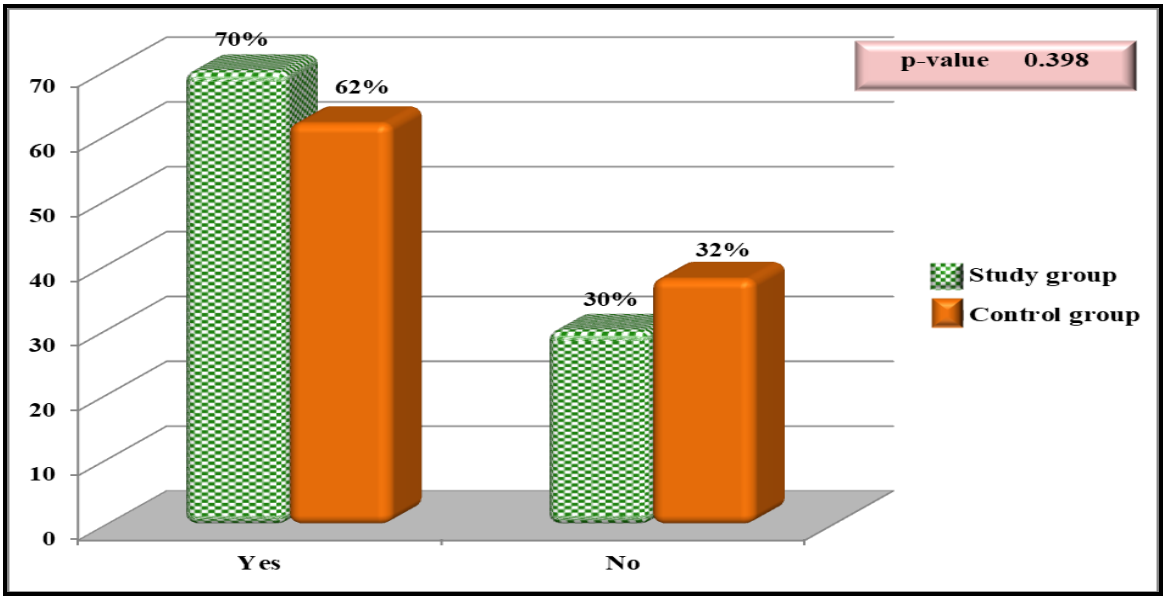

Figure (1): Distribution of the studied women as regard presence of breast milk in the study and the control groups:

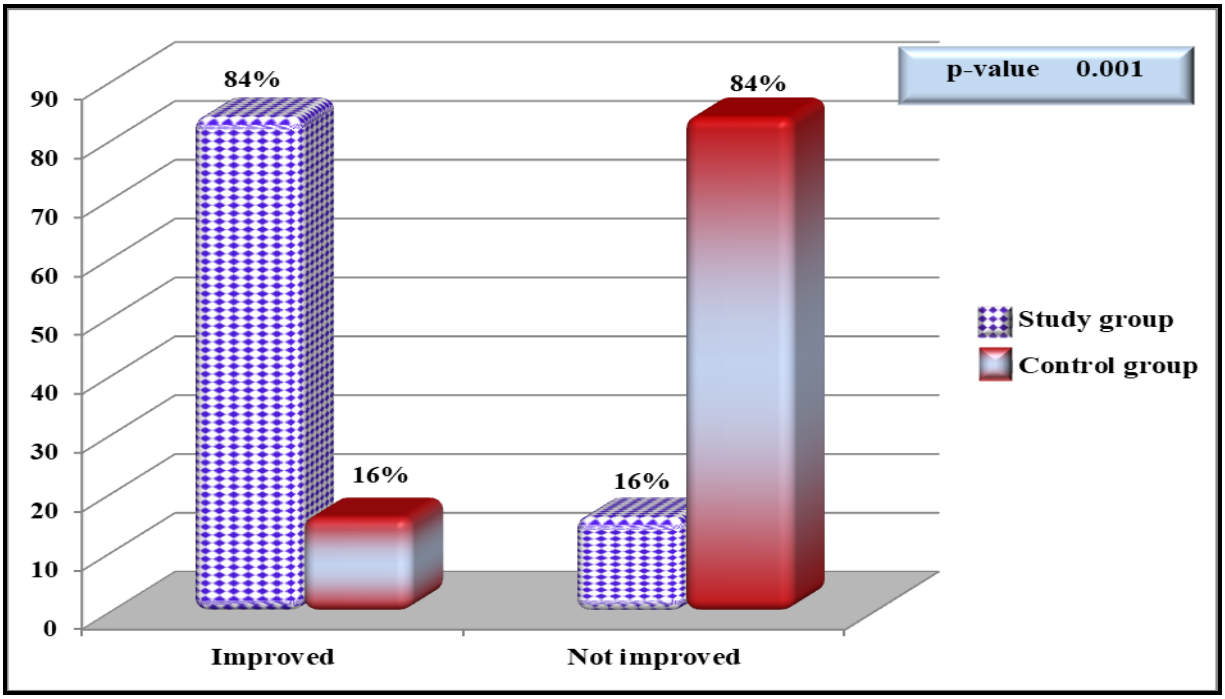

Figure (2): Distribution of studied women regarding women's behavior after receiving health education in Study and control group:

Table (1): Shows sociodemographic characteristics of the studied women, and reports that there are no statistical significant differences between women in the study and the control groups regarding their age group, residence, marital status, woman's education, occupation, duration of marriage, and prolactin, p-value are 0.627, 0.317, 0.494, 0.556, 0.420, 0.652, 0.985, and 0.849 respectively. The Mean±SD of age is 31.58±6.79 years among women in the study groups and 30.74±6.79 among those in the control group.

Table (2): Clarifies obstetric history of the studied women and shows that there are no statistical significant differences between study and control group as regards gravidity, parity, no of abortions and number of live births p.value are 0.629, 0.749, 0.240 and 0.491 respectively.

Table (3): Rreports infertility history of the studied women and clarifies that there are no statistical significant differences between them in the study and the control groups as regards history of infertility and type of infertility p.value are 0.476 and 0.452 respectively. However there is a statistical significant difference regarding duration of infertile p value(<0.001) .

Table (4): Shows medical history of the studied women in the study and the control groups, and finds that there are no statistical significant differences between them in the study and the control groups regarding medical diseases, hormonal disorders in women's family and psychiatric disorders in women's family p.value are 0.095, 0.148 and 0.086 respectively. While there is a statistical significant difference between the study and the control groups regarding drugs used p value (<0.001).

Table (5): Demonstrates that there are no statistical significant differences between women in the study and the control groups concerning pathological causes hyperprolactenimia and other causes, p value are 0.689 and 0.885 respectively. As well as there is a statistical significant difference between the study and the control groups regarding symptoms before diagnosis and treatment of hyperprolactinemia p value 0.001.

Table (6): Shows that there is a statistical significant difference between before1^{rst} visit and 2nd visit regarding prolactin value in the study and the control groups p value (<0.001) for both.

Figure (1): Demonstrates that there is no statistical significant difference between women in the study and the control groups concerning presence of milk p value is 0.398.

Figure (2): Clarifies that there is a statistical significant difference between the study and the control groups regarding women's behavior after receiving health education p value (<0.001).

Discussion:

Hyperprolactinemia is a prevalent issue that occurs in women with reproductive problems. Prolactin estimations were necessary after it was discovered that prolactin hypersecretion not only caused galactorrhoea and amenorrhea, but also gonadal dysfunction and infertility**(Turankar et al., 2016).**

When hyperprolactinemia is verified, the cause of the condition must be determined.This involves a careful history and examination, followed by laboratory tests and diagnostic imaging of the sella turcica, and the nurse carry a vital role in taking history and patient's counseling **(Salah Eldin et al, 2017).**

Based on current results, it is illustrated that there are statistical significant difference between the study and the control groups regarding prolactine value, as the majority of studied women have a normal value in study group and abnormal value in control one p-value 0.001.

This was supported by (**Vreeland & Kim, 2014)**, who applied their study to discusses the overall assessment and management of psychotropic-associated weight gain, obesity, type 2 diabetes, and hyperprolactinemia in patients with schizophrenia and bipolar disorder and supported the vital role of nurse in assessment and management of hyperprolactinemia.

Also **(Somerall, 2020)** reported that nurses had an important role in assessing and managing hyperprolactinemia through providing a counseling that needed to women. This explains the importance of nursing role in providing counseling and its role in management of hyperprolactinemia.

As regard causes of hyperprolactinemia, actual study demonstrates that around one third of studied women had hyperprolactinemia due to drugs induced hyperprolactinemia.

Near to previous results **(DAR et al., 2020),** who implemented their study in India to study the clinical presentation and etiology of hyperprolactinemia and to address any changing trend in the etiological profile of this disorder and illustrated that more than half of studied women had hyperprolactinemia due to drugs induced.

On the other hand **(Zargar et al., 2005),** who carried out to study the clinical presentation and etiology of hyperprolactinemia, a common disorder encountered in endocrine practice, and showed that only 5.3% of studied women had hyperprolactinemia due to using drugs. Also **(Dong-Yun et al, 2012),** who carried out their study in Korea to evaluate the prevalence of hyperprolactinemia in adolescents and young women with menstrual problems, and found that less than one fifth of studied women their hyperprolactinemia caused by medications. This difference may back to

changing in the culture, setting and traditions between studied women in both studies.

Concerning symptoms of hyperprolactinemia before treatment, present study showed that only 7% of all studied women had Galactorrhae as a symptom of hyperprolactinemia, and around one quarter of studied women in both groups (study and control) had irregular periods as a symptom of hyperprolactinemia.

On the other side, **(DAR et al., 2020) & (Zargar et al., 2005)** reported that more than three fifths and the majority of studied women respectivelly had a Galatorrhae as a symptom of hyperprolactinemia.

Also **(Thirunavakkarasu et al., 2013)**, who achieved their study in India to assess the prevalence of macroprolactinemia in hyperprolactinemic infertile women, and found that more than one quarter had a Galatorrhae as a symptom for hyperprolactinemia. This dissimilarity may back to changing in the etiological factor to hyperprolactinemia in different studies reported above.

Recent data suggests that hyperprolactinemia lowers kisspeptin production at the hypothalamus level, lowering hypothalamic secretion of gonadotrophin-releasing hormone (GnRH) and, as a result, pituitary gonadotrophin synthesis and secretion (LH and FSH) with a loss of gonadal stimulation and infertility **(Rizzo et al., 2020).**

Regarding history of infertility among studied women, present study reported that the majority of them in both groups had previous history of infertility. This was agreed with **(Turankar et al., 2016),** who achieved their study in India to study the serum prolactin levels and the serum TSH in primary infertile females, and illustrated that the serum prolactin concentration was increased in the infertile group (54.38 ±11.34) as compared to that in the control group (18.14± 5.99) and it was found to be statistically highly significant ($p<0.0001$).

Also **(Agrawal et al., 2013),** who implemented their study in India to find out the incidence of hyperprolactinemia in infertility and highlight the importance of assessment of serum TSH level in hyperprolactinemia, and concluded that hyperprolactinemia was a common finding in an infertile women. This confirms the relation between hyperprolactinemia and infertility.

In incongruent with previous **(Nwachuku & Green, 2019),** who applied their study to determine the prevalence of hyperprolactinemia among females in some gynaecological clinics in Rivers State, Nigeria, and cleared that more than one half of studied women had hyperprolactinemia. This difference may back to dissimilarity in sample as the second one for infertile women but the first for hyperprolactinemia women.

Antipsychotic drugs are also known to influence the hypothalamo-hypophyseal axis and induce variable degrees of hyperprolactinemia. Hyperprolactinemia is a recognized adverse side effect of antipsychotic drugs. It can be acute or chronic, and Sexual dysfunction, menstrual abnormalities, amenorrhea, galactorrhea, and osteoporosis have all been linked to it **(Takechi et al., 2017).**

As regard history of family's psychiatric disorders, current study shows that around one sixth of studied women in study group and more than one quarter in control group had a family history of psychiatric disorders with no statistical significant difference between study and control group.

The same opinion reported by **(Takechi et al., 2017)**, who achieved their study in Japan to evaluate the prevalence of hyperprolactinemia and menstruation disorders in women undergoing anti-psychotic treatment, and clarified that treatment with anti-psychotic drugs has been associated with hyperprolactinemia.

Other study implemented by **(Kinon et al., 2003)** in USA to determine the extent of this potential problem in a routine clinical setting, and found that majority of premenopausal women develop hyperprolactinemia during treatment with anti-psychotic drugs. This confirm the relation between using anti- psychotic drugs and hyperprolactinemia and variation in percent may back to the type of drug used, and other personal characteristics in the studied sample.

Hormonal abnormalities of the female reproductive system include a variety of issues caused by abnormal hypothalamic-pituitary-ovarian axis activity. Infertility is frequently caused by these rather common illnesses. The measurement of prolactin and thyroid hormones, particularly thyroid stimulating hormone (TSH), has long been regarded a crucial part of a woman's infertility evaluation **(Shoaib & Hassan, 2016).**

Regarding family history of hormonal disorders, actual study demonstrated that more than one quarter of studied women in study group and more than one sixth in control group had a family history of hormonal disorders there were no statistically significant differences between both groups.

This was on the same line with **(Binita et al., 2009),** who carried out their study on infertile women to review the impact of thyroid status on the menstrual function and fertility of the subjects, and showed that serum TSH levels were found to be positively correlated with prolactin levels in the cases ($r=0.4$, $p=0.01$). This supports the relation between hormonal disorder and hyperprolactinemia.

Concerning medical history, current study reveals that more than one third of all studied women, more than

one sixth and less than one tenth had a history of cardiovascular disease, hypertension and diabetes mellitus (D.M) respectively.

Freitas1 et al., 2015 agreed with previous results in history of D.M as more than one tenth of studied women had a history of D.M, but dis agreed regarding history of cardiovascular disease (more than one tenth) and hypertension (nearly two fifth).

Regarding obstetric history of studied women, present study clarified that there was no statistical significant difference between study and control group regarding parity, no of living birth and abortion, p- value 0.474, 0.682 and 0.368 respectively. This was on the same line with **(Masoumi et al., 2017),** who reported that there was statistical significant difference between study and control group regarding mean and SD of parity, no of living birth and abortion, p- value 0.08, 0.32 and 0.060 respectively.

As regard prolactin value before treatment, present study reported that the mean and SD of prolactin value was 75.9±38.1 in study group and 77.16±26.9 in control group with no statistical significant difference between study and control group.

This was differ from **(Medić-stojanoska et al., 2014),** who conducted a study to assess the impact of hyperprolactinemia on hemostatic system parameters and coagulation system activation, and reported that there was a statistically significant difference between the study and control groups (p-value 0.001), this difference back to comparing hypeprolactinemia (study) with no hypeprolactinemia (control). Also **(Salah Eldin, 2017),** who showed that there was statistical significant difference between case and control group p-value 0.000.

Concerning BMI, current study reported that there was no statistical significant difference between study and control group regarding BMI p-value 0.435. This was agreed with **(Freitas1 et al., 2015),** who showed that there was no statistical significant difference between mean and SD of BMI in study and control group. Also **(Rizzo et al., 2020)**, who found that Hyperprolactinemia was discovered to be a risk factor for obesity-related metabolic syndrome, insulin resistance, and diabetes mellitus, owing to a direct effect on pancreatic beta cells.

On the other hand **(Medić-stojanoska et al., 2014)** illustrated that there was statistical significant difference between study and control group regarding mean and SD of BMI. These backs to working on different groups study (hypeprolactinemia) and control (not hypeprolactinemia) p value 0.017.

Regarding demographic data, current study report that there was no statistical significant difference between study and control group regarding age, residence, marital status, educational level, occupation and duration of marriage p- value were 0.627, 0.317, 0.494, 0.556, 0.420 and 0.652 respectively. On the same line **(Medić-stojanoska et al., 2014)** demonstrated that there was no statistical significant difference between study and control group regarding age p- value 0.390**.**

On the other side **(Wu et al., 2021)** found that there was statistical significant difference between group1 (hypeprolactinemia) and group2 (not hypeprolactinemia) regarding age and marital status p- value 0.040 and 0.020 respectively.

Physical activity and its impacts on prolactin concentrations have been unclear.Early reports demonstrated that intensive exercise acutely increased prolactin concentrations; however, more recently an exercise intervention reported that long-term exercise decreased prolactin concentrations when the analysis was limited to exercisers with the highest change in physical fitness **(Brenner et al., 2017).**

As regard effect of daily activity on increasing milk production, actual study demonstrated that only 2% of studied women in study group and no one in control group who performed exercise had an effect on increasing milk production.

Concerning sexual pattern (women's behavior) in study and control group, actual study represents that there was no statistical significant difference between study and control group p- value 0.710, and around one third in both groups performed breast simulation during sexual intercourse.

The link between hyperprolactinemia and sexual dysfunction is still up for debate. Some research has revealed a link between the two illnesses as **(Ahl et al., 2004),** who implemented their study to determine the point prevalence of hyperprolactinemia in schizophrenia patients who had been treated with convention- al antipsychotics or risperidone and **(Rubio-Abadal et al., 2016),** who implemented their study in Spain to examine the association between hyperprolactinemia (HPRL) and sexual dysfunction (SED) in a group of patients taking a dose-stable antipsychotic medication, as well as sex differences in HPRL and SED prevalence and interaction.

Regarding nutritional habits for studied women, it is reported that more than one third of studied women in study group and half of them in control group like or eat sweets food with statistical significant difference between study and control group p- value 0.004.

Other opinion reported by **(Freitas1 et al., 2015),** who applied their study in Brazil to assess nutritional and metabolic status of overweight patients with and without hyperprolactinemia caused by prolactinoma and compare them, and found that the majority of hyperprolactinemia women prefer to have a refined sugar as a sweetener. This difference may back to change in cultures, traditions and customs between studied samples in both studies.

Conclusion:

The nurse carry a vital role for hyperprolactinemia through health education including (feeding habits , Life style and sexual behaviors)**.** in assessing and managing hyperprolactinemia. and thus increase the quality of life.

Recommendations:

1. Life style, feeding habits and sexual behaviors are must be included in the management protocols of hyperprolactinemia
2. More educational programs are required to improve knowledge of women in outpatient clinics about management of hyperprolactinemia
3. Refreshing nursing staff knowledge about hyperprolactinemia and management must be in mind.
4. Encourage nurses to attend educational courses in the form of workshops , conferences , training programs and review update nursing role related to hyperprolactinemia and management it.
5. Guide poster about nursing management of hyperprolactinemia should be placed at work place.
6. support the nurses's role in assessing and managing hyperprolactinemia through providing a counseling that needed to women.

References

- **Abha M. & Nisha Sh (2013):** Hyperprolactinemia. Journal of Human Reproductive sciences 6(3): 168–175). Hum Reprod Sci.
- **Agrawal, M., Samal, S., Hariharan, C., & Agrawal, S. (2013):** Prevalence of hyperprolactinemia in infertile cases and its correlation with TSH in a rural set up hospital. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 2(4), 626–630.
- **Ahl, J., Kinon, B., & Liu-Seifert, H. (2004):** Sexual dysfunction associated with neuroleptic-induced hyperprolactinemia improves with reduction in prolactin levels. Annals of the New York Academy of Sciences, 1032, 289–290.
- **Andrew R. Hoffman, MD Shlomo Melmed, MD & Janet Schlechte, (2011):** Patient guide to hyperprolactinemia diagnosis and treatment.The Journal of Clinical Endocrinology & Metabolism, Pages 35A–36A.
- **Binita, M., Suprava, M., & Mainak, M. (2009):** Correlation of Prolactin and Thyroid Hormone Concentration with Menstrual Patterns in Infertile Women. J Reprod Infertil., 10(2), 207–212.
- **Brenner, D., Ruan, Y., Morielli, A., Courneya, K. & Friedenreich, C. (2017):** Physical activity does not alter prolactin levels in post-menopausal women : results from a dose-response randomized controlled trial. European Review of Aging and Physical Activity (2017), 14(10), 1–5.
- **Capozzi A, Scambia G, Pontecorvi A, Lello S. (2015):** Hyperprolactinemia: pathophysiology and therapeutic approach. Gynecol Endocrinol; 31: 506-10.
- **DAR, J., BHAT, M., Javaid Ahmad BHAT, R., MASOODI*, S., & WAN, A. (2020):** Clinical Profile and Changing Etiological Spectrum of Hyperprolactinemia at a Tertiary Care Endocrine Facility Clinical Profile and Changing Etiological Spectrum of Hyperprolactinemia at a Tertiary Care Endocrine Facility Üçüncü Basamak Bir Endokrin Kurul. Society of Endocrinology and Metabolism of Turkey. 24(December), 308–313.
- **Dong-Yun Lee, MD, PhD; Yoon-Kyung Oh, MD & Byung-Koo Yoon, MD, P. (2012):** Prevalence of hyperprolactinemia in adolescents and young women with menstruation-related problems. American Journal of Obstetrics & Gynecology, 15(4), 1–5.
- **Freitas , B , Renata Z , Carolina L, Miriam F., & Pereira S. (2015):** Nutritional and metabolic assessment in overweight patients with and without hyperprolactinemia caused by prolactinoma. Nutrition Hospitalaria, 32(5), 2030–2037.
- **Kinon, B., Gilmore, J., Liu, H., & Halbreich, U. (2003):** Prevalence of hyperprolactinemia in schizophrenic patients treated with conventional antipsychotic medications or risperidone. Psychoneuroendocrinology, 28(SUPPL. 2), 55–68.
- **Masoumi, S., Kazemi, F., Nejati, B., Parsa, P., Karami, M., Care, C., & Health, C. (2017):** Effect of Sexual Counseling on Marital Satisfaction of Pregnant Women Referring to Health Centers in. Electronic Physician (ISSN: 2008-5842), January, 3598–3604.
- **Medić-stojanoska, M., Mitić, G., Mitić, I., Spasić, D., & Ćurić, N. (2014):** The Influence of Hyperprolactinemia on Coagulation Parameters in Females with Prolactinomas. Srp Arh Celok Lek., 142(6), 314–319.
- **Nwachuku I. & Green, E. (2019):** Prevalence of Hyperprolactinemia and Socio-Demographic Profile of Hyperprolactinemic Women in Some Gynaecologica ... IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), 18(1), 50–54.
- **Rizzo, L., Mana, D., Serra, H, & Danilowicz, K. (2020):** Hyperprolactinemia associated with psychiatric disorders. ISSN 1669-9106 MEDICINA (Buenos Aires), 80(6), 670–680.
- **Rubio-Abadal, E., Del Cacho, N., Saenz-Navarrete, G., Arranz, B., Cambra, R. M., Cuadras, D., Rodante, D., Fehér, C., Roca, M., Barneda, V., & Usall, J. (2016):** How

hyperprolactinemia affects sexual function in patients under antipsychotic treatment. Journal of Clinical Psychopharmacology, 36(5), 422–428.

- **Salah Eldin A. AbdElghani 1, Abdelgadir A. Elmugadam*2, 3 & Mohammed Elsanousi M.4. (2017).** Hyperprolactinemia as a cause of female primary infertility and its prevalence in Gezira State, Central Sudan. C. Physiology & Molecular Biology, 5(1), 31–36
- **Shoaib, O., & Hassan, E. (2016):** A Study of Serum Thyroid Stimulating Hormone and Prolactin Levels of Infertile Females. International Journal of Science and Research (IJSR), 5(5), 836–839.
- **Simeon Margolis, M.D., Ph. D (2011):** What is Hyperprolactinemia Data from a Tertiary Care Centre. JAPI, 53(June 2011), 200–210.
- **Somerall, B., William E., & D'Ann W. (2020):** Hyperprolactinemia : The ABCs of diagnosis and management. In Women's Healthcare (Issue December).
- **Sturate B, Rui M, & Ursula H (2013):** Standard operating procedures for female orgasmic disorder ,Jornal of sexual medicine,10 ,2606-2609.
- **Takechi, K., Yoshioka, Y., Kawazoe, H., Tanaka, M., Takatori, S., Kobayashi, M., Matsuoka, I., Yanagawa, H., Zamami, Y., & Imanishi, M. (2017):** Psychiatric Patients with Antipsychotic Drug-Induced Hyperprolactinemia and Menstruation Disorders. The Pharmaceutical Society of Japan, 40(10), 1775–1778.
- **Thirunavakkarasu, K., Dutta, P., Sridhar, S., Dhaliwal, L., Prashad, G., Gainder, S., Sachdeva, N., & Bhansali, A. (2013):** Macroprolactinemia in hyperprolactinemic infertile women. Endocrine, 2013(44), 750–755.
- **Turankar, S., Sonone, K., & Turankar, A. (2016):** Hyperprolactinaemia and its Comparision with Hypothyroidism in Primary Infertile Women. 7(5), 794–796.
- **Vreeland, B., & Kim, E. (2014):** Managing the Clinical Consequences of Psychiatric Illness and Antipsychotic Treatment: A Discussion of Obesity, Diabetes, and Hyperprolactinemia. American Psychiatric Nurses Association S17, 10(3), 17–24.
- **Wu, T., Lin, C., Goh, K., & Chen, C. (2021):** The Relationships between Hyperprolactinemia, Metabolic Disturbance, and Sexual Dysfunction in Patients with Schizophrenia under Olanzapine Treatment. 12(August), 1–9.
- **Zargar, A., Laway, B., Masoodi, S., & Bhat, M. (2005):** Clinical and Etiological Profile of Hyperprolactinemia - Data from a Tertiary Care Centre. JAPI, 53(June 2014), 288–290.