

Effect of women's health education regarding life style in reducing value of prolactine in hyperprolactinemia: a prospective randomized controlled trial

Abeer A. Hasan¹, Atef M. Darwish², Nadia H. Ahmed³, Reda R. Ali⁴

¹Nursing Specialist at Women's Health Hospital in Assiut University .

²Professor of Obstetrics & Gynecology Medicine, Faculty of Medicine, Assiut University

³Assistant Professor of Obstetrics & Gynecological Nursing, Faculty of Nursing, Assiut University

⁴Lecturer of Obstetrics & Gynecological Nursing ,Faculty of Nursing- Assiut University

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Abstract: Hyperprolactinemia is a condition of elevated prolactin levels in blood which could be physiological, pathological, or idiopathic in origin. Similarly elevated prolactin levels could be associated with severe clinical manifestations on one side of the spectrum or be completely asymptomatic on the other side. **Aim:** To give health education for women underlying forms of prolactine drugs for hyperprolactinemia. **Sampling:** convenience sample started from April 2019 to March 2020. **Design method:** Prospective study (randomized controlled trial). **Setting:** This study was conducted at the laboratory of the Woman's Health University Hospital, Assiut University. **Results :** Based on current results, it is illustrated that there are statistical significant difference between study and control group 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. **Discussion:** Counseling and educational programs about hyperprolactinemia help reduce risks and complications connected with this condition and thus increase the quality of marital life. **Conclusion:** Health education for women under drugs of hyperprolactinemia is effective in reduce level of prolactine. **Recommendations:** Life style, feeding habits and sexual behaviors are must included in the management protocols of hyperprolactinemia.

Keywords: Hyperprolactinemia, Life style, prolactin.

1. INTRODUCTION

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

hyperprolactinemia can occur at any age, and the prevalence varies from 0.4% in the normal adult population to as high as 9-17% in women with menstrual problems such as amenorrhea or polycystic ovarian syndrome. Although a recent study reported that the highest incidence rate of dopamine agonist-treated hyperprolactinemia was found in women 25-34 years old, there has been little information about hyperprolactinemia in young women including adolescents, especially in relation to menstrual problems such as amenorrhea, oligomenorrhea, or AUB. (Melmed S,et al 2011).

hyperprolactinemia is one of the most common endocrine disorders of the hypothalamic-pituitary axis in young women, is associated with ovulatory dysfunction that results in menstrual irregularities. Aside from high prolactin levels during pregnancy and lactation, prolactinoma is the most frequent cause of persistent hyperprolactinemia. Additionally, there are a number of causes that alter the neuroendocrine control of prolactin secretion, such as stress and exercise and certain medications. (Melmed S, et al 2011).

other causes of hyperprolactinemia due to lack of time, busy physicians usually focus on major causes of hyperprolactinemia and may ignore some other important etiologies. Life style factors of hyperprolactinemia include stress and excessive sleep. Wearing tight clothes that lead to chest wall and nipple stimulation. Nipple stimulation during sexual intercourse increases serum prolactin concentrations, Feeding habits have direct impact on hyperprolactinemia. Diet rich in chicken and some oils and some drinks are accused to cause hyperprolactinemia. (Daria La Torre et al, 2007) .

The effect of hyperprolactinemia on both men and 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 sex painful, Breast discharge when not pregnant or nursing ,Adolescent girls may also have menstrual problems and breast discharge. Men may have: Erectile dysfunction-trouble getting or keeping an erection ,decreased body hair and muscle mass ,Boys may have delayed puberty and low testosterone levels. Some people with hyperprolactinemia have no symptoms. (Capozzi A et al ,2015)

Role of nurses in Health education regarding life style the management of hyperprolactinemia: This including (feeding habits , Life style and sexual behaviors) to improve in the management of hyperprolactinemia: changing diet (avoid food that causes hyperprolactinemia 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, is thought to optimize anyone's health. The diet should also include whole grains; legumes, especially soybeans; nuts and seeds; and cold-water fish. Beyond this, certain foods emerge as specifically beneficial in lowering prolactin levels and keeping stress levels down. (Sturate B et al, 2013)

According to Oregon State University's Micronutrient Information Center, several studies point out a link between vitamin B6 deficiency and hyperprolactinemia. Considering eating more foods containing vitamin B6, such as potatoes, bananas, wild salmon, chicken and spinach is essential. Also, according to a study published in "The Lancet," supplementation with zinc decreased prolactin levels ,Foods high in zinc include shellfish, beef, turkey and beans avoiding clothing that makes the chest uncomfortable and overstimulate the nipples ,avoid sexual behavior and personal habits that causes hyperprolactinemia ,demonstration of proper way to use the medications ,demonstration of the possible side effects and how to manage(Winyoo Ch, et al 2004).

Significance of the study:

Many women despite being well-treated in proper dose, with proper drug and for proper duration, may not respond to different forms of prolactin normalizing drugs. This will lead to extension of the treatment duration up to months or even years. Doctors usually increase the dose of the drug with high possibility of side effects and even complications. Some doctors change drug group to another without any significant improvement of hyperprolactinemia. hyperprolactinemia can indicate a deeper issue, about 10 percent of the population has hyperprolactinemia (Abha M et al, 2013)

Life style, feeding habits and sexual behaviors are usually not included in the management protocols of hyperprolactinemia. (Sturate B et al ,2013).

Aim of the study

This study was be aimed to:

- 1- Give health education for women underlying forms of prolactine drugs for hyperprolactinemia.

Hypothesis of the study

H1- Health education for women under drugs of hyperprolactinemia is effective in reduce level of prolactine.

H0- Health education for women under drugs of hyperprolactinemia is not effective in reduce level of prolactine.

Operational definitions:

Prolactin: (PRL) is a 199-aa polypeptide hormone, with a molecular weight of 23 kDa, synthesized by lactotrophs in the adenohypophysis (Binart N.et al, 2017).

Hyperprolactinemia: It is the most common endocrine disorder of the hypothalamic-pituitary unit. The causes of hyperprolactinemia can be physiological, analytical, pathological and pharmacological. Serum PRL levels are higher in women than in men and hyperprolactinemia is diagnosed when the PRL levels are higher than 25 ng/ml in females and higher than 20 ng/ml in males . (Vilar L,et al 2019).

2. SUBJECTS AND METHOD

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

I) 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 (laboratory of the Woman's Health University Hospital) That involved one room, for take blood sample and examination.

Research sample:

The study included a convenience sample (100 women) started from April 2019 to March 2020. all women diagnosed to have hyperprolactinemia as diagnosed by one laboratory (lab of the Woman's Health University Hospital).

Inclusion criteria:

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

Exclusion criteria:

- 1- Physiologic hyperprolactinemia. 2- Women who don't consent for follow up.

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:

I. 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, residence, educational level, duration of marriage, number of phone 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.

Part 3: included Menstrual history as Age of menarche, Duration, Interval, and rhythm.

Part 4: Current hyperprolactinemia data including: Pathological causes of hyperprolactinemia as (Hypothalamic-pituitary disease, Non-hypothalamic-pituitary disease). Drugs induced hyperprolactinemia. Other causes as (Life style factor, Sexual behaviors, Feeding habits).

II. Health education tool: Women's Life style

Part 1 : Behaviors of woman (Sexual pattern) as avoid breast stimulation during SI ,No touch breast Direct ,Avoid pressure on chest or (trauma)

Part 2 : Nutritional habits as (avoid sweets , Fats , oils, Seeds and nuts

Provid vegetables ,fruits ,Fish , vit omega 3 plus , zink,vit B16 and Protein).

Part 3 : Daily behaviors increase milk secretion as (Avoid See of other women breast feeding ,Avoid Handling children on your chest,Avoid not enough Sleep ,Avoid excessiveExercise,Avoid Stress ,Avoid tight Clothes).

III . follow up sheet that involved

Part 1: (second visit after month with measurement of serum prolactin level again).

Part 2 : Behaviors of woman was response or not.

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 an official permission was obtained from the director of Woman Health Hospital, informed consent was taken from each woman involved in the study.

II) 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 months, 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, Residence, Education, marital status, Occupation, Duration of marriage, telephone number, Weight, Height, Smoking consumption). obstetrical history (gravidity, parity, No of live birth, No of abortion, history of still births, Time since last delivery or abortion). included Menstrual history as Age of menarche, Duration, Interval, and rhythm. 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 randomized selection of the participant as the following: give the participant an envelope contains two choice of (A or B) labeled papers then according to her choice she will engaged in the group: Group A will be take medications for hyperprolactinemia with nurse health education. and group B will be will be take medications for hyperprolactinemia without 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 pattern;Breast stimulation during SI ,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 ,Protein). 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).

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 study and control group. Observation Prolactine value at second visit after receiving health education behavior of women response or not response.and without nurse health education

III) Administrative design:

Informed 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.

IV) Statistical design:

Statistical analysis was performed using SPSS for windows version 20.0. All variables with continuous data showed normal distribution and were expressed in mean ±standard deviation (SD). Categorized data were presented in number and percentage. The comparisons were determined using t test for variables with continuous data. Chi-square and McNemar test was used for comparison of variables with categorized data. Statistical significance was considered at P-value ≤ 0.05.

Limitation of the study:

No Limitation of the study

3. RESULTS

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

| 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 |

Table (2): Distribution of studied women according to menstrual history in study and control group:

| Menstrual history | Study(n=50) | | Control(n=50) | | P. value |
|-----------------------------|-------------|------|---------------|------|----------|
| | No | % | No | % | |
| Age of menarche | | | | | |
| From 10-12 years | 26 | 52.0 | 18 | 36.0 | 0.085 |
| from 13-15 years | 24 | 48.0 | 29 | 58.0 | |
| More than 15 years | 0 | 0.0 | 3 | 6.0 | |
| Mean ±SD | 12.62±1.23 | | 13.08±1.45 | | 0.091 |
| Duration of menarche | | | | | |
| From 1-3 days | 15 | 30.0 | 14 | 28.0 | 0.228 |
| From 3-5 days | 23 | 46.0 | 30 | 60.0 | |
| more than 5 days | 12 | 24.0 | 6 | 12.0 | |
| Mean ±SD | 4.46±1.72 | | 4.24±1.35 | | 0.478 |
| Rhythm | | | | | |
| Regular | 17 | 34.0 | 28 | 56.0 | 0.027* |
| irregular | 33 | 66.0 | 22 | 44.0 | |
| Interval | 39.9±9.9 | | 36.22±8.61 | | 0.050* |

*Significant level at P value < 0.05

Table (3): Distribution of studied women according to obstetrical history in study and control group:

| Obstetrical history | Study(n=50) | | Control(n=50) | | P. value |
|--------------------------|-------------|------|---------------|------|----------|
| | No | % | No | % | |
| Gravidity | | | | | |
| Non | 22 | 44.0 | 25 | 50.0 | 0.629 |
| 1-3 gravidity | 20 | 40.0 | 14 | 28.0 | |
| 3-5 gravidity | 6 | 12.0 | 8 | 16.0 | |
| More than 5 Parity | 2 | 4.0 | 3 | 6.0 | |
| Mean ±SD | 1.64±1.83 | | 1.96±2.79 | | 0.499 |
| Parity | | | | | |
| Non | 22 | 44.0 | 25 | 50.0 | 0.749 |
| 1-3 Parity | 19 | 38.0 | 14 | 28.0 | |
| 3-5 Parity | 7 | 14.0 | 8 | 16.0 | |
| More than 5 Parity | 2 | 4.0 | 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 |

Table (4): Distribution of studied women regarding current hyperprolactinemia data:

| Current hyperprolactinemia data | Study(n=50) | | Control(n=50) | | P. value |
|--|-------------|------|---------------|------|----------|
| | No | % | No | % | |
| Pathological causes hyperprolactinemia | | | | | |
| 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 | |

**Significant level at P value < 0.01

Table 5: Distribution of studied women as regards women's Life style in study and control group:

| Women's Life style | Study(n=50) | | Control(n=50) | | P. value |
|--|-------------|------|---------------|------|----------|
| | No | % | No | % | |
| Behaviors of woman (Sexual pattern) | | | | | |
| Breast stimulation during SI | 19 | 38.0 | 16 | 32.0 | 0.710 |
| No touch breast Direct | 13 | 26.0 | 14 | 28.0 | |
| pressure on chest or pressure (trauma) | 7 | 14.0 | 11 | 22.0 | |
| Direct pressure on chest or breast | 11 | 22.0 | 9 | 18.0 | |
| Nutritional habits | | | | | |
| Like sweets | 18 | 36.0 | 25 | 50.0 | 0.004** |
| Vegetables and fruits | 0 | 0.0 | 4 | 8.0 | |
| Fish , vit omega 3 plus , zink,vit B16 | 6 | 12.0 | 3 | 6.0 | |
| Protein | 11 | 22.0 | 0 | 0.0 | |
| Fats and oils | 12 | 24.0 | 14 | 28.0 | |
| Seeds and nuts | 3 | 6.0 | 4 | 8.0 | |
| Daily behaviors increase milk secretion | | | | | |
| See of other breast feeding women | 14 | 28.0 | 10 | 20.0 | 0.019** |
| Handling children on your chest | 15 | 30.0 | 10 | 20.0 | |
| Sleep | 1 | 2.0 | 13 | 26.0 | |
| Exercise | 1 | 2.0 | 0 | 0.0 | |
| Stress | 11 | 22.0 | 8 | 16.0 | |
| Clothes | 8 | 16.0 | 9 | 18.0 | |

Chi square test for qualitative data between the two groups

*Significant level at P value < 0.05, **Significant level at P value < 0.01

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

| | Study(n=50) | | P value1 | Control(n=50) | | P value2 |
|------------------------|-----------------------|-----------------------|----------|-----------------------|-----------------------|----------|
| | 1 st visit | 2 nd visit | | 1 st visit | 2 nd 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

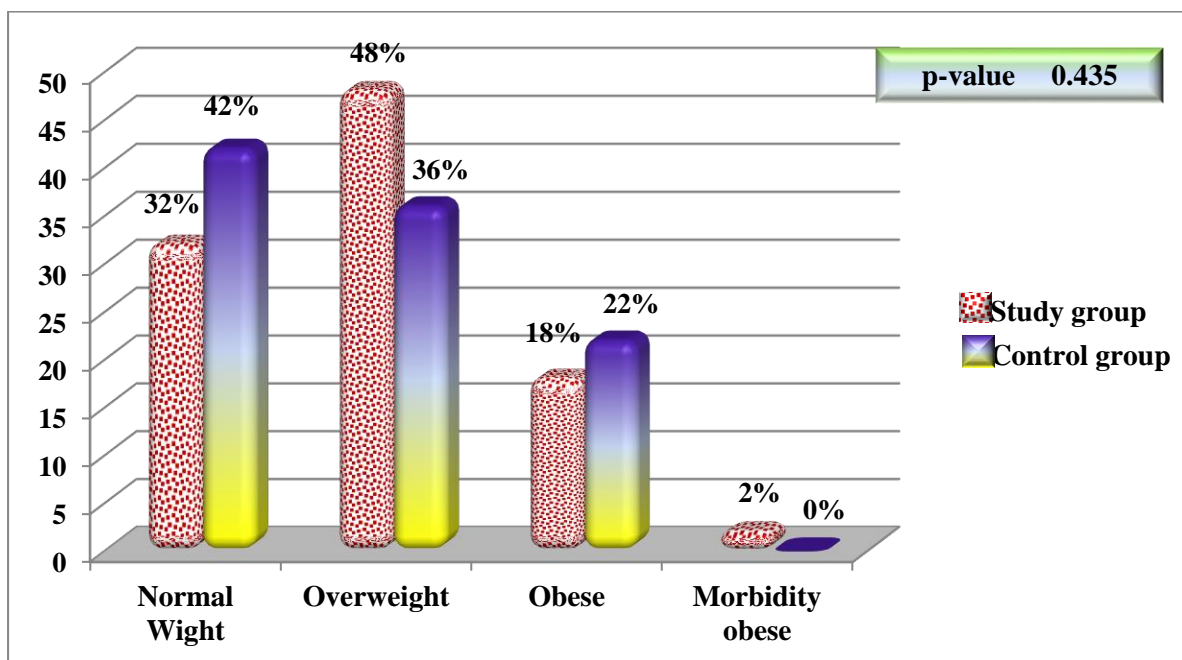


Figure (1) Distribution of studied women according to body mass index (BMI) in study and control group

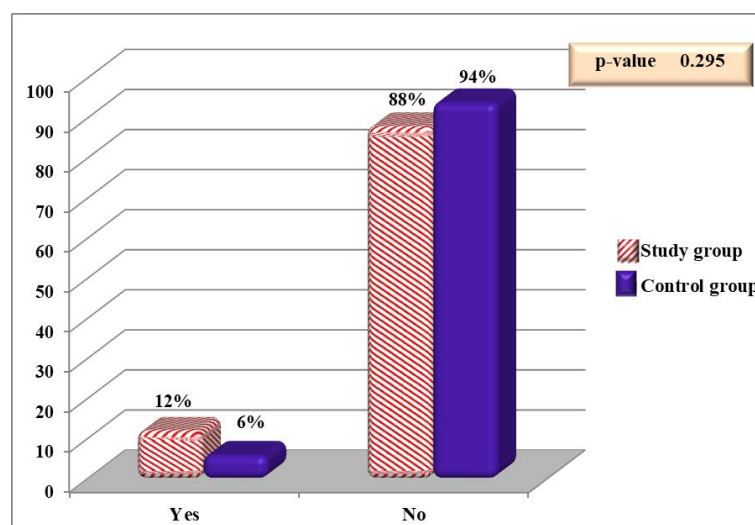


Figure (2) Distribution of studied women according to number of post-menopausal women in study and control group

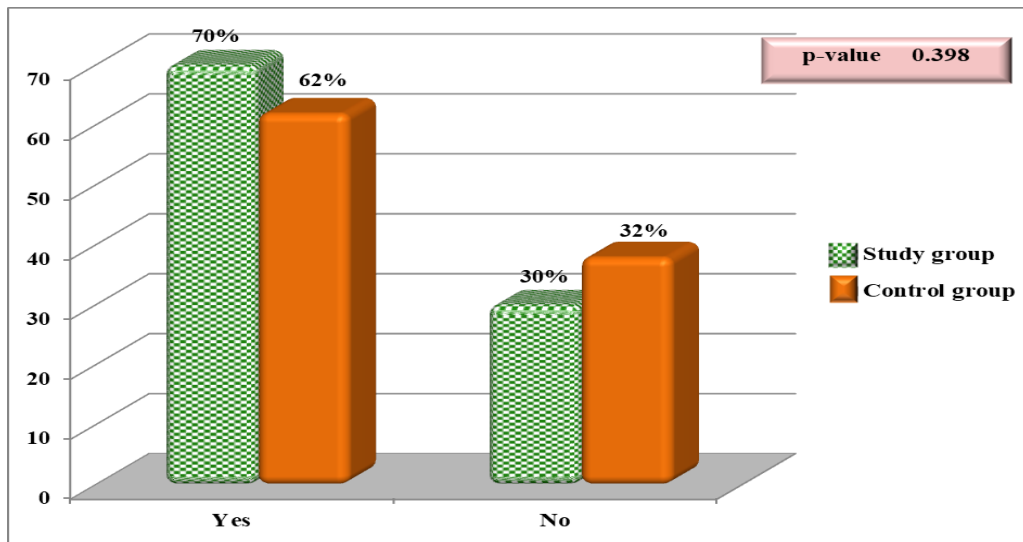


Figure (3): Distribution of studied women as regard presence of breast milk in study and control group:

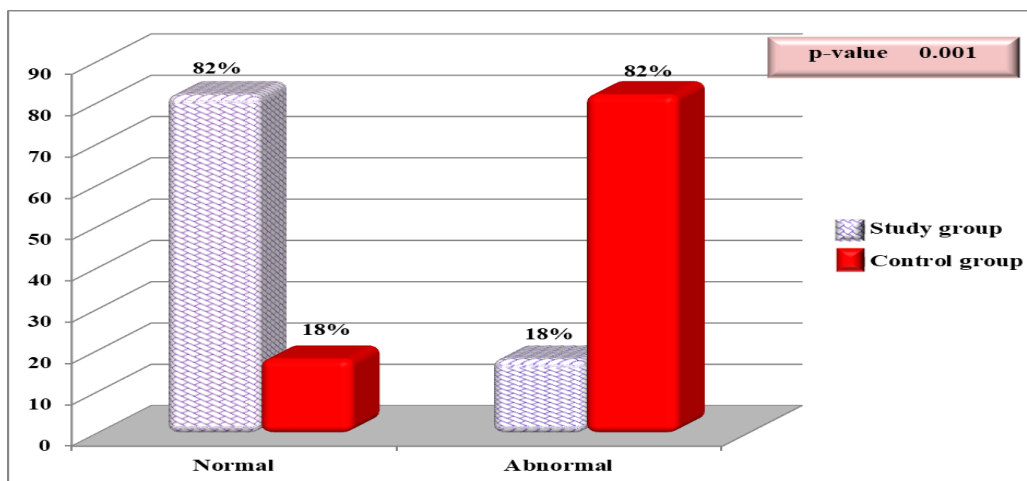


Figure (4): Distribution of studied women regarding prolactin value after receiving health education in study and control group:

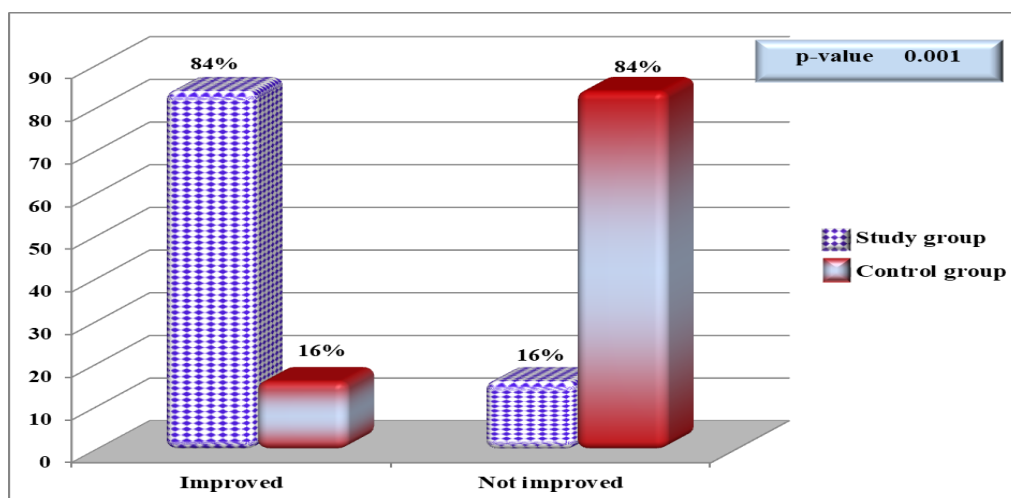


Figure (5): Distribution of studied women regarding women's behavior after receiving health education in Study and control group:

Table 1: shows sociodemographic characteristics of studied women, and reports that there are no statistical significant differences between study and control group regarding 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 in study group and 30.74±6.79 in control group.

Table 2: clarifies menstrual history of the studied women and illustrates that there are no statistical significant difference between study and control group regarding age of menarche, and duration of menstruation, p-value are 0.091 and 0.478 respectively. And there are statistical significant difference between study and control group regarding rhythm and interval, P-value 0.027* and 0.050* respectively.

Table 3: clarifies obstetric history of studied women and shows that there are no statistical significant differences between study and control group as regards gravidity, parity, no of abortions and no of live births p-value are 0.629, 0.749, 0.240 and 0.491 respectively.

Table 4: demonstrates that there are no statistical significant differences between study and control group concerning pathological cause's hyperprolactinemia and other causes, p value are 0.689 and 0.885 respectively. And there is a statistical significant difference between study and control group regarding symptoms before diagnosis and treatment of hyperprolactinemia p value 0.001.

Table 5: illustrates that there are a statistical significant difference between study and control group regarding nutritional's habits and increased milk secretion after daily behaviors p value are 0.004** and 0.019** respectively. And there is no statistical significant difference between study and control group as regard behaviors of woman (Sexual pattern) p value 0.710.

Table 6: shows that there is a statistical significant difference between before 1st visit and 2nd visit regarding prolactin value in study and control group p value (<0.001) for both.

Figure (1): reports that 48% of studied women in study group and 36% in control group are overweight with no statistical significant differences between study and control group study and control group p-value is 0.435.

Figure (2): demonstrates that 12% in study group and 6% in control group are menopause with no statistical significant differences between study and control group study and control group p-value is 0.295.

Figure (3): demonstrates that there are no statistical significant differences between study and control group concerning presence of milk p value is 0.398.

Figure (4): illustrates that there is a statistical significant difference between study and control group regarding prolactin value after receiving health education p value (<0.001).

Figure (5): clarifies that there is a statistical significant difference between study and control group regarding women's behavior after receiving health education p value (<0.001).

4. DISCUSSION

Counseling and educational programs about sexual health can improve sexual satisfaction and thus increase the quality of marital life. Midwifery counseling minimizes psychosexual impairments by providing information, advice, and awareness, as well as assisting couples in understanding, reviewing, and analyzing the problem, as well as deciding and selecting the best solution (Masoumi et al., 2017).

Based on current results, it is illustrated that there are statistical significant difference between study and control group regarding prolactin 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 discuss 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 and D'Ann, 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.

Concerning women's behavior (sexual pattern) after receiving health education, present study finds that there is statistical significant difference between study (who received health education) and control (who received routine hospital care) group with a p- value 0.001.

This was agreed with (**Hosseini et al., 2020**), who carried out their study in Iran to determine the effect of cognitive behavioral counseling on the sexual self-concept of female students at Kerman University of Medical Sciences, and illustrated that there was statistical significant difference between study (who received counseling) and control (who received routine care) group regarding sexual knowledge and avoid risky sexual relation with a p- value 0.001.

Also (**Masoumi et al., 2017**), who implemented their study in Iran to investigate the effects of sexual counseling on marital satisfaction of pregnant women, and found that there was statistical significant difference between pre and post sexual counseling p- value 0.001. And this illustrates the importance of counseling on improving sexual pattern and behavior.

And (**Tiznobek et al., 2017**), who carried out their study in Tehran to assess effects of counseling on sexual function of menopause women and their spouses, and revealed improvement in sexual pattern after counseling with a p- value 0.025 between pre and post sexual counseling.

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.

The same opinion reported by (**Brenner et al., 2017**), who conducted their research in Canada to see if physical activity had a dose-response effect in lowering prolactin levels in postmenopausal women, and found that there was no statistically significant difference between high and moderate exercise in terms of prolactin value, with both having a p-value of 0.90.

Also (**Tworoger et al., 2007**), who applied their study in California to assess the effect of a 12-month moderate-intensity exercise intervention on serum prolactin values as a secondary end point (primary end points were estrogens and androgens), and showed that no effect to exercise on prolactin secretion.

On the other side (**Dey et al., 2014**), who carried out their study in India to determine whether participation in exercise may increase the level of secretion of prolactin hormone or not, and clarified that there was statistical significant difference between pre and post intervention (exercises) regarding prolactin value with a p- value 0.001. Difference may back to dissimilarity in the exercise program used with the participants

Also (**Konlaan et al., 2002**), who implemented their study in Sweden determine the specific biomedico-social impacts of engaging in cultural events and gentle physical exercise, in addition to the general effect of participating in group activities, and found that exercise may enhance prolactin hormone secretion.

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 conventional 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.

But other studies have discovered no such relationship as (**Johnsen et al., 2011**), their research was conducted out in Norway to assess the prevalence of SD and hyperprolactinemia in male patients, as well as to see if there are any links between SD and prolactin levels. It's possible that the discrepancy stems from a different sample (male). And (**Kikuchi et al., 2012**), they conducted a study in Japan to determine the prevalence of sexual dysfunction and hyperprolactinemia in patients with schizophrenia, as measured by the Nagoya Sexual Function Questionnaire (NSFQ), and to look into the association between sexual dysfunction and serum prolactin levels.

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.

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) and (Zargar et al., 2005) reported that more than three fifths and the majority of studied women respectively 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).

As regards menstrual regularity, current study reveals that around half of studied women in both groups had an irregular menstruation. This was agreed with (Ugwa et al., 2016), who conducted their study in Nigeria to determine the serum prolactin levels of infertile women presenting with galactorrhea and to identify the prevalence of hyperprolactinemia among them, and reported that half of studied women had an irregular menstruation.

Also (Takechi et al., 2017), who demonstrated that The mean PRL serum level was significantly higher in patients with menstrual disorders compared with those without menstrual disorder (89.3 ± 36.9 vs. 42.5 ± 54.5 ; 95% confidence interval (CI): 46.8 [19.3–74.3], $p < 0.001$). And (Salah Eldin A. et al, 2017), who clarified that more than one half of studied women had irregular menstruation. This similarity confirms the effect of prolactin level on menstrual regularity.

In congruent with previous results (Kulshreshtha et al., 2017), who applied their study to analyze menstrual cyclicality in patients with prolactinoma and drug-induced hyperprolactinemia, and it was discovered that the majority of menstruating women had irregular periods.. This difference back to include of prolactinemia cases with hyperprolactinemia (difference in sample character).

Based on current study, it is illustrated that less than one tenth of studied women are menopause. This was supported by (Auriemma et al., 2021), who applied their study to assess hyperprolactinemia after menopause , its diagnosis and management, and found that hyperprolactinemia are rarely diagnosed at menopausal age is demonstrated by the evidence

that over the last 25 years Only three independent studies have looked at the clinical aspects and characteristics of women diagnosed with hyperprolactinemia after menopause, with a total of 37 individuals.

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 hyperprolactinemia (study) with no hyperprolactinemia (control). Also (**Salah Eldin A., 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 (hyperprolactinemia) and control (not hyperprolactinemia) p value 0.017.

5. CONCLUSION

Health education for women under drugs of hyperprolactinemia is effective in reduce level of prolactine.

6. RECOMMENDATIONS

Life style, feeding habits and sexual behaviors are must included in the management protocols of hyperprolactinemia.

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