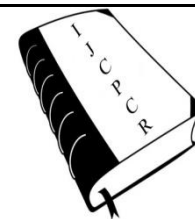




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DRUG UTILIZATION PATTERN OF ESTROGEN AND PROGESTERONE AMONG WOMEN

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ABSTRACT

The objective of the study was to analyze the drug utilization pattern of hormones mainly Estrogen and Progesterone in women. Approximately 6 million of women in reproductive age and 50 million of women in menopausal age undertake hormonal therapy. A Prospective Observational study was done with a total of 124 patients who were newly prescribed with hormones of age 18 years and above. Patients details were collected, symptoms were analyzed using MMRS questionnaire and follow-up was carried out 15 and 30 days after hormone therapy. Prescribing pattern of Estrogen and Progesterone, their dosage regimen and associated side effects were assessed and evaluated. Hormonal therapy has both benefits and risks (mainly obesity and BP variation) associated with each patient. Low medication adherence was also common among people which were assessed using MMAS. Administration of hormonal therapy can be appropriate only for suitable indications along with provision of suitable supplementation to treat the associated side effects.

Key words: Utilization Pattern, Estrogen, Progesterone, Modified Menopause Rating Scale, Morisky Medication Adherence Scale.

INTRODUCTION

A Hormone is a substance of intense biological activity that is produced by specific cells in body and is transported through circulation to act on its target cell [1]. Hormones are important for regulating most major body process, so a hormonal imbalance can affect wide range of body functions such as metabolism and appetite, heart rate, sleep cycles, reproductive cycles, sexual functions, general growth and development, mood and stress levels and body temperature. Here, we are mainly focusing on female sex hormones: Estrogen and Progesterone. Approximately 6 million of women in reproductive age and 50 million of women in menopausal age undertake hormonal therapy [2]. Estrogen and Progesterone are mainly utilized for the following indications: PCOS is one of the most common hormone disorder affecting women with a prevalence of 5-10% in women of reproductive age [3]. In postpartum and menopausal women, there will be a significant drop of circulating estrogens. Thus both these periods are

associated with an increased risk for onset or exacerbation of psychiatric disorders [4]. Fibroid is another most common neoplasm affecting women. It has been postulated that they occur in over 70% of women by the onset of menopause, 25-27% are estimated to be clinically apparent and 25 % of women of reproductive age and cause symptom severe enough to require treatment [5]. Contraceptives, otherwise known as birth control pills, contain a combination of estrogen and a progestin. India as a whole has a modern contraceptive prevalence rate of 52.2% [6]. Abnormal uterine bleeding was reported to occur 9 – 14% in women between menarche and menopause. In India, it occurred about 17.9% [7]. Other indications of hormone therapy include endometrial polyp, infertility and hysterectomy. Misoprostol, an anti-progestin is given in case of abortion along with other progestin's are given for women with multiple miscarriages [8].

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The aim of the study was to analyze the drug utilization pattern of hormones mainly Estrogen and Progesterone in women. MMRS (Modified Menopause Rating Scale) [9] was used to frame questionnaire to evaluate different symptoms associated with the condition in each patient. The prescribing pattern of hormones and their indications were analyzed. Safety and efficacy of hormone medications were evaluated and studied. Medication Adherence and Appropriateness relating to hormone administration were evaluated using MMAS [10].

MATERIALS AND METHODS

A prospective observational study was conducted at Gynecology Department at Karuna Medical College Hospital, Villayodi, Chittur, Palakkad. The study was conducted from February 2021 to July 2021. Total 124 patients was taken and follow-up was done.

Inclusion Criteria

1. Newly diagnosed inpatients and outpatients of age 18yrs and above.
2. Patients willing to give consent.
3. Patients taking hormonal therapy indicated for Cancer, AUB, Uterine fibroids, PCOS, Irregular periods, Abortion, Infertility and Hysterectomy.

Exclusion Criteria

1. Patients under HRT for Osteoporosis AIDs.
2. Pre-diagnosed cases with cardiovascular disease.

Study Procedure

Signed informed consent was obtained from all participants prior to study. Specifically designed data entry form was used to collect patient demographics, previous medical and medication history, risk factors, genetic factors, vital sign and laboratory data, on-going treatment, use of hormonal drugs and their complications. MMRS (Modified Menopausal Rating Scale) was used to frame a questionnaire to evaluate different symptoms associated with the condition in each patient. The prescribing pattern of hormones and their indications were analyzed. Safety and efficacy of hormone medications were evaluated and studied. Medication Adherence and Appropriateness relating to hormone administration were evaluated.

ETHICAL CONSIDERATION

Ethical clearance and approval of study was obtained from Karuna Medical College ethical review board, Institution of health before starting the actual data collection.

STATISTICAL ANALYSIS

The collected data was entered in MS-Excel 2010 for calculating the percentage and frequency of various parameters. Unpaired t-test was performed using SPSS 28.0.

RESULTS AND DISCUSSION

There were 54 inpatient cases and 70 outpatient cases, since many patients need follow up thus more outpatient cases. Perimenopause is a menopausal transition. It is the interval in which women's body undergo a natural shift to more or less cycle of ovulation and menstruation towards permanent infertility. In similar studies it shows >50% woman have hormonal abnormality at >40 years of age [5]. In this study 47 patients comes under perimenopausal age (36-45) with 37.90 percentage which is higher than menopausal age (>50 years) which is only 8.06 percentage.

Analyzing different symptoms among patients, menorrhagia was found to be the most common symptom observed. Among different indications, irregular periods were more prominent indication for hormone therapy.

The present trend for hormonal therapy was assessed and we found progesterone was most commonly prescribed to patients. Progesterone was mainly prescribed per orally for polypeptomy, irregular periods, abortion, uterine fibroids and AUB. Synthetic progesterone (mainly norethindrone) was prescribed.

On the other hand, estrogen was prescribed for mainly 2 indications: infertility and hysterectomy. Natural Estrogen (Estradiol) was mainly prescribed. During Baseline, 12 patients underweight (9.67%), 101 patients had Normal BMI (81.45%), 10 patients (8.06) overweight 1 patient (0.86). During 15 days follow up, 20 patients underweight (16.12%), 65 patients Normal BMI (52.41%), 24 patients overweight (19.35%), 15 patients obese (12.09). During 30 days follow up, 10 patients underweight (8.06), 25 patients Normal BMI (20.16%), 37 patients overweight (29.83%) 52 patients obese (41.93%). Obese patients have excessive adipose tissue which increases peripheral aromatization of androstenedione to estrone. Elevated estrone leads to abnormal feedback in hypothalamus pituitary axis can cause oligo or anovulation. Many journals also suggested that hormonal therapy can lead to obesity (increase in BMI)

During Baseline, 4 patients Optimal BP (3.22%) 114 patients, Normal BP (91.93%), 4 patients PREHTN (3.22%), 2 patients HTN (1.61%) During 15 days, 13 patients Optimal BP (10.48%), 86 patients Normal BP (69.53%) 20 patients PREHTN (16.12%) 5 patients HTN (4.03%) During 30 days, 34 patients Optimal BP (27.41%) 20 patients Normal BP (16.12%) 43 patients PREHTN (34.67%) 27 patients HTN (21.77%) [11].

Similar study was conducted by Daichi Shimbo *et al* shows that the association between hormone therapy and blood pressure has produced divergent results reporting an increase in blood pressure level or a higher risk of hypertension [12].

In our study we have included a self-designed menopause rating scales which include 11 questions to assess the side effects in women taking hormonal therapy.

The content validity of scale was ensured through literature review and subject experts.

The MMRS is good enough to detect treatment related changes in women with only little or mild symptoms to severe ones. In this study about 96 patients (77.41 %) had no side effects in the baseline but after 30 days follow up it was observed that about 47 patients (37.90%) had severe side effects and about 19 patients (15.32%) had extremely severe side effects. Similar study was conducted by Lothar AJ Heinemann *et al* and

concluded that the complaints of patients was decreased by the treatment but the associated side effects was seem to be increased.

In this study the Medication adherence of patients taking hormone was also analysed using Morisky Medication Adherence Scale (MMAS) and was observed that about 54% of patients had Low medication adherence and the reason was found to be discouragement of taking hormonal supplements by the friends and family (62.9%) and also miss out of time (35.96%) [9].

FORM 1. MODIFIED MENOPAUSE RATING SCALE

S.No	SYMPTOMS	SCORE				
		0	1	2	3	4
1.	Hot flushes, Sweating					
2.	Heart discomfort(Unusual awareness of heartbeat, Heart skipping,Racing)					
3.	Sleep problems					
4.	Depressive mood					
5.	Irritability (Feeling nervous, Inner tension, Aggressive)					
6.	Anxiety(Panic, Restlessness)					
7.	Physical and Mental exhaustion (Decrease in performance,Impaired memory)					
8.	Sexual problems.					
9.	Bladder problems (Difficulty in urinating, Increased need to urinate)					
10.	Dryness of vagina (Dryness, Burning, Difficult Intercourse)					
11.	Joint and muscular discomfort (Pain in joints, Rheumatoid complaints)					

Score:

None: 0; Mild: 1-14; Moderate:15-24; Severe: 25-34; Extremely Severe:35-4

Fig 1.Study Population Distribution

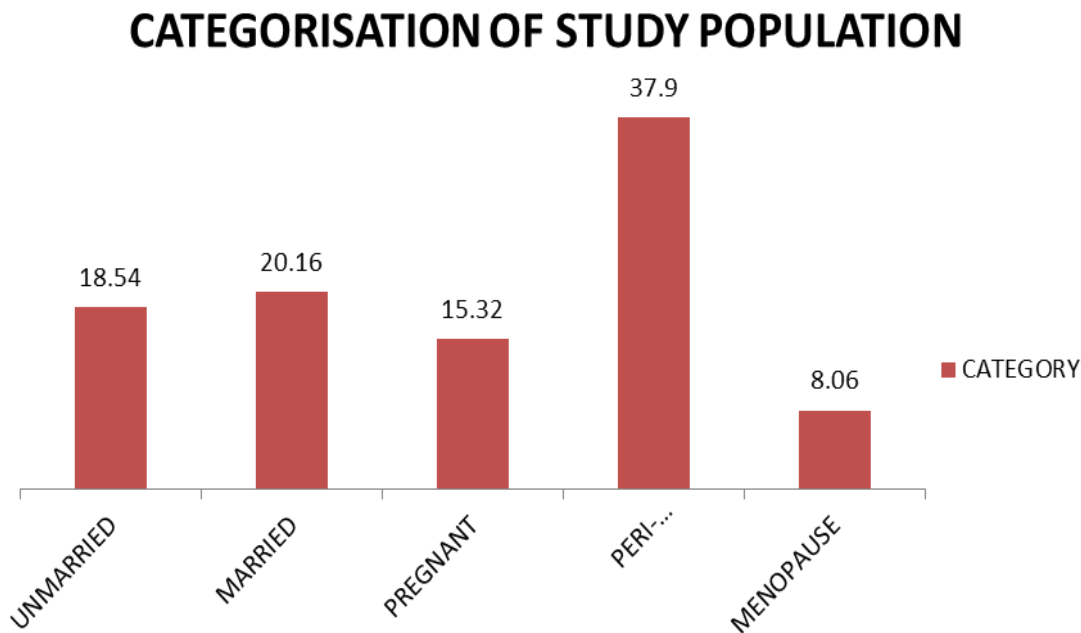


Fig 2. Estrogen Deficiency and the Origin of Obesity during Menopause.

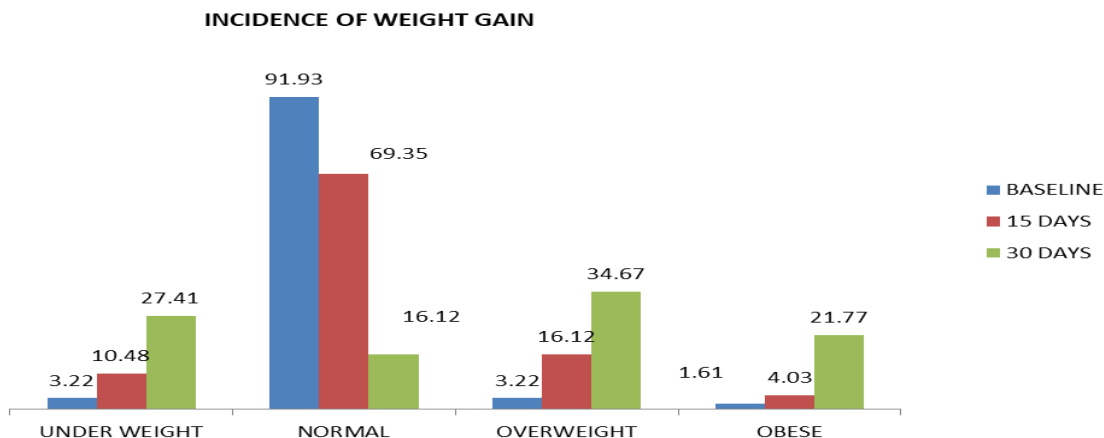


Fig 3. The Effect of Hormone Therapy On Mean Blood Pressure And Visit-To-Visit Blood Pressure Variability In Postmenopausal Women

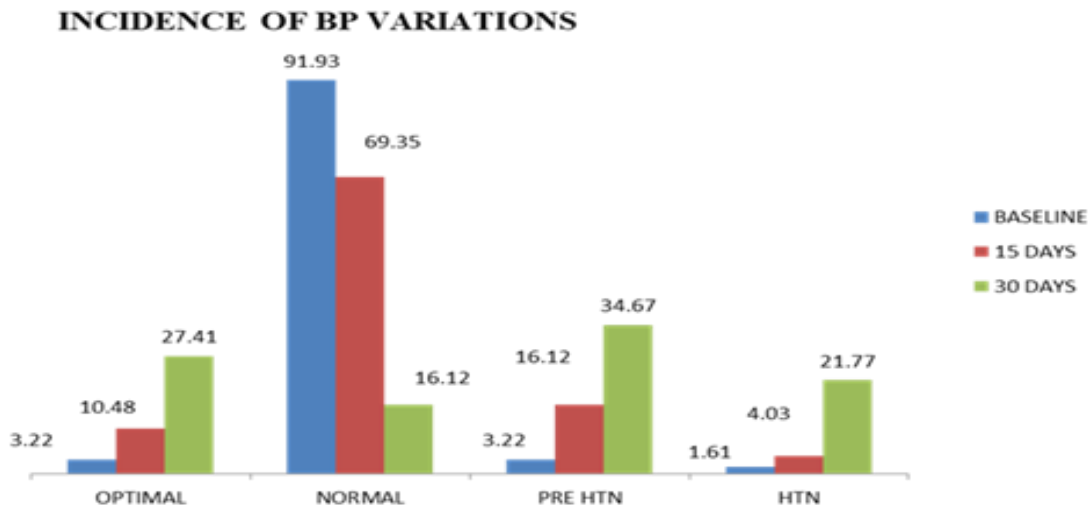
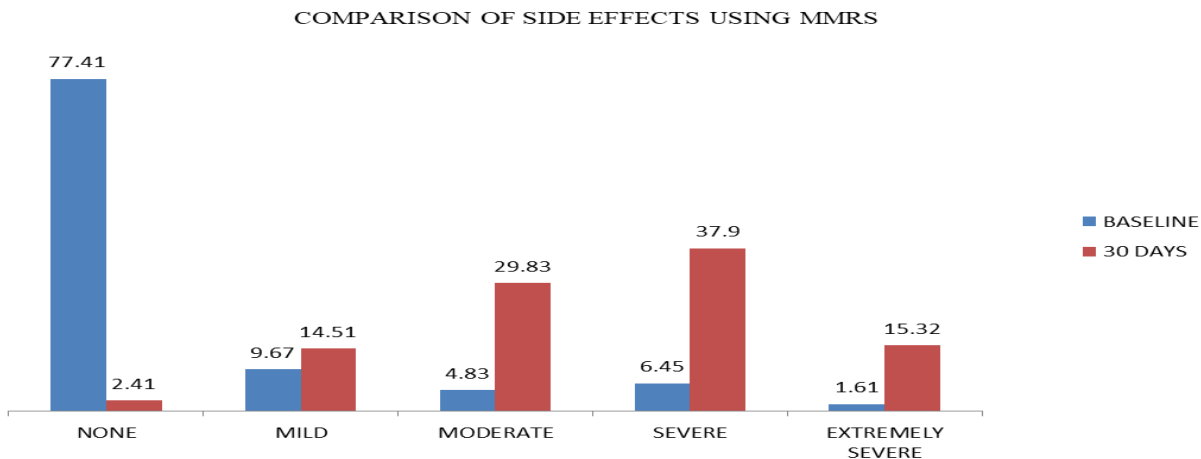


Fig 4. The Menopause Rating Scale (MRS): reliability of scores of menopausal complaints.



LIMITATION

Missing information such as dosing when a prescription was written, whether a prescription was filled or refilled, or the accuracy of comorbidity recording may be called into question.

CONCLUSION

The Present study suggests that hormonal imbalances are a common problem that has an impact on women daily activities. Such conditions mostly occur in reproductive, perimenopausal and menopausal age. By this study we can understand the prescribing pattern of hormonal supplements mainly Estrogen and Progesterone and its different indications. Hormonal therapy has both benefits and risks associated with each patient. Administration of hormonal therapy can be appropriate

only for suitable indications along with provision of suitable supplementation to treat the associated side effects. Low medication adherence was also observed in our study so it is often recommended that awareness campaigns about appropriate hormonal usage for treatment of variations should be done.

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CONFLICT OF INTEREST

No interest

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