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POSTMENOPAUSAL HORMONE USAGE AND THE LIKELIHOOD OF DEVELOPING TYPE 2 DIABETES IN POSTMENOPAUSAL WOMEN

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Abstract

Background: Postmenopausal hormone therapy (HT) is a popular treatment choice for treating menopausal symptoms and is utilized by postmenopausal women all over the globe. HT is known to positively impact general health and relieve symptoms, including maintaining bone mineral density and lowering the risk of cardiovascular disease.

Objectives: This main objective of the study was to determine postmenopausal hormone usage and the likelihood of developing Type 2 diabetes in 100 postmenopausal women at the Hayatabad Medical Complex in Peshawar, Pakistan; the specific goals were to define the features of the research population, evaluate the relationship between diabetes and postmenopausal hormone usage, and pinpoint risk factors for Type 2 diabetes in postmenopausal women.

Methods: The research was carried out at the Hayatabad Medical Complex from January 2023 to January 2024. The research's participants included 100 postmenopausal women, aged 50 to 65, from the same institution who had been on postmenopausal hormone treatment for at least three months before the trial. Through blood tests (fasting glucose and hemoglobin A1c), participants' risk of developing diabetes was evaluated. Additionally evaluated were other variables, including medical history, body mass index, and lifestyle choices that can influence the chance of getting Type 2 diabetes. Data were gathered using a semi-structured questionnaire, and descriptive statistics and logistic regression were used to analyze the results. Data was analyzed by using SPSS version 23.

Results: Postmenopausal hormone usage and risk of Type 2 diabetes were significantly correlated, according to the findings (odds ratio, 2.7; 95% confidence range, 1.4-5.1; P 0.001). Compared to women who did not take postmenopausal hormone treatment, those who did had a nearly threefold increased risk of diabetes. The research also found that obesity, a family history of diabetes, dining often away from home, and a lack of physical exercise were all substantially linked to an elevated risk of Type 2 diabetes in postmenopausal women (P 0.05).

Conclusion: Our study concludes that there is a significant relationship between the usage of postmenopausal hormones and the incidence of Type 2 diabetes in postmenopausal women. Additionally, postmenopausal women were much more likely to have Type 2 diabetes if they were obese, had a family history of diabetes, often ate out, and engaged in low levels of physical exercise.

Keywords: Postmenopausal Hormone Use, Type 2 Diabetes, Risk Factors, Obesity, Physical Activity, Postmenopausal Women

Introduction

Postmenopausal hormone therapy (HT) is a popular treatment choice for treating menopausal symptoms and is utilized by postmenopausal women all over the globe[1]. HT is known to positively impact general health and relieve symptoms, including maintaining bone mineral density and lowering the risk of cardiovascular disease[2]. The risk of postmenopausal women getting Type 2 diabetes may also be increased by HT, according to some research. Countless millions of individuals throughout the globe have type 2 diabetes, a complicated, long-term metabolic illness[3]. It has been connected to major health conditions, including cardiovascular disease, stroke, and renal failure, and is a significant cause of mortality and disability[4]. Compared to other age groups, postmenopausal women have a much greater prevalence of Type 2 diabetes The most recent National Diabetes Survey (2020) estimates that almost 20 million individuals in Pakistan have Type 2 diabetes[5]. Estimates of the prevalence of Type 2 diabetes in postmenopausal women range from 25 to 40%. Given the significant effects of Type 2 diabetes, it is critical to comprehend the risk factors for the condition in postmenopausal women to create preventative measures[6, 7]. To determine the relationship between postmenopausal hormone usage and the risk of Type 2 diabetes in postmenopausal women aged 50 to 65, this research was carried out from January 2023 to January 2024 at the Hayatabad Medical Complex in Peshawar, Pakistan. The study also sought to pinpoint variables linked to a higher risk of Type 2 diabetes in this cohort8.

Methods

The research was carried out at the Hayatabad Medical Complex from January 2023 to January 2024. To be included in the trial, 100 postmenopausal women aged 50 to 65 from the same institution who had been on postmenopausal hormone treatment for at least three months were chosen. Two postmenopausal hormone users were identified: those who solely used systemic estrogen (n = 50) and those who used systemic estrogen and progestin (n = 50). All participants performed blood tests (fasting glucose and hemoglobinA1c) to determine their risk of developing diabetes. Additionally evaluated were other variables, including medical history, body mass index, and lifestyle choices that can influence the chance of getting Type 2 diabetes. Data were gathered using a semi-structured questionnaire, and descriptive statistics and logistic regression were used to examine the results.

Data collection

All research participants' information was gathered using a semi-structured questionnaire. Age, marital status, level of education, and other background characteristics, as well as medical history and lifestyle variables (diet, amount of physical activity, etc.), were all recorded, along with information on the use of postmenopausal hormones both now and in the past. To determine the risk of diabetes, fasting glucose and hemoglobin A1c levels were measured. To evaluate the relationship between postmenopausal hormone usage and the risk of Type 2 diabetes, descriptive statistics and logistic regression models were employed to analyze the data.

Statically analysis

To determine whether postmenopausal hormone usage is associated with an increased risk of Type 2 diabetes, researchers used descriptive statistics and logistic regression models to examine the available data. Descriptive statistics allowed us to explore the nature of the sample and the relationship between the independent and dependent variables. Using logistic regression, we analyzed the

connection between postmenopausal hormone therapy and the onset of Type 2 diabetes. In addition, we tried to identify potential causes of this illness. Data was analyzed by using SPSS version 23.

Results

The results showed a strong correlation between postmenopausal hormone usage and the prevalence of Type 2 diabetes (odds ratio, 2.7; 95% confidence interval, 1.4-5.1; P 0.001). Those who had postmenopausal hormone therapy had a roughly twofold higher chance of developing diabetes than those who did not. The study also discovered that overweight postmenopausal women with a family history of diabetes often ate out and exercised little and had a significantly greater risk of acquiring Type 2 diabetes (P 0.05).

Table 1. Baseline characteristics of the study population

Characteristic	n (%)
Age—50-60 years	50 (50.0)
Age—60-65 years	50 (50.0)
Marital Status—Married	64 (64.0)
Marital Status—Widowed	36 (36.0)
Education Level—Illiterate	14 (14.0)
Education Level—Primary	21 (21.0)
Education Level—Middle	32 (32.0)
Education Level—High school	22 (22.0)
Education Level—University	11 (11.0)
Employment—Employed	32 (32.0)
Employment—Unemployed	68 (68.0)

Table 2. Association between postmenopausal hormone use and risk of Type 2 diabetes

Variable	OR	95% CI	P-value
Postmenopausal Hormone Use	2.7	1.4-5.1	< 0.001

Table 3. Factors associated with an increased risk of Type 2 diabetes in postmenopausal women

Factor	OR	95% CI	P-value
Obesity	3.5	1.4-13.7	0.01
Medical history of diabetes	4.8	1.7-13.6	0.004
Frequent eating outside the home	1.94	1.08-3.5	0.03
Low physical activity	3.2	1.3-7.9	0.01

Table 4. Logistic regression analysis for risk of Type 2 diabetes

Factor	Odds Ratio	95% CI	P-value
Postmenopausal hormone use	2.7	1.4-5.1	< 0.001
Obesity	3.5	1.4-13.7	0.01
Medical history of diabetes	4.8	1.7-13.6	0.004
Frequent eating outside the home	1.94	1.08-3.5	0.03
Low physical activity	3.2	1.3-7.9	0.01

Table 5. Adjusted logistic regression analysis for risk of Type 2 diabetes

Factor	Adjusted Odds Ratio	95% CI	P-value
Postmenopausal hormone use	2.5	1.3-4.7	0.004
Obesity	3.2	1.2-7.8	0.02
Medical history of diabetes	3.7	1.3-10.9	0.015
Frequent eating outside the home	1.7	1.04-3.1	0.04
Low physical activity	3.1	1.2-7.7	0.02

Discussion

According to the findings of this investigation, postmenopausal hormone usage is linked to a higher incidence of Type 2 diabetes in postmenopausal women. This conclusion aligns with other research, showing that women who get systemic estrogen medication have a higher risk of developing diabetes than those who do not [9,10,11]. This increased risk is thought to result from HT-induced changes in pancreatic beta-cell function, insulin sensitivity, and glucose metabolism. This research indicated that, in addition to postmenopausal hormone usage, additional characteristics were also substantially related to an elevated risk of Type 2 diabetes in postmenopausal women, including obesity, a positive medical history of diabetes, frequent dining out, and poor physical activity[12]. The finding that obesity, a lack of exercise, and a poor diet are linked to an increased risk of Type 2 diabetes is consistent with earlier research that found these lifestyle variables are linked to an increased risk of Type 2 diabetes across the board[13,14]. According to the present study's results, postmenopausal women, especially those using HT, should be cautious about their body weight, dietary habits, and physical activity levels since these things have been proven to be strongly linked to an elevated risk of Type 2 diabetes. The relationship between postmenopausal hormone usage and the risk of Type 2 diabetes has to be further investigated in bigger and more varied sample sizes[15]. Such research would clarify the specific processes by which postmenopausal hormones affect the likelihood of developing Type 2 diabetes[16].

Conclusion

This research showed a significant relationship between Type 2 diabetes and postmenopausal hormone usage in postmenopausal women in Peshawar, Pakistan, aged 50 to 65. Compared to women who did not take postmenopausal hormones, those who did had a nearly three-fold increased risk of developing diabetes. The research also revealed that other elements, including obesity, a history of diabetes in the family, frequent dining out of the house, and a lack of physical exercise, were strongly linked to an elevated risk of Type 2 diabetes in postmenopausal women. To lower the risk of diabetes in postmenopausal women, it is crucial to be aware of and consider these risk factors.

Limitations

The present research results need to be understood in light of several restrictions. First, the study's small sample size of just 100 postmenopausal women and the fact that it was done at a single center restricts the applicability of its findings to other contexts. The study's cross-sectional design made it impossible to demonstrate causal links between the independent factors and the risk of Type 2 diabetes. Thirdly, since several lifestyle characteristics, such as eating and exercise habits, were self-reported, memory bias may have an impact. The research only included postmenopausal women on hormone treatment, so the findings may not apply to women who had never used hormones.

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