



**JPM**

Jurnal Pengabdian Mandiri

Volume 2 Issue 2, 2025 (137-142)

ISSN (*online*) : 3089-3070

Homepage : <https://jurnalunived.com/index.php/MANDIRI>

Doi : <https://doi.org/10.70963/mandiri.v2i2>

## Education And Detection Of Diabetes Mellitus In Pre-Menopausal And Menopausal Women In The Subdistrict Of Pekan Arba Tembilahan

Wita Meyrent<sup>1</sup>, Cipta Pramana<sup>2</sup>, Novita Puspita Dewi<sup>3</sup>  
<sup>1,2,3</sup> Sekolah Tinggi Ilmu Kesehatan Guna Bangsa Yogyakarta  
<sup>1</sup> e-mail; [bintanggalaxy2021@gmail.com](mailto:bintanggalaxy2021@gmail.com)

*Received [24-07-2025]*

*Revised [24-11-2025]*

*Accepted [28-11-2025]*

**Abstract:** The lack of knowledge among premenopausal and menopausal women about the possibility of developing diabetes mellitus can lead to delayed detection and management of the condition. Diabetes mellitus in premenopausal and menopausal women is a condition that occurs when the body is unable to regulate blood sugar levels properly. This can cause a variety of serious health problems. Premenopausal and menopausal women have a higher risk of developing diabetes than men. This is due to hormonal changes, decreased muscle mass, and increased body fat that occur during this period. Understanding Diabetes Mellitus is very important for premenopausal and menopausal women because with a good understanding, women can improve their quality of life. Many problems will arise if women do not have good knowledge about health disorders in their old age. Therefore, by providing education about Diabetes Mellitus, it is hoped that the knowledge of premenopausal-menopausal women can be improved and their behaviour influenced so that they become more concerned about their health. The methods used were lectures and group discussions that took place interactively. A total of 10 premenopausal-menopausal women attended.

**Keyword:** Diabetes Mellitus, Premenopausal-Menopausal Women, Health Education.

### INTRODUCTION

Menopause is one of the stages of life that all women will inevitably experience, marking the transition from fertility to old age (Kartini, 2020). Before entering menopause, women first experience premenopause. Premenopause is a transitional period between reproductive age and old age, typically occurring between the ages of 40 and 55, characterised by irregular menstrual cycles and prolonged, relatively heavy bleeding. Premenopausal women experience a decline in ovarian function to produce eggs and reproductive hormones. Decreased progesterone and remaining oestrogen can cause an imbalance and lead to climacteric complaints (Sutrisari and Juwinto, 2023).

Menopause is the end of a woman's reproductive life as a result of ovarian ageing. This is characterised by a substantial decrease in endogenous oestrogen concentration and is accompanied by changes in body weight, adipose tissue distribution and energy expenditure, as well as insulin secretion, insulin sensitivity and activity, which can predispose women to the development of Type 2 DM and contribute to ageing (Stavroula et al, 2019).

Blood glucose levels in menopausal women increase because during menopause, the ovaries stop producing the hormones oestrogen and progesterone exclusively from androsterone, so menopausal women have more fat tissue. The accumulation of fat, especially abdominal fat, affects the protein adiponectin, which decreases. Adiponectin greatly influences glucose and fatty acid metabolism, particularly in liver and muscle cells, which are more

sensitive to insulin action. Therefore, increased central intra-abdominal fat in menopausal women is believed to play an important role in the development of insulin resistance after menopause, which can increase blood glucose levels (Kadek et al., 2022).

According to the WHO, Indonesia ranks fourth in the world in terms of the number of people with diabetes mellitus, after India, China, and the United States. The number of people with diabetes mellitus in Indonesia, according to data from the World Health Organisation (WHO), reaches 8.6% of the country's 220 million population and is estimated to increase. By 2025, it is estimated to increase to 12.4 million patients (Isviyanti et al., 2020). Based on the 2018 Basic Health Research, the prevalence of diabetes mellitus increased from 6.9% in 2013 to 8.5% in 2018. The highest prevalence of diabetes mellitus among menopausal women aged 45-54 years has reached 3.9%.

In the Pekan Arba sub-district, Indragiri Hilir Regency, Riau Province, in 2024, there were 20 cases of diabetes mellitus among pre-menopausal and menopausal women. This data was obtained from the recapitulation of Prolanis PRB participants at the Tembilahan Kota Community Health Centre. There are still many residents, especially women aged 40-55 years, who have not had their blood sugar checked. This is due to a lack of awareness and a lack of knowledge and information among the community regarding diabetes mellitus experienced by premenopausal and menopausal women.

From an interview with the Head of the Pekan Arba Village PKK, it was found that the auxiliary health centre in the village had previously held an information session on menopause, but had never held a more specific information session on diabetes mellitus in pre-menopausal and menopausal women.

## **RESEARCH METHODS**

This Community Service activity was carried out using the following methods:

1. This education was carried out using the principles of Adult Learning (POD).
2. Students, as presenters, provided education on diabetes mellitus in premenopausal and menopausal women using leaflets and PowerPoint presentations to deliver the material.
3. In accordance with the POD approach, the methods used were lectures, question and answer sessions, and discussions.
4. Assignments
5. Participants were assigned to complete pre-tests and post-tests and read leaflets.
6. This meeting began with an introduction of the presenters, a time contract, pre-tests, random blood sugar checks, material delivery, discussion and question and answer sessions, and post-tests.

## **RESULTS AND DISCUSSION**

### **Implementation of Activities**

The community service activity entitled 'Education and Detection of Diabetes Mellitus in Premenopausal-Menopausal Women in Pekan Arba Tembilahan Subdistrict' on 20 February 2025 at 2:00 p.m. was carried out successfully. Participants were premenopausal women aged 40–55 years. Out of a total of 15 participants, only 10 were able to attend due to rain. However, the community service activity proceeded smoothly, as evidenced by the participants' enthusiasm in following each part of the programme.

### **Random Blood Sugar (RBS) Testing**

Participants filled out consent forms before the random blood sugar test was conducted. This test aimed to detect cases of Diabetes Mellitus among the participants. In the RBS test, 10 premenopausal-menopausal women obtained the maximum and minimum values as shown in the table below.

**Table 1 Results of the random blood sugar test**

No.	Assessment Category	RBS Results (< 200 mg/dl)
1.	Maximum value	152 mg/dl
2.	Minimum value	97 mg/dl

Based on Table 1 above, it can be concluded that the GDS test results for all participants in the educational programme were in the normal category, marked by maximum and minimum values below <200 mg/dl. Before the presentation of the material, participants completed a 15-question pretest in 10 minutes. The aim was to assess the participants' knowledge about premenopausal women, menopausal women, and diabetes mellitus before the education session. After a 30-minute presentation, as an evaluation and to determine changes in participants' knowledge and understanding of the material presented, participants completed a 15-question posttest. After conducting the pre-test and post-test, the results were as follows:

**Table 2. Pre-Posttest Scores of Participants' Knowledge about Diabetes Mellitus in Premenopausal and Menopausal Women**

No.	Assessment	Pre-test	Post-test
1.	Maximum Score	85	92,4
2.	Minimum Score	39,6	72,6
	Average Score	67,9	82,5

Based on Table 2, it can be concluded that there was an increase in the knowledge of premenopausal-menopausal women after being given an explanation about the detection of diabetes mellitus in premenopausal-menopausal women. The educational activity about DM in premenopausal-menopausal women used PowerPoint presentations and leaflets that were given to each participant as reading material and information.



**Figure 1. Diabetes Mellitus Leaflet for Premenopausal-Menopausal Women.**

During the educational activity, both during the presentation of the material and the discussion and question-and-answer session, participants paid attention to the PowerPoint presentation while reading the leaflets that had been distributed. Participants were enthusiastic and asked several questions related to the material, both from their own experiences and those of their families. All participants were able to follow the activity in an orderly manner. Several participants said that this was their first time participating in an educational activity about diabetes mellitus accompanied by a blood sugar test. Participants played an active role during the discussion and question-and-answer sessions and were able to explain what had been conveyed by the presenter using their own language related to the educational material.

This activity was coordinated with the Community Health Centre and the Sub-District Office, and it was agreed that the activity would be held on 20 February 2025 at 2:00 p.m. Western Indonesian Time in the Hall of the Pekan Arba Sub-District Office. Before the presentation of the educational material, participants took a pre-test, where they were given 15 questions to measure their knowledge before receiving education about DM in pre-menopausal and menopausal women. After the pre-test, a GDS test was conducted, followed by the presentation of the material and an evaluation with a post-test.

### **GDS Test**

Based on Table 1, it can be seen that the GDS test results for all participants were within the normal range, i.e., < 200 mg/dl. No participants were found to have high blood sugar levels in this examination. However, some participants admitted that they were still afraid to have their blood sugar checked regularly. Eight out of ten participants in the education programme were in the premenopausal-menopausal category. Premenopausal-menopausal women contribute significantly to the occurrence of diabetes mellitus, due to higher levels of oestrogen and progesterone, which can cause metabolic disorders and glucose absorption, thereby increasing insulin resistance (Nugrahaeni and Dathin, 2020).

Choi and Yu (2025) investigated changes in diabetes risk,  $\beta$ -cell function, and insulin sensitivity during the menopause phase, considering the onset of diabetes. The results of the study indicate that the risk of diabetes is higher during the pre- and perimenopausal periods compared to the postmenopausal period, regardless of menopausal age and obesity. Additionally, a decrease in insulin sensitivity followed by a subsequent decrease in  $\beta$ -cell function in accordance with the time of onset is associated with the risk of diabetes.

In line with the research by Aprilya et al. (2022), the results of a study of 60 menopausal women found that 25 women (41.67%) had high blood glucose levels. High blood glucose levels in menopausal women are associated with a decrease in the production of the hormones oestrogen and progesterone. A decrease in oestrogen and progesterone can cause menopausal women to have a lot of fatty tissue. The increase in fat in menopausal women is believed to play a role in insulin resistance after menopause, which can increase blood glucose levels. The results of the examination showed that high blood glucose levels were most prevalent in the 50-54 age group, with 9 women (36.00%). This occurs because after the age of 40, changes occur in the human body, starting at the cellular level, continuing to the tissue level, and then to the organs. One of the changes that occurs is a change in pancreatic  $\beta$  cells to produce insulin, which affects blood glucose levels.

### **Education about Diabetes Mellitus in Premenopausal-Menopausal Women**

Participants were given education in the form of material about DM in premenopausal-menopausal women. The materials covered premenopausal women, menopausal women, diabetes mellitus, causes of DM in premenopausal-menopausal women, symptoms, prevention, and management of DM in premenopausal-menopausal women. The provision of these materials was intended to support participants' knowledge and raise awareness of the importance of regular self-examination. The education used leaflets containing information about DM in premenopausal-menopausal women.

Based on Table 2, it can be seen that participants experienced an increase in knowledge after receiving the education. The average pre-test score was 67.98 and the average post-test score was 82.5. This indicates that the education was effective in increasing knowledge. This is in line with Risa's (2022) research, which found that there was an increase in the knowledge of PKK mothers about menopause and how to prevent associated diseases and live a healthy lifestyle during menopause between before and after being given health education through an

educational method using leaflets. Leaflets in education usually help make it easier for someone to understand the content of the material being conveyed.

Pamungkas et al. (2015) in Khalida et al. (2022) explained that the respondents' knowledge could increase with the use of leaflets, because leaflets are a medium that can be carried anywhere so that the information in the leaflets can be well received by the respondents. According to Khalida et al. (2022), the leaflet media used in their research was delivered through group discussions, making it easier for individuals to understand the material presented. When the material presented was unclear, respondents could read the contents of the leaflet that had been provided and ask the researchers questions about the contents of the leaflet or other matters related to menopause.

Based on the results of research by Jubaedah et al (2020), it was found that the media most widely used by students was leaflets. According to the author's assumption, this media contains more messages that are used as information for the community, making it more effective. Leaflets, as shown by existing research, have proven to be effective as visual messages for health promotion in improving health behaviour. In addition, leaflets are easy to design, can be stored for a long time, and are attractive (Fahlevi, 2019). Another study mentions that leaflets are a form of social media that can influence the knowledge, attitudes, and health behaviours of the community (Leonita & Jalinus, 2018). This medium is considered significant in showing differences in community motivation after being educated using leaflets (Ferasinta & Dinata, 2020).

The outreach activity on 'Education and Detection of Diabetes Mellitus in Premenopausal-Menopausal Women in Pekan Arba Subdistrict' is one effective method of increasing participants' knowledge about health during premenopause and menopause. After receiving counselling and undergoing pre-tests and post-tests, participants' knowledge increased, with an average pre-test score of 67.9 and an average post-test score of 82.5. It can be concluded that participants' knowledge increased by 10%.

The GDS test results showed that none of the premenopausal-menopausal women had high blood sugar levels; all were within the normal range. However, the pretest-posttest results showed an increase in participants' knowledge related to the information provided. This serves as a benchmark that the information provided was well received, thereby increasing participants' knowledge about DM in premenopausal-menopausal women.

## **RECOMMENDATIONS**

The author hopes that DM screening can be carried out regularly on premenopausal and menopausal women and that health education can be provided at every meeting, whether at integrated health service posts, monthly routine meetings, or other opportunities. It is hoped that the provision of health information and education will improve the quality of life of women.

## **REFERENCES**

- Ariska Risa (2022). Edukasi Kesehatan dengan Media Leaflet Tentang Menopause pada Kelompok Ibu PKK di BTN Pagesangan Kecamatan Mataram. *Jurnal Pengabdian Masyarakat*. Vol.2 No. 2
- Aprilya et al (2022). Gambaran Kadar Glukosa Darah Sewaktu Pada Wanita Menopause di Kelurahan Bitera Kecamatan Gianyar. *Jurnal Skala Husada : The Journal of Health*. Vol. 19 No. 2
- Choi Mi Jin & Yu Juyoun (2025). Menopause dan Risiko Diabetes, Seiring dengan Lintasan Fungsi Sel  $\beta$  dan Sensitivitas Insulin : Sebuah Studi Kohort Berbasis Komunitas. *Healthcare*, 13(9), 1062.

- Ferasinta, F., & Dinata, E. Z. (2020). The Effect of Education With the Leaflet Media on Motivation in Caring Baby With Diarrhea. *Jurnal Vokasi Keperawatan (JVK)*, 3 (2), 165–172
- Isviyanti, Ni Buatan G.G, Amelia K, (2020). Pengaruh Aktifitas Fisik Yoga Terhadap Penurunan Kadar Gula Darah Puasa pada Menopause dengan Diabetes Mellitus Tipe II di Lingkungan Bendega Tanjung Karang.
- Jubaedah, E., Yuhandini, D. S., (2020). Pendidikan Kesehatan Melalui Media Video dan Leaflet Terhadap Pengetahuan Personal Hygiene Menstruasi Remaja Putri Kelas VII. *Jurnal Ilmiah PANNMED (Pharmacist, Analyst, Nurse, Nutrition, Midwivery, Environment, Dentist)*, 15(1), 30–35
- Jumadewi Asri (2024). Praktik Pembelajaran Promosi Kesehatan Melalui Penyuluhan dan Media Leaflet. *Jurnal Inovasi Penelitian Pendidikan dan Pembelajaran*. Vol. 4 No. 4
- Kadek A, I Nyoman G.S, Ni Nyoman A.D (2022). Gambaran Kadar Glukosa Darah Sewaktu Pada Wanita Menopause Di Kelurahan Bitera Kecamatan Gianyar. *Jurnal Skala Husada : The Journal of Health*. Vol. 19 No. 2.
- Kartini (2020). Analisis Faktor-Faktor yang Berhubungan dengan Usia Menopause. *Health Information Jurnal Penelitian*. Volume 12, Nomor 1
- Kemenkes (2021). Penyakit Tidak Menular Indonesia : Waspada! Gejala Diabetes Mellitus.
- Kemenkes (2024). Penyakit Tidak Menular Indonesia : Penyakit Diabetes Mellitus.
- Nugrahaeni D. K, Dathin A. P (2020). Faktor Risiko Terjadinya Diabetes Mellitus Tipe 2 pada Wanita Menopause. *Jurnal Kesehatan Kartika*. Vol. 15, No. 3.
- Paschou Stavroula, A et al (2019). Diabetes in Menopause: Risks and Management. *Curr Vasc Pharmacol*, 2019;17(6):556-563.
- Rekap Data Peserta Prolanis PRB Puskesmas Tembilahan Kota Tahun 2024
- Sutrisari S, Juwinto I (2023). Perubahan Fisik dan Tingkat Kecemasan Fisik pada Wanita Perimenopause. Volume 8, Nomor 2