

Health Education on Diabetes Prevention for Family Empowerment and Welfare Women in Lembah Griya Indah Citayam

Najla Qonita Putri Jatmiko¹, Wirdatul Jannah², Apriningsih³

Universitas Pembangunan Nasional Veteran Jakarta, Jakarta, Indonesia

Author email: 2410722002@mahasiswa.upnvj.ac.id¹, 2410722005@mahasiswa.upnvj.ac.id²,
apriningsih@upnvj.ac.id³

Abstract. Diabetes mellitus (DM) is a metabolic disease characterized by an increase in human blood sugar levels. Apart from that, an unhealthy lifestyle can also be a cause of diabetes mellitus. Unhealthy lifestyles can include lack of sleep, lack of physical activity such as exercising, not consuming enough fiber, and others. The number of cases of diabetes mellitus continues to increase every year. This can result because many people prefer food and drinks that contain quite a lot of sugar in them. West Java Province recorded an increase in the incidence of diabetes mellitus from 2019 to 2020, from 790,686 diabetes mellitus sufferers in 2019 to 1,218,294 in 2020. The regional health profile of Bogor City recorded that in 2017, 27,000 people were suffering from diabetes mellitus which then increased in 2020 to 71,462 people suffering from diabetes mellitus. This community service aims to provide education to PKK mothers regarding diabetes mellitus which includes definitions, symptoms, and prevention efforts using poster media. This community service was carried out on 10 respondents who were PKK mothers at the Lembah Griya Citayam Housing Complex. This activity uses a pre-test and post-test design which aims to determine differences in the level of knowledge of respondents regarding diabetes mellitus before and after the education was carried out. The statistical test used in this activity is the Paired Sample T-test. The test results show that poster education media with a p-value = 0.000 ($p < 0.05$) has a significant influence on increasing the level of knowledge of PKK mothers regarding diabetes mellitus. So it can be concluded that poster media is effective in increasing PKK mothers' knowledge about diabetes mellitus

Keywords: Diabetes mellitus, Poster, Knowledge.

1 Introduction

Human lifestyles continue to change and develop along with the times. The eating patterns and physical activity of each individual continue to experience changes, and if they are not in balance with each other, they will hurt the individual. Currently, more people tend to choose to consume junk food (fast food) than real food (real food) because of the ease of obtaining this food and its preparation which does not require a long time. In reality, fast food is processed using a fairly long process so that the food contains many dangerous ingredients such as chemicals, preservatives, artificial sweeteners, and other ingredients which, if consumed excessively, will have a bad impact on the health of the person involved. consuming it is like the emergence of diabetes mellitus, or blood sugar disease in the body (Astutisari, et al., 2022).

Diabetes mellitus (DM) is one of the many diseases that is dangerous for the body. Even though this disease is not contagious, diabetes mellitus is a hereditary disease. Diabetes mellitus is a disease that disrupts the body's metabolism and is characterized by increased blood sugar levels (hyperglycemia) which is caused by failure of insulin secretion, failure of insulin to work, or even both (Eltrikanawati et al., 2020). Risk factors for diabetes mellitus include various things, both genetic and environmental factors. Several factors that can increase a person's chances of developing diabetes include obesity, lack of physical activity, poor diet, and increasing age. Apart from that, rapid lifestyle changes in modern society also play a role in increasing the prevalence rate of diabetes mellitus (Novita et al., 2022). Apart from that, diabetes mellitus can also be caused by consuming too much daily sugar. Currently, many sellers serve fast food and contain high levels of sugar compared to sellers who serve healthy food. This can encourage people to consume processed food or drinks because it is easy for people to get them. Apart from that, currently, people tend to prefer to consume foods and drinks that are rich in sugar compared to

healthy foods so that they can easily and quickly develop diabetes mellitus.

The number of diabetes sufferers throughout the world increases quite significantly every year. In 1990, it was recorded that the number of diabetes sufferers was more than 200 million people, which then increased to 830 million people in 2022. The increase in the prevalence of diabetes mellitus occurred more rapidly in low-income and middle-income countries compared to other countries. high-income countries. The World Health Organization (WHO) in 2024 noted that in 2022 more than half of diabetes sufferers will not take the medication needed to manage their disease. Low- and middle-income countries recorded the lowest treatment coverage. Diabetes can cause various serious disease complications, such as blindness, kidney failure, neuropathy (damage to the body's nerve cells which usually occurs in the hands and feet), heart attack, stroke, and amputation of body parts.

In 2021, there will be more than 2 million deaths due to diabetes and kidney disease caused by diabetes mellitus. In addition, around 11% of deaths from cardiovascular disease are caused by high blood glucose levels (WHO, 2024). Complicated diseases that are initially caused by diabetes mellitus are generally due to damage to human blood vessels and are the result of hyperglycemia that lasts for quite a long time (Ministry of Health, 2019). Prevention or delay of the onset of type 2 diabetes can be done with several efforts, namely by adopting a healthy diet, exercising regularly, maintaining a healthy body weight, and avoiding smoking. With proper management, such as diet, exercise, medication, and regular health checks, diabetes can be controlled, and the risk of complications can be minimized or delayed (WHO, 2024). According to the IDF (International Diabetes Federation), Indonesia is ranked 5th (fifth) as the country with the highest number of diabetes mellitus sufferers, reaching 19.5 million people in 2021, and is predicted to continue to increase to 28.6 million people in 2045. This disease often goes undetected at first and eventually causes more serious complications, so proper monitoring and treatment are very necessary for diabetes mellitus (Ministry of Health, 2024).

Listriyani, et al., (2022) stated that the recorded number of cases in West Java Province was quite high, reaching 790,686 cases in 2019, which then increased in 2020 to 1,218,294 cases. In 2020, Bekasi Regency was ranked first with the most cases of diabetes mellitus in West Java Province, namely 242,169 cases. Meanwhile, according to the regional health profile of Bogor City in 2020, 71,462 people were suffering from diabetes mellitus (Susilowati, 2024).

In the city of Bogor itself, according to the health profile of the city of Bogor in 2017, the incidence of diabetes mellitus has reached 27,000 people per year and the number of data continues to increase significantly from year to year and is in line with national data which records Indonesia as the country with the highest number of diabetes sufferers in the world. world, outreach needs to be carried out to increase public awareness regarding the prevention and management of diabetes mellitus, especially among Family empowerment and welfare women who play an important role in family health. It is hoped that education regarding healthy eating patterns and lifestyles can help reduce the risk of diabetes mellitus and its increasingly urgent complications and it is important to remember that the prevalence of this disease continues to increase. Based on Bogor Regency Health Profile Data, the number of cases of diabetes mellitus patients is 11.52% or 11.85 cases in people aged 45 to 75 years, which is the second highest number of cases after hypertension (Maspupah, 2022). Diabetes mellitus is one of the many diseases that must be understood. The importance of understanding diabetes mellitus as an effort to prevent the disease, especially in low and middle income countries. The importance of carrying out community service to increase awareness and prevention of diabetes mellitus by showing that people who have more information or are informative can take better preventive actions.

This community service aims to provide education about what diabetes mellitus is, the symptoms of diabetes mellitus, and what preventive measures can be taken to avoid this disease by using the visual media of posters.

2 Method

This activity uses a pre-test and post-test design to find out differences in the level of knowledge of respondents regarding diabetes mellitus before being given education and after being given education. The results of the pre-test and post-test will then be calculated to determine the mean (average) value of the respondents before and after the education. Community service was carried out on November 20 2024 for 10 Family empowerment and welfare women at the Lembah Griya Indah Citayam Housing Complex. The target audience in community service activities involving PKK women who are the main target in this activity is quite good. The audience selection of PKK mothers has a big influence in the family and society, mothers are often responsible for the family's health so they have an important role in educating families about healthy lifestyles. This activity aims to show the effectiveness of carrying out community service activities using pre-test and post-test media. The final results show that community service activities using visual poster media can increase PKK mothers' knowledge of diabetes mellitus. The criteria for inclusion in this community service are Family empowerment and welfare women residing in the Lembah Griya Indah Citayam Housing Complex, aged 25 – 60 years, willing to be given education (covering all community service activities), and willing to complete the pre-test and post- test. Meanwhile, the exclusion criteria for this community service are respondents who are not

PKK mothers at the Lembah Griya Indah Citayam Housing Complex. The number of samples in this research was 10 respondents. Analysis was carried out using statistical test tools. The test used is the Paired Sample T-Test. In carrying out this community service, educational media is used, namely in the form of posters.

3 Result and Discussion

3.1 Result

On November 20th, 2024, community service activities were carried out for 10 Family empowerment and welfare women located at the Lembah Griya Indah Citayam Housing Complex. The following are the results of carrying out community service activities:

Table 1. Characteristics of Respondents

Characteristics	n	%
Age		
25 – 40 years old	3	30,0
41 – 60 years old	7	70,0
Level of Education		
Junior High	1	10,0
School Senior	6	60,0
High School Bachelor	3	30,0
Work		
Work	5	50,0
Housewife	5	50,0

Based on Table 1 above, it can be seen that the characteristics of the respondents are that out of 10 respondents, there are 3 respondents (30.0%) who are 25 - 40 years old and 7 respondents (70.0%) who are 41 - 60 years old. The educational levels of Family empowerment and welfare women were quite diverse, namely 1 respondent (10.0%) with a junior high school education level, 6 respondents (60.0%) with a high school education level, and 3 respondents (30.0%) with a bachelor's level education. There were 5 respondents (50.0%) who worked every day and 5 respondents (50.0%) who did not work or were housewives.

Table 2. Data Normality Test

Variable	Kolmogorov-Smirnov		
	Statistics	Df	p-value
<i>Pre-test</i>	0,160	10	0,200
<i>Post-test</i>	0,181	10	0,200

Based on Table 2 above, the normality test was carried out using Kolmogorov-Smirnov on the results of filling in the pre-test and post-test. In the normality test, it was found that the results of the pre-test were normally distributed as evidenced by the p-value= 0.200 ($p > 0.05$), and the normality test results obtained in the post-test were normally distributed as evidenced by the p-value= 0.200 ($p > 0.05$). Based on the results of the normality test on the pre-test and post-test of this community service, it was processed using the Paired T-test.

Table 3. Results of Analysis of Differences in Mean Knowledge of Respondents regarding Prevention of Diabetes Mellitus

Variable	Mean	N	SD	p-value
<i>Pre-test</i>	3,80	10	1,317	0,000
<i>Post-test</i>	8,80	10	1,033	

Table 3 above shows that by carrying out statistical tests, a p-value = 0.000 was obtained, which shows that community service in the form of education using poster media is effective in increasing the knowledge of PKK mothers in Lembah Griya Indah Citayam regarding the prevention of diabetes mellitus.

3.2 Discussion

Posters are one of the many educational media available. Posters are visual educational media that consist of images, writing, and colors that can attract someone's interest in reading them. The aim of the poster is so that readers do not feel bored when looking at it because it has good visuals. Good posters usually have attractive colors and writing that can be read clearly. Apart from that, a good poster must be able to convey the message it contains to its readers quickly and easily and without being long-winded (Rahayu & Kurniasari, 2022).

According to Sumartono and Astuti (2018), posters are an educational medium in the form of images and contain short messages. Like other educational media, posters also have advantages and disadvantages. The advantages possessed by posters are that they have the property of making it easier or faster for readers to understand the message they contain, posters are equipped with colors that are comfortable for the eye so they can attract readers, posters have a simple shape, and making posters tends to be easy and does not require a lot of money. expensive. Meanwhile, the weakness of poster educational media is that its production requires special skills, reading skills are required to understand the message contained in the poster, and the message on the poster is conveyed only through visual elements.

Counseling on the prevention of diabetes mellitus for Family empowerment and welfare women at the Lembah Griya Indah Citayam Housing Complex is an important and quite good initiative that aims to increase public awareness and knowledge about diabetes mellitus. To achieve this goal, this outreach activity is arranged in detail in the form of a systematic rundown, which includes various educational activities that are expected to provide in-depth understanding to educational participants. The Rundown of community service activities carried out are:

Table 4. Rundown of Outreach Activities

Time	Activity	Pearson Responsible
08.00 – 08.30	Participant registrarion	Committee
08.30 – 09.30	Opening of the event	Committee
09.00 – 09.15	Greetings from the Family Empowerment and Welfare Women chairman	Family empowerment and welfare women chairman
09.15 – 09.30	Explanation of the purpose and benefits of the activity	Committee
09.30 – 09.45	Filling out the pre-test sheet	Committee
09.45 – 09.50	Distribution of poster educational materials	Committee
09.50 – 10.50	Providing outreach materials	Source person
10.50 – 11.05	Question and answer	Source person
11.05 – 11.20	Filling out the post-test sheet	Committee
11.20 – 11.30	Conclusion	Committee

Based on community service activities carried out for Family empowerment and welfare women at Griya Indah Citayam Housing using educational poster media, it is known that there is an increase in the mean (average) value in the knowledge scores of Family empowerment and welfare women regarding diabetes mellitus before being given education and after being given education. Previously, the average knowledge score for Family empowerment and welfare women was 3.80 and then increased after being given education to 8.80. The results of statistical tests using the Paired T-test obtained a p-value = 0.000 ($p < 0.05$) so it can be concluded that providing education using poster media can significantly increase the level of knowledge of respondents regarding the prevention of diabetes mellitus. This is in line with research conducted by Sapitri and Kurniasari (2024) to see the effectiveness of using poster media on teenagers' knowledge about diabetes mellitus with the results of the Paired T-test statistical test on the level of knowledge with p-value = 0.000 ($p < 0.05$) so it can be concluded that providing education using poster media to teenagers at SMAN 1 Jatisari can significantly increase their knowledge of diabetes mellitus. The existence of community service activities by providing education can increase respondents' knowledge because they receive clear information. Supported by the results of previous research conducted by Luh Putu, et al., (2021) stated that there was influence of the use of poster media on the compliance of patients with type 2 diabetes mellitus at the Sahabat Pharmacy, Denpasar Bali, which was shown by the p-value = 0.001 ($p < 0, 05$). This research shows that education using poster media can increase medication adherence in diabetes mellitus sufferers.

In contrast to research conducted by Nur et, al., (2024), the results indicated that the use of videos and posters as a method of conveying information had a positive effect on increasing participants' knowledge and attitudes, although it did not show a significant effect on changing behavior. The Wilcoxon test also confirmed that the two methods succeeded in increasing the level of knowledge significantly, but did not succeed in changing traits and behavior. These findings suggest that relying solely on videos and posters may not be enough to change traits and behavior. Additional, more effective methods or media are needed, as well as longer time to optimize

health promotion efforts to the target group. The results of research conducted by Maspupah (2020), stated that there are two main risk factors causing diabetes mellitus in Bogor Regency, namely genetic factors and behavioral factors related to the Healthy Community Movement (GERMAS). These behavioral factors include physical activity, healthy eating patterns, smoking habits, alcohol consumption, and regular health checks. The importance of public education regarding diabetes mellitus prevention behavior needs to be emphasized, especially to change lifestyle towards a healthier one. Apart from that, other research conducted by Kurniasari, et al., (2024) stated that the diet of Diabetes Mellitus sufferers has a big influence on improvement. blood sugar levels in the body. Therefore, Diabetes Mellitus sufferers need to be able to control the intake they consume so that blood sugar levels in the body remain stable. This is in line with research conducted by Asyumdah, et al., (2020) which also states that there is an influence of a person's consumption pattern on the incidence of type 2 diabetes mellitus in Kulon Progo Regency, Yogyakarta Special Region of 0.005 times. Based on the Chi-Square Test, the p-value obtained is 0.000 ($p < 0.05$) OR = 0.005.

Community service activities held at the Lembah Griya Indah Citayam Housing Complex showed that education using poster media could have a positive impact on increasing the knowledge of Family empowerment and welfare women regarding the prevention of diabetes mellitus. Effective education can increase public awareness of the importance of a healthy diet and lifestyle as an effort to prevent diabetes mellitus, where diabetes mellitus is a non-communicable disease with an increasing prevalence. These findings can be used as a basis for developing other health education programs, not only for diabetes but also for other chronic diseases that can be prevented through lifestyle changes. The use of visual media such as posters has proven effective in conveying health information, which shows that visual approaches can be applied more widely.

This community service program focuses on educational factors by using poster media to convey information about diabetes mellitus to PKK mothers in Lembah Griya Indah Citayam. Although poster media is effective in increasing participant knowledge, this approach may not fully utilize the potential of innovative tools that can increase engagement. The success of the education program using poster media shows the potential for integration with ongoing health programs, such as collaboration with health centers or routine counseling. Recommendations for follow-up include ongoing training, periodic counseling, and the development of additional educational materials that are appropriate to local needs.

The following is documentation of the implementation of counseling on the prevention of Diabetes Mellitus at the Lembah Griya Indah Citayam Housing Complex:



Figure 1. Extension Activities for Preventing Diabetes Mellitus



Figure 2. Documentation after Counseling on Diabetes Mellitus



Figure 3. Poster for the Prevention of Diabetes Mellitus

4 Conclusion

From the description above, it can be concluded that community service activities regarding diabetes mellitus using poster media can increase the knowledge of Family empowerment and welfare women in the Lembah Griya Citayam Housing Complex. This can be proven by an increase in the mean (average) value from the comparison of the pre-test and post-test results filled in by respondents. Apart from that, the community service activities carried out were also well received by the PKK mothers as indicated by the enthusiasm of the Family empowerment and welfare women while participating in this community service activity from the start of the event to the end.

This community service on diabetes prevention provides a comprehensive picture of the needs and challenges of the Bogor community related to awareness and prevention of diabetes mellitus. The educational program implemented in Lembah Griya Indah Citayam is well designed to address unique local needs, as evidenced by the increase in participants' knowledge after participating in the program.

Based on the results obtained, as part of efforts to prevent diabetes mellitus it is important to consider more comprehensive and sustainable strategies in the implementation of educational programs. This program recommends expanding the scale and replicating similar programs in other communities using various approaches, including diversifying educational media, collaborating with relevant stakeholders such as community health centers (puskesmas) and non-profit organizations, as well as community-based outreach involving families. Challenges faced, such as low public awareness and limited resources, can be addressed through more intensive public awareness campaigns and the search for alternative funding sources.

References

- Apriani, M., Mutiara, R., & Ekaputri, C. (2021). Analisis Perkembangan Diabetes Melitus Tipe 2 di Kota Bogor Jawa Barat. *Journal of Experimental and Clinical Pharmacy*, 1(2), 112-120. doi:10.52365/jecp.v1i2.243.
- Arviani, L. P. I., & Oktianti, D. (2021). Pengaruh Media Poster Terhadap Kepatuhan Pasien Diabetes Melitus Tipe 2 Di Apotek Sahabat Denpasar Bali: The Effect of Poster Media on Patients with Type 2 Diabetes Mellitus at the Sahabat Pharmacy Denpasar Bali. *Journal of Holistics and Health Sciences (JHHS)*, 3(2), 155-162.
- Astutisari, I. D. A. E. C., Darmini, A. Y. D. A. Y., Ayu, I. A. P. W. I., & Wulandari, P. (2022). Hubungan Pola Makan Dan Aktivitas Fisik Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus Tipe 2 Di Puskesmas Manggis I. *Jurnal Riset Kesehatan Nasional*, 6(2), 79-87.
- Elok Kurniasari, & Wachidah Yuniartika. (2024). Controlling Blood Sugar Levels with Diet in Diabetes Mellitus Sufferers: Literature Review. *International Journal of Public Health*, 1(3), 1-8. <https://doi.org/10.62951/ijph.v1i3.63>

- Eltrikanawati, T., & Tampubolon, M. (2020). Relationship between eating patterns and activity patterns Physique On Blood Sugar Levels in Type 2 Diabetes Mellitus Patients. *Journal Scientific Imelda Nursing*, 6(2), 171-177.
- Kementerian Kesehatan Republik Indonesia. (2019). Laporan tentang diabetes melitus di Indonesia. Jakarta: Kemenkes RI.
- Kementerian Kesehatan. (2024). Saatnya Mengatur Si Manis. Mediakom. Diakses dari <https://sehatnegeriku.kemkes.go.id/baca/blog/20240110/5344736/saatnya-mengatur-si-manis/eperawatan>, J. (2021). Efektivitas Poster dan Kotak Obat dalam Meningkatkan Kepatuhan Minum Obat Pasien Diabetes Melitus A'an Dwi Sentana 1(CA) , Kosi Pratama 2 1(CA). In *Kosi Pratama Bima Nursing Journal* (Vol. 2, Issue 2). <http://jkip.poltekkes-mataram.ac.id/index.php/bnj/index>
- Listriyani, A. S., Sandya, F., Handayani, M. I., & Leftungun, S. Y. (2023). Analisis Risiko dan Perilaku Pencegahan Penyakit DM Tipe 2 pada Usia Produktif di Wilayah Kerja UPTD Puskesmas Depok Jaya Tahun 2022: Risk Analysis and Prevention Behavior for Type 2 DM in the Productive Age in the Depok Jaya Community Health Center UPTD Work Area in 2022. *Journal of Public Health Education*, 2(2), 62-69.
- Luh Putu Indah Arviani, Dian Oktianti. (2021). Pengaruh Media Poster Terhadap Kepatuhan Pasien Diabetes Melitus Tipe 2 Di Apotek Sahabat Denpasar Bali. *Journal of Holistics and Health Sciences*, Vol. 3, No. 2, September 2021.
- Maspupah, T., Nina, T. D. S., Pakhpahan, J., & Octavianie, G. (2022). Perilaku Pencegahan dan Risiko Kejadian Diabetes Melitus Tipe 2 pada Usia Produktif di Kabupaten Bogor Tahun 2021. *Journal of Public Health Education*, 2(1), 1-10. <https://doi.org/10.53801/jphe.v2i1.66>
- Novita, A., Marniati, Husna, A., Iskandar, Putranto, R. H., Putri, E. S., & Anwar, S. (2022). Kajian Faktor Intrinsik dan Ekstrinsik dengan Klasifikasi Diabetes Melitus. *J-Kesmas: Jurnal Fakultas Kesehatan Masyarakat*, 9(2), 18-25. doi: <https://doi.org/10.35308/j-kesmas.v7i2.5982>
- Pengetahuan, I. P., Pencegahan, P., Melitus Pada Siswa, D., Dasar, S., Nur, R., 1, A., Nahda, S., Suan, C., Tarigan, F., Nugroho, E., Nisa, A. A., Woro, O., & Handayani, K. (2024). 225 *HIGEIA 8 (2) (2024) HIGEIA JOURNAL OF PUBLIC HEALTH RESEARCH AND DEVELOPMENT Article Info*. <https://doi.org/10.15294/higeia/v8i2/77675>
- Perspektif, J., Masyarakat, K., Korespondensi, A., Asyumdah, A., Yuniastuti, A., & Kuswardinah, A. (n.d.). *Analisis Pola Konsumsi Pangan dengan Kejadian Diabetes Melitus Tipe 2 di Kabupaten Kulon Progo DI Yogyakarta*. <http://journal.unnes.ac.id/sju/index.php/phpj>
- Rahayu, F. S., & Kurniasari, R. (2022). Efektivitas Media Poster Dan Media Video Animasi Terhadap Tingkat Pengetahuan Remaja Mengenai Hipertensi. *Jurnal Kesehatan*, 11(1), 53-58.
- Sapitri, V., & Kurniasari, R. (2024). Efektivitas Media Poster, Video Animasi dan Podcast terhadap Pengetahuan Remaja Mengenai Diabetes. *Jurnal Gizi*, 13(1), 30-41.
- Sumartono, S., & Astuti, H. (2018). Penggunaan poster sebagai media komunikasi kesehatan. *Komunikologi: Jurnal Ilmiah Ilmu Komunikasi*, 15(1).
- Susilowati, N. H., Kusuma, R. H., & Susaldi. (2024). Hubungan Self Management Dengan Kualitas Hidup Penderita Diabetes Melitus Tipe II Di RS PMI Kota Bogor Pada Tahun 2023. *Jurnal Riset Ilmu Kesehatan Universitas Indonesia Maju*, 2(2), 49-64. doi:10.57213/jrikuf.v2i2.228
- Widyana, A. R., & Afriansyah, M. A. (2022). Penyuluhan dan Pemeriksaan Kadar HbA1c pada Pasien Diabetes Mellitus Tipe 2 di RSUD Suradadi. *JURNAL INOVASI DAN PENGABDIAN MASYARAKAT INDONESIA*, 1(3), 6-9.
- World Health Organization. (2024). Diabetes. Diakses dari <https://www.who.int/news-room/fact-sheets/detail/diabetes>