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REVIEW: THE RELATIONSHIP BETWEEN KNOWLEDGE AND MEDICATION ADHERENCE IN TYPE 2 DIABETES PATIENTS

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ABSTRACT

Diabetes mellitus poses a major threat to human health, as evidenced by the increasing prevalence of diabetes, and the number of cases of diabetes in Indonesia is anticipated to rise from 10.7 million in 2019 to 13.7 million by 2030.The lack of public knowledge and compliance with treatment has caused the incidence of the disease to increase every year. This Review aimed to determine the relationship between knowledge of medication compliance in patients with type 2 diabetes mellitus. The primary data methods obtained were national and international journals using search engines such as Google Scholar, PubMed, and Science Direct, as well as other search engines with the Narrative Review pattern. The search result of the publications obtained 769 articles; 40 articles screened full text based on the results of the screening that received 18 articles that met the inclusion criteria and were used as a review. The analysis of data writing in this article is mostly based on cross-sectional study approaches. Surveys were conducted within a three-month period. The results showed that knowledge had a significant relationship with drug consistency (p-value value = 0, 000 < 0.05). Knowledge is very much related to the medication compliance of each individual; the higher a person's knowledge, the better the attitude of compliance with diabetes drug consumption.

Keywords: Compliance, Knowledge, Type 2 Diabetes, Narrative Review.

INTRODUCTION

Diabetes mellitus is a metabolic disease characterized by chronic increases in blood sugar levels caused by etiological factors, accompanied by a lack of insulin secretion and dysfunction of the pancreas (American Diabetes Association, 2018). The International Diabetes Federation estimates that by 2021, there will be 530 million individuals with DM worldwide, and by 2045, there will be more than 780 million (Sun H, et al., 2022). Increase in cases of DM in Indonesia in 2019 from 10.7 million to 13.7 million in 2030. The 2018 Riskesdas report showed that the prevalence of DM in Indonesia diagnosed by doctors among the population aged ≥15 years is 2%. This shows that there is an increase of 1.5% compared to the prevalence of DM in the population aged ≥ 15 years in the 2013 Rikesdas study. Because of its chronic nature, DM can damage various systems or organs of the body, causing complications. Diabetic retinopathy and nephropathy are acute and chronic complications of DM (Lotfy M, et al., 2017).

The success of therapy in patients with DM is influenced by several factors, including the patient's knowledge and compliance with medication. Knowledge is the basis of health behaviors. Compliance is the patient's attitude towards following the doctor's recommendations regarding the use of medication (Rosyida et al., 2015).

Good knowledge about treatment leads to good treatment behavior, whereas insufficient knowledge can lead to poor treatment behavior. Patient noncompliance in taking medication is due to a lack of knowledge about diabetes, treatment regimens, and the benefits of medication, causing patients to not fully comply with treatment

recommendations. Treatment of diabetes is lifelong and requires changes in the patient's behavior. Glycemic control includes routine blood sugar and urine tests, diet, and exercise. Diabetes sufferers must adopt a healthy lifestyle. Successful treatment is influenced by patient compliance with treatment, which is the main factor in therapeutic outcomes and is one of the efforts to prevent complications in patients with DM (Rasdianah, et al., 2016).

RESEARCH METHOD

Tools and Materials

The study methodology employed in this article is a narrative review based on an online search of scientific articles from national and international journals accredited by SINTA, Google Scholar, PubMed, and Science Direct. The retrieved article was then screened to select an article that corresponded to the title of the review.

This article uses data obtained from searching scientific articles online using Google Scholar, PubMed, and Science Direct with ISSN, accredited by SINTA, from national and international journals. The journal used in this narrative review is a journal published in the last 10 years (2013-2023) using the following keywords: Compliance, Knowledge, Type 2 Diabetes Mellitus, and Narrative Review. The articles obtained were then screened to obtain an article that matched the title that we reviewed.

Article Selection Criteria

The inclusion criteria for the selection of articles were as follows: (1) this study shows the relationship between knowledge and adherence to type 2 diabetes treatment, (2) period of publication from to 2013-2023 (3) articles using quantitative cross-sectional methods, and (4) articles used can be accessed in full text.

The exclusion criteria for the selection of articles used include (1) Inappropriate article titles (2) articles with a publication period outside the 2013-2023 period (3) Articles using a literature review method (4) articles that cannot be accessed (5) articles which is only an abstract, not full text

Research Procedures

Out of a total of 769 articles available, the author picks articles or journals that belong to the theme, ranging from two thousand thirteen to twenty-three, that are accessible and full-text. We then used 18 journals or articles that matched the inclusion criteria that covered linked compliance of consuming diabetic medication and its association with the knowledge factor; an overview of the narrative review method is shown in Figure 1.

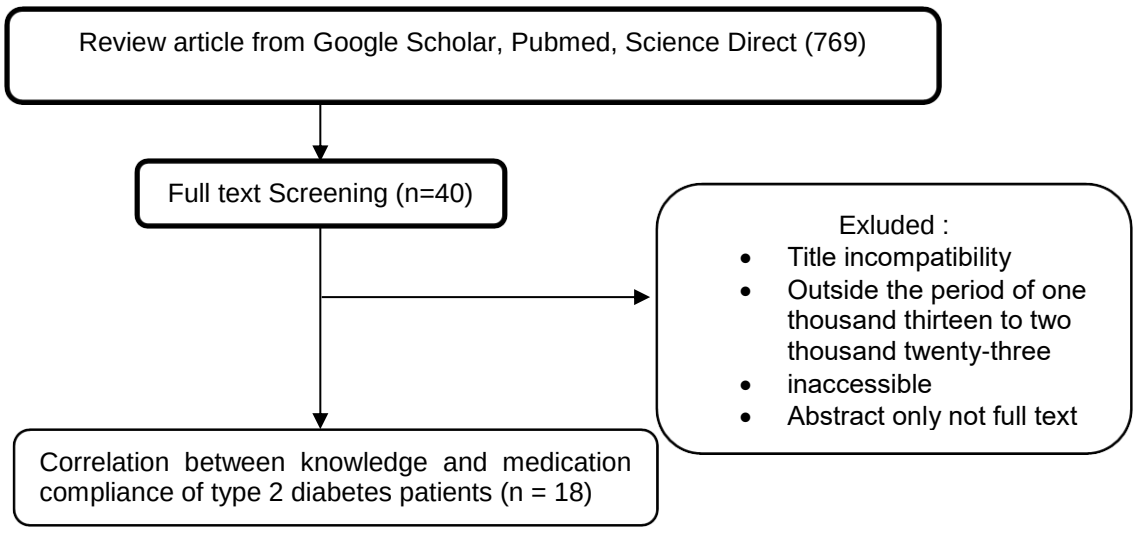

Figure 1. Flow Chart Of The Publication Search Method

RESULTS AND DISCUSSION

The following is a summary of the research results, which can be seen in Table I.

Table I. Recapitulate Article Research Results

No	Ref	Research Design	Respondent Demographics	Result
1	Hidayah, et al (2018)	*Quasi-Experiment with Pretest-Postest design*	• The total number of respondents was 25 57-65 years of age was 72% • Dominated by female gender was 17 people 68% • High school graduate respondents dominate by 10% • and respondents dominated with no work as many as 20 people or 64%	• Research results show differences in knowledge before and after intervention using pocket book and leaflet media (p<0,05)
2	Akrom, et al (2019)	Cross Sectional	• Total of 122 respondents • Age 19-59 of 75 or 61.5 % • Dominated by female sex 84 of 68.9 % • Long-term respondents suffering from DM < 6 years 66 predominated by 54.1 % • And respondents dominated by not working by 81 or 66.4 %	• The study results showed patients with high compliance in this study were 66.4% and low compliance was 33.6%
3	Laumara, et al (2021)	One grup pre-post test design	• 35 respondents • 48.6% from 41-50 years of age • 68.6% from 24 women • 62.9% from high school graduates • 22% from IRTs	Results of statistical T pairs obtained p 0,000<0.05 show that the influence of diagnosis on knowledge and compliance with type 2 diabetes diets
4	Nazriati, et al (2018)	Cross Sectional	• Total respondents 40 respondents • Most respondents in the study were aged 46-55 with 45% • Dominated by the female gender of 25 respondents with 62.5%	• The results showed that the majority (75.0%) of knowledge is moderate, 17.5% is low and 7.5% is high. • The drug compliance rate was half high,

			• Respondents graduated from secondary school dominated with 35% • Responds dominated by not working with 33 or 82.5%	27.5% low and 22.5% low.
5	Bulu A, et al (2019)	Cross Sectional	• The total number of respondents is 55 • The predominant age range is 69-55 years of age with 42% • 28 male predominance of 50.9% • high school graduates predominant of 32.7% • Respondents predominate private sector of 23 or 41.8%	The results showed that less than half (47.3%) of patients had moderate drug compliance and more than half (60.0%) had abnormal blood sugar levels.
6	Ilham M, et al (2021)	Cross Sectional	• Total Respondents 96 respondents • Dominated by the sex of 70 women with 83.3% • Most respondents in participating in this study aged 51-60 years of age 34,4% • Respondent with normal IMT 26 people with 33.3% • Respondent graduates of secondary school dominated with 21.9% • Respondent dominated disease duration >5 years 54 people with 56.3% • Live with family 77 people with 80.2% • Drug therapy type with a combination of 64.6% • Frequency of taking medication 2x a day with 53.1% • Glimepiride + metformin medication combination with 49%	The result showed 80.3% obedience and 19.3% disobedience
7	Rasdianah N, et al (2016)	Retrospektif	• The total number of respondents was 123 Women's gender was 92 with 74.8% • The majority of	The results of the study showed that the rate of compliance of diabetic patients was at a low level.

			respondents in the study were under 60 years of age, at 60.2% • Elementary school respondents were 63.4% • Disease duration was predominantly under 5 years 89 people were 72.4% • Respondents with comorbidity of 66 people were 53.6% • Combined drug therapy was 56.1% • Irregular dietary patterns were 78.1% • Disorderly exercise as large as 49% • Non-smoking respondents dominated 95.9%	Women's compliance rate was 46.7 per cent higher than men's, 35.5 per cent. From this picture, it can be concluded that men are more likely to neglect compliance than women.
8	Romadhon R, et al (2020)	Cross Sectional	• The total number of respondents was 175 • Dominated by the female sex of 112 with 64% • High school graduates dominated with 64 % • aged > 60 with 66.3% • Respondents dominated as household mothers with 53.7% • Long suffering < 6 years 54.9% • History of non-hereditary diseases 57.7% • Associated hypertension 45.1% • Frequency of taking medication 3 times a day 56.6%	According to the study's findings, 39 respondents (22.3%) had low levels of conformance, 65 respondents (37.1%) had high levels of conformity, and 71 respondents (40.6%) had moderate levels of compliance when it came to taking antidiabetic medications.

DISCUSSION

1. Demographic Characteristics

a. Respondent characteristics based on age

Age is the age of an individual counted from birth to birthday. Early old age is at a vulnerable age of 46-55 years and late old age of 56-65 years. (Lasut, 2017). Based on review data from 18 of the 12 articles, the distribution of respondents' statements by age is known, with almost half of the respondents belonging to the late age category of 56-65 years and a small proportion belonging to the early age group of 46-55 years. Physiologically, in the elderly, there will be a decrease in functions in

the body, including the hormone insulin, which cannot work optimally, causing high blood sugar levels.

b. Respondent characteristics based on gender
Gender type is the biological difference between a woman and a man since a person was born (Hungu, 2016). Based on the data from 18 articles, the results of 12 articles indicated that the dominant gender was female. This is because women have higher cholesterol levels than men, so the incidence of diabetes in women is 3-7 times higher than that in men, i.e. 2-3 times higher (Gunawan & Rahmawati, 2021).

c. Respondent characteristics based on educational level
Based on 18 known articles, the respondents were dominated by high school education. This suggests that curiosity is a person's attitude toward an object of varying degrees and that the higher the level of education a person has, the better the knowledge that the person has as it is in the processing of a healthy lifestyle.

2. Knowledge

Knowledge is the outcome of "knowledge" and arises when an individual penetrates a specific item. Education, first-hand experience, social immersion, media exposure, and environmental factors account for the majority of human knowledge (Fithriyah, 2023).

Based on the review findings, most respondents had little knowledge of DM. This indicates that the relationship between knowledge and drug adherence remains poor. According to (Widiyanto 2003), a person's adherence to a standard or rule is also influenced by the knowledge and education of the individual; the higher the level of knowledge, the more it affects one's adherence to the rules or standards in force. According to (Hasibuan 2003), compliance is the awareness and willingness of a person to obey all rules and social norms that apply, which is in line with the (Notoadmojo, 2007) theory that observation affects knowledge.

Knowledge or cognition is an important domain in the formation of actions. And Knowledge is needed as a psychic impulse in cultivating attitudes and behaviors every day, so it can be said that knowledge is a stimulation to one's actions (Sampulawa, 2019)

The following are the advantages and disadvantages of several studies on the relationship between knowledge and compliance in taking type 2 DM medication. Although restrictions are usually influenced by some emerging obstacles such as the small number of people surveyed, the short duration of the research, and the process of obtaining information provided by patients through questionnaires, sometimes do not give the true opinion of respondents, because of differences in thinking and the honesty of each person. The benefits of this research can be achieved within a relatively short period of time. Quantitative research can be understood using objective statistical analysis, which is both scientific and sensible, as presented in Table II.

Table II. Deficiencies and Advantages of Research

No	Ref	Deficiencies	Advantages
1	Hidayah, et al (2018)	Media leafleat and book restrictions in healthcare facilities	Clearly displays the research background
2	Akrom, et al (2019)	Requires advanced research using different methods	Give a specific explanation.
3	Laumara, et al (2021)	Requires sustainable research using different methods	The data provided is structured to make it easier for the reviewer to conduct analysis of compliance with

			the use of DM drugs.
4	Nazriati, et al (2018)	Requires ongoing activities specifically on the causes, signs and symptoms of DM patients	Comprehensive and clear speech
5	Bulu A, et al (2019)	Use of observation sheets for further research	The explanation is described in detail so that it is easier to analyze
6	Ilham M, et al (2021)	Using HbA1c concentration parameters as clinical outcomes for type 2 DM patients.	A clearly described explanation makes it easier for the reviewer to analyze the journal.
7	Rasdianah N, et al (2016)	There is no suggestion regarding the expansion of this research.	Results and detailed discussion making it easier for the reviewer to analyze
8	Romadhon R, et al (2020)	There is no suggestion regarding the expansion of this research.	Results and detailed discussion making it easier for the reviewer to analyze

CONCLUSION

Based on studies of literature that have been carried out, the public should be aware of the importance of knowledge related to type 2 diabetes. Lack of knowledge will lead to non-compliance with the use of diabetic medication, thus affecting the success of treatment therapy. A good knowledge of medicine leads to a good behavior of medicine, but a lack of knowledge can lead to a bad behavior of medicine. To raise public awareness of the role of health workers including pharmacists is essential to provide education

REFERENCES

Akrom, A., Sari, O.M., Urbayatun, S., Saputri, Z., 2019. Analisis Determinan Faktor-Faktor yang Berhubungan dengan Kepatuhan Minum Obat Pasien Diabetes Tipe 2 di Pelayanan Kesehatan Primer. Jurnal Sains Farmasi & Klinis 6, 54. https://doi.org/10.25077/jsfk.6.1.54-62.2019

American Diabetes Association, 2018. 2. Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes-2018. Diabetes Care 41, S13–S27. https://doi.org/10.2337/dc18-S002

Bulu, A., Wahyuni, T.D., Sutriningsih, A., 2019. Hubungan Antara Tingkat Kepatuhan Minum Obat Dengan Kadar Gula Darah Pada Pasien Diabetes Mellitus Tipe II. Nurs News 4, 181–189.

Fithriyah, R dan Nurkiassania S. 2023. Hubungan Pengetahuan Dengan Manajemen Diri Pada Penderita Diabetes Melitus Di Desa Sukaluyu Kabupaten Cianjur. Jurnal Ilmu Kebidanan, Keperawatan Dan Kesehatan Lingkungan (JLK3) 93-104.

Gunawan, S., & R Rahmawati,.(2021). Hubungan Usia, Jenis Kelamin dan Hipertensi dengan Kejadian Diabetes Mellitus Tipe 2 di Puskesmas Tugu Kecamatan Cimanggis Kota Depok Tahun 2019. Arkesmas (Arsip Kesehatan Masyarakat), 6(1), 15–22. https://doi.org/10.22236/arkesmas.v6i1.5829

Hasibuan.(2018) : Pengaruh Pendampingan Konsultasi Gizi terhadap Pengendalian Kadar Gula Darah pada lansia penderita Diabetes Melitus di Puskesmas Padang Bulan Medan

Hidayah, M., Sopiyandi, S., 2019. EFEKTIFITAS PENGGUNAAN MEDIA EDUKASI BUKU SAKU DAN LEAFLET TERHADAP PENGETAHUAN DAN KEPATUHAN DIET PASIEN RAWAT JALAN DIABETES MELITUS TIPE 2 DI PUSKESMAS. Pontianak Nutrition Journal (PNJ) 1, 66. https://doi.org/10.30602/pnj.v1i2.290

Hungu. (2016). Demografi Kesehatan Indonesia. Jakarta: Penerbit Grasindo.

Ilham, F., Rochmah, T.N., 2015. Kepatuhan Pasien Rawat Inap Diet Diabetes Mellitus Berdasarkan Teori Kepatuhan Niven. Jurnal Administrasi Kesehatan Indonesia 3, 60. https://doi.org/10.20473/jaki.v3i1.2015.60-69

Lasut, E. 2017. Analisis Perbedaan Kinerja Pegawai Berdasarkan Gender, Usia Dan Masa Kerja (Studi Pada Dinas Pendidikan Sitaro). J EMBA , Volume Vol 5 No 2, Pp. 2771-80 .

Laumara, Nurhaenah, Syahwal, M., Karya Kesehatan, Stik., Karya Kesehatan Korespodensi, Stik., Laumara, Nurhaena, Kunci, K., 2021. Pengaruh Penyuluhan Kesehatan Terhadap Pengetahuan Dan Kepatuhan Diet Penderita Diabetes Melitus Tipe 2 di Ruang Rawat Inap BLUD Rumah Sakit Konawe. Jurnal Ilmiah Karya Kesehatan 02, 35–41.

Lotfy, M., Adeghate, J., Kalasz, H., Singh, J., Adeghate, E., 2016. Chronic Complications of Diabetes Mellitus: A Mini Review. Curr Diabetes Rev 13, 3–10. https://doi.org/10.2174/1573399812666151016101622

Nazriati, E., Pratiwi, D., Restuastuti, T., 2018. Pengetahuan pasien diabetes melitus tipe 2 dan hubungannya dengan kepatuhan minum obat di Puskesmas Mandau Kabupaten Bengkalis. Majalah Kedokteran Andalas 41, 59. https://doi.org/10.25077/mka.v41.i2.p59-68.2018

Notoatmodjo, S. (2007). Promosi Kesehatan dan Ilmu Perilaku. Jakarta: PT Rineka Cipta.

Rasdianah, N., Martodiharjo, S., Andayani, T.M., Hakim, L., 2016. The Description of Medication Adherence for Patients of Diabetes Mellitus Type 2 in Public Health Center Yogyakarta. Indonesian Journal of Clinical Pharmacy 5, 249–257. https://doi.org/10.15416/ijcp.2016.5.4.249

Riset Kesehatan Dasar (Riskesdas). (2013). Badan Penelitian dan Pengembangan Kesehatan Kementerian RI tahun 2013. Diakses: 19 Oktober 2018, dari http://www.depkes.go.id/resources/download/general/Hasil%20Riskesdas%20 2.

Riset Kesehatan Dasar (Riskesdas). (2018). Badan Penelitian dan Pengembangan Kesehatan Kementerian RI tahun 2018. Diakses: 27 Desember 2018 dari www.depkes.go.id

Romadhon, Et Al. (2020). Indonesian Fundamental. Indonesian Journal Of Fundamental Sciences (Ijfs), 6(1), 16–26.

Rosyida et al. (2015). Kepatuhan Pasien pada Penggunaan Obat Antidiabetes dengan Meode Pill-Count dan MMAS-8 di Puskesmas Kedurus Surabaya. Jurnal Farmasi Komunitas, 2(2), 36–41.

Sampulawa, D. (2019). Hubungan Pengetahuan Pasien Diabetes Melitus Dengan Pelaksanaan Senam kaki Diabetik Di RSUD Labuang Baji Makassar. ISSN 2502-3632 (Online) ISSN 2356-0304 (Paper) Jurnal Online Internasional & Nasional Vol. 7 No.1, Januari – Juni 2019 Universitas 17 Agustus 1945 Jakarta, 53(9), 1689–1699.

Sun, H., Saeedi, P., Karuranga, S., Pinkepank, M., Ogurtsova, K., Duncan, B.B., Stein, C., Basit, A., Chan, J.C.N., Mbanya, J.C., Pavkov, M.E., Ramachandaran, A., Wild, S.H., James, S., Herman, W.H., Zhang, P., Bommer, C., Kuo, S., Boyko, E.J., Magliano, D.J., 2022. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes Res Clin Pract 183, 109119. https://doi.org/10.1016/j.diabres.2021.109119

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