Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

Blood glucose levels in chronic kidney disease patients with diabetes mellitus at the internist poly of RSUD Dr. H Abdul Moeloek Bandar Lampung

Fathia Azzahra Faizar[1], Himmi Marsiati[2], Firman Arifandi[3], Linda Armelia[4]
[1,2,3,4]Program Studi Kedokteran Fakultas Kedokteran, Universitas YARSI, Indonesia

Article Info
Keywords:
Blood Glucose Levels,
Chronic Kidney Disease,
Diabetes Mellitus

ABSTRACT
Background: High blood glucose levels in Diabetes Mellitus patients can harm renal capillaries. Chronic Kidney Disease caused by Diabetes Mellitus begins with microalbuminuria. Chronic Kidney Disease patients with Diabetes Mellitus at RSUD Dr. H. Abdul Moeloek Bandar Lampung from July 202 to December 2022 there were 127 patiens.Purpose: The aim of this study was to determine blood glucose levels ini Chronic Kidney Disease patients suffering from Diabetes Mellitus at RSUD Dr. H. Abdul Moeloek Bandar Lampung.Method : This research is an observational analytical research with a cross-sectional approach. The sample in this study was calculated using the Slovin formula so that the number of samples used was 99. Data analysts used univariate analysis.Result : from the research result, it was found that 127 patients with Chronic Kidney Disease suffered from Diabetes Mellitus. Chronic Kidney Disease with Diabetes Mellitus was most often found in men, 64 patients (50.4%), in the age group, Chronic Kidney Disease with Diabetes Mellitus was most often found in patients aged 51-60 years, 56 patients (44.1%), while the blood glucose levels of patients with Chronic Kidney Disease with Diabetes Mellitus were most often found in patients with blood glucose levels >180 mg/DL, 76 patients (59.8%). Conclussion : The blood glucose level most often found was >180 mg/DL, namely 76 patients were called the hyperglycemia category and the lowest blood glucose level found was <74 mg/DL, namely 2 patinents were calles the hypoglycemia category.

Corresponding Author:
Fathia Azzahra Faizar
Program Studi Kedokteran Fakultas Kedokteran, Universitas YARSI
fathiaazzahraf@gmail.com

INTRODUCTION

Kidney failure is a condition where kidney function decreases irreversibly so that the body is unable to maintain metabolism and fluid and electrolyte balance, resulting in an increase in urea and requiring permanent kidney replacement therapy in the form of dialysis or kidney transplantation [1]

Globally, in 2017 there were 1.2 million people dying from chronic kidney disease worldwide. Between 1990 and 2017, global deaths from chronic kidney failure increased

Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

by 41.5% across all age groups, although standardized deaths did not change significantly. In 2017, 697.5 million cases of all stages of chronic kidney failure were recorded, with a global prevalence of 9.1%. The global prevalence of chronic kidney disease in all age groups has increased by 29.3% since 1990, while the age-standardized prevalence has remained stable. Chronic kidney disease accounted for 35.8 million Disability-Adjusted Life Years (DALYs) in 2017, with diabetic nephropathy accounting for nearly a third of DALYs. Most of the burden of Chronic Kidney Disease is concentrated in the bottom three of the socio-demographic index (SDI). In some regions, especially Oceania, sub-Saharan Africa and Latin America, the burden of chronic kidney disease is much higher than expected based on the rate of development, whereas the disease burden is in western, eastern and central sub-Saharan Africa. Africa, East Asia, South Asia, Central and Eastern Europe, Australia, and Western Europe were lower than expected. Kidney failure accounts for 1.4 million cardiovascular deaths and 25.3 million DALYs. [2]

In Indonesia, 2018 Riskesdas data shows that the prevalence of chronic kidney disease is 3.8% with the lowest prevalence being 1.8% and the highest being 6.4% with one of the main risk factors being Diabetes Mellitus with a prevalence of 8.5%. Diabetes, an endocrine system disorder diagnosed by abnormally high blood sugar, is one of the most common and fastest growing diseases worldwide. It is estimated that 693 million adults will be affected by 2045, representing an annual increase of >50% in 2017. While the precise mechanisms of hyperglycemia-induced vascular damage are complex and not fully understood, it is believed that high intracellular glucose levels increase the production of reactive oxygen species. , which alters several important downstream pathways, including the polyol pathway (formation of glucose into fructose), the formation and activation pathway of glycation products (covalent bonds between sugar and fat), activation of protein kinase C, and the hexosamine pathway. [3]

In people with Diabetes Mellitus, high blood sugar that exceeds normal limits can damage and endanger kidney capillaries. As a result, the nephrons experience a lack of oxygen and clean blood, so that dirty blood in the body cannot be filtered properly. This can disrupt the body's overall metabolism, because fluid and salt accumulate so that the kidneys cannot filter them. [4].

METHODS

The design of this research is observative analytic, namely looking for the relationship between the independent and dependent variables without any intervention, with a cross-sectional data collection approach, namely selecting subjects randomly at a certain time. This research uses the Slovin formula. The data used in this study is secondary data obtained from the medical records of patients with chronic kidney disease with diabetes mellitus in the internal medicine clinic at RSUD Dr. H. Abdul Moeloek Bandar Lampung in 2022.

Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

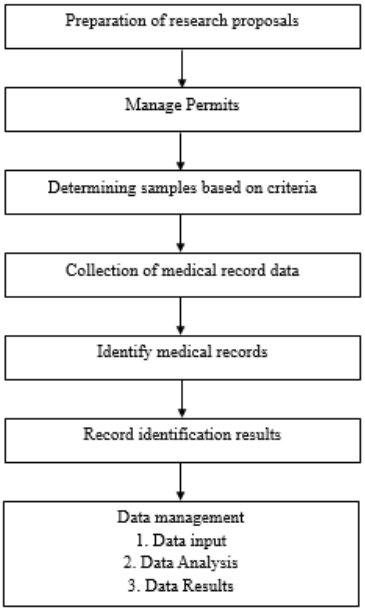

Figure 1. Research Flow

RESULTS AND DISCUSSION

Research Results

The research was carried out at RSUD Dr. H Abdul Moeloek Bandar Lampung in August 2023. The patient data for this study is secondary data, namely in the form of medical records of patients suffering from chronic kidney disease with diabetes mellitus from January 2022 - December 2022. This study aims to determine blood glucose levels in chronic kidney disease patients suffering from diabetes mellitus at the internal medicine clinic at Dr. H Abdul Moeloek Bandar Lampung 2022.

Respondent Characteristics

In this study, the sample characteristics that will be discussed from respondents include gender and age which will be discussed in table 1 for gender and in table 2 for age. The inclusion criteria for this study were patients who sought treatment at the Internal Medicine Clinic in 2022, totaling 127 patients. Meanwhile, the exclusion criteria for this study are patients with medical record data that cannot be examined (damaged) and patients with incomplete medical record data and patients suffering from chronic kidney disease with diabetes mellitus.

Table 1 Frequency distribution of respondents based on gender in patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

Gender	Amount	Presentase (%)
Man	64	50,4 %
Woman	63	49.6 %
Total	127	100 %

Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

Based on the data from table 1, the results showed that the frequency distribution of respondents' characteristics was based on male gender, 64 (50.4%) of the sample and female gender, 63 (49.6%) of the sample.

Table 2 Frequency distribution of respondents based on age in patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

Age	Amount	Presentase
<40 Years	6	4,7 %
41 – 50 Years	27	21,3 %
51 – 60 Years	56	44,1 %
>60 Years	38	29,9 %
Total	127	100%

Based on data from table 4.2, the results obtained from the frequency distribution of respondent characteristics based on age were 6 samples aged >40 years (4.7%), 27 samples aged 41-50 years (21.3%), 56 samples aged 51-60 years (44, 1%), 38 samples aged >60 years (29.9%).

Table 3 Frequency distribution of respondents based on the results of blood glucose levels in patients suffering from chronic kidney disease and diabetes mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

Kadar Glukosa Darah	Keterangan	Jumlah	Presentase
<74 mg/DL	Hipoglikemia	2	1,6 %
74 - 179 mg/DL	Normal	49	38,6 %
>180 mg/DL	Hiperglikemia	76	59,8 %
Total		127	100%

Based on data from table 3, the results obtained from the frequency distribution of respondents' characteristics based on blood glucose levels were 2 samples with information about hypoglycemia blood sugar levels (1.6%), 49 samples with information about normal blood sugar levels (38.6%), 76 samples with information hyperglycemia blood sugar levels (59.8%).

Discussion

Frequency distribution of respondents based on gender in patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

In this study, the inclusion criteria were applied by selecting 127 patients who sought treatment at the Internal Medicine Clinic in 2022, providing clear boundaries for the research subject population. It is important to ensure that the sample used represents the relevant population in the context of this research. In addition, exclusion criteria include patients with medical record data that cannot be examined (damaged) and incomplete medical record data. The results of the frequency distribution of respondent characteristics

Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

based on gender showed that there were 64 male patients (50.4%) and 63 female patients (49.6%) in the sample. This almost even gender distribution indicates that the research sample reflects gender diversity in the patient population seeking treatment at the Internal Medicine Clinic in 2022. This balanced gender composition indicates that Chronic Kidney Disease with Diabetes Mellitus does not have a specific tendency towards one gender, and both sexes have a similar risk of developing the disease. The balance between men and women in the patient group is very important because it ensures that an equal number of each sex is included in the study. This helps make the research results fairer and can be applied to men and women suffering from Chronic Kidney Disease with Diabetes Mellitus. Additionally, this information could be used as a basis for further research that seeks to understand whether the disease affects men and women in different ways or whether the response to treatment differs between the sexes. Thus, the results of this gender distribution provide an important foundation for managing patients with Chronic Kidney Disease and Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung by taking into account gender differences in care and management. However, research results show that men are more likely to suffer from chronic kidney disease and diabetes mellitus, although there is only a slight difference from women.

Frequency distribution of respondents based on age in patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

Results of frequency distribution of respondent characteristics based on age in patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022 provides an important picture of the age of the patient population in the context of the medical conditions they experience. There are four age groups identified in this analysis, namely age less than 40 years, age 41-50 years, age 51-60 years, and age >60 years. The 51-60 year age group tends to be more numerous in this result, namely around 44.1% of the total sample, which indicates that the majority of patients suffering from Chronic Kidney Disease with Diabetes Mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung is in this age group. This fact reflects the relationship that may exist between age and the risk of developing chronic diseases such as diabetes and kidney disease. This age group may be more susceptible to the condition and require more intensive medical attention. Nonetheless, it is important to note that the age group less than 40 years only comprised 4.7% of the total sample, which may not represent this age group well. Therefore, interpretation of data for this age group needs to be done with caution and requires further research with larger samples. Apart from that, the age group 41-50 years (21.3%) and age >60 years (29.9%) also have a significant share in the sample. This information provides valuable insight into the age distribution of patients and can be used as a basis for better and more specific treatment planning according to the needs of diverse age groups in the patient population suffering from Chronic Kidney Disease with Diabetes Mellitus.

Jurnal Info Sains : Informatika dan Sains
Volume 14 , Number 01, 2024, DOI 10.54209/infosains.v14i01
ESSN 2797-7889 (Online)
https://ejournal.seaninstitute.or.id/index.php/InfoSains

Frequency distribution of respondents based on the results of blood glucose levels in patients suffering from chronic kidney disease and diabetes mellitus at RSUD Dr. H Abdul Moeloek Bandar Lampung in 2022

The kidneys are vital organs that have a very important role in maintaining the stability of the body's environment. Its function includes regulating the balance of body fluids, electrolytes and acid base by filtering blood, selectively absorbing water, and excreting excess fluid and metabolic waste such as urea, creatinine and uric acid into the urine. Diabetic nephropathy is a degenerative disorder of the blood vessels in the kidneys which is related to impaired carbohydrate metabolism or sugar intolerance, known as Diabetes Mellitus. Diabetic nephropathy can be defined as a clinical condition in Diabetes Mellitus patients which is characterized by persistent albuminuria, namely the presence of albumin in the urine in amounts higher than normal limits (>300 mg/24 hours or >200 micrograms/minute) in at least two examinations within a period of 3 to 6 months. Diabetes mellitus itself is a group of metabolic diseases characterized by high blood sugar levels (hyperglycemia) which occurs due to impaired insulin secretion, insulin action, or both. Damage to the kidneys in individuals suffering from Diabetes Mellitus begins with the appearance of microalbuminuria, which is defined as the excretion of albumin in the urine of more than 30 mg per day.

Researchers are interested in previous research as an interesting topic to study in more depth. From several examples of previous research that have been mentioned, researchers are trying to conduct new research on similar main topics. The research carried out was entitled "Blood Glucose Levels in Chronic Kidney Disease Patients Suffering from Diabetes Mellitus at the Dr. Hospital's Disease Clinic. H. Abdul Moeloek Bandar Lampung". Researchers intend to dig deeper into blood glucose levels in chronic kidney disease patients suffering from diabetes mellitus. The difference with previous studies is that the research respondents specifically targeted patients suffering from Chronic Kidney Disease with Diabetes Mellitus who received treatment at Dr.H Abdul Moeloek Regional Hospital, Bandar Lampung. Researchers also brought up the latest data, which refers to 2022 data at RSUD Dr. H. Abdul Moeloek Bandar Lampung to look deeper into its relevance to current conditions. Measurement of the glucose levels of each respondent was carried out to determine the distribution based on their blood glucose levels. The research carried out also divided respondents into certain characteristic groups, namely based on gender and age to find phenomena related to blood sugar levels based on different patient characteristics.

CONCLUSION

Based on the research results, the data was concluded as follows: In patients with chronic kidney disease complicated by diabetes mellitus, there were 2 people who had blood glucose levels in the hypoglycemia category. In patients with chronic kidney disease complicated by diabetes mellitus, there were 49 people who had blood glucose levels in the normal category. There were 76 patients with Chronic Kidney Disease complicated by

Diabetes Mellitus who had blood glucose levels in the Hyperglycemia category. The most common age of patients with Chronic Kidney Disease complicated by Diabetes Mellitus is 51-60, namely 56 people. Gender of Chronic Kidney Disease patients complicated by Diabetes Mellitus at RSUD DR. H. Abdul Moeloek Bandar Lampung, namely that there were more male patients, totaling 64 people. One of the ways taught by Rasulullah SAW to maintain health is by maintaining a healthy lifestyle. The Prophet's teachings in maintaining stable blood sugar levels include eating regularly, consuming healthy food, fasting, doing physical activity, getting enough sleep, managing stress, and sharing with others. Apart from that, Islam teaches the attitudes that must be had in dealing with illness, namely by firmly adhering to the Aqidah of Ahlu Sunnah wal Jama'ah, increasing one's sense of trust in Allah SWT, being humble and not arrogant, not panicking and not giving up, and maximizing one's efforts. or business. One form of this effort is through treatment. This treatment itself has several legal opinions from different schools of thought, obligatory, mustahab, permissible/absolutely permissible and especially for those with high tawakkal it is better not to seek treatment, while for those whose tawakkal is weak it is better to seek treatment

REFERENCE

1. Ananto, F. (2020). Perbedaan Kadar Glukosa Darah Pasien Gagal Ginjal Kronik dengan Riwayat Diabetes Mellitus dan Non Diabetes Mellitus Sebelum dan Sesudah Hemodialisa. Skripsi. Prodi Analis Kesehatan Politeknik Kesehatan Kemenkes Surabaya.*
2. Duan, J., Wang, C., Liu, D., Qiao, Y., Pan, S., Jiang, D., ... & Liu, Z. (2019). Prevalence and risk factors of chronic kidney disease and diabetic kidney disease in Chinese rural residents: a cross-sectional survey. Scientific reports, 9(1), 10408.
3. Coll-de-Tuero, G., Mata-Cases, M., Rodriguez-Poncelas, A., Pepió, J. M., Roura, P., Benito, B., ... & Saez, M. (2012). Chronic kidney disease in the type 2 diabetic patients: prevalence and associated variables in a random sample of 2642 patients of a Mediterranean area. BMC nephrology, 13, 1-9.
4. Napitupulu, D. S. (2022). Gambaran Kadar Glukosa Darah Pada Pasien Gagal Ginjal Kronik di Rumah Sakit Elisabeth Medan Tahun 2021. Elisabeth Health Jurnal, 7(1), 97-100. https://doi.org/10.52317/ehj.v7i1.476
5. Elisabet, A. (2013). Perbedaan Kadar Glukosa Darah pada Pasien Gagal Ginjal Kronik Prehemodialisis dan Post-Hemodialisis di RSUD Dr. H. Abdul Moeloek Bandar Lampung Desember 2012. Medical Journal of Lampung University, 2(3).
6. Adhiatma, A. T., Wahab, Z., & Widyantara, I. F. E. (2017). Analisis faktor-faktor yang berhubungan dengan kejadian gagal ginjal kronik pada pasien hemodialisis di RSUD Tugurejo Semarang. Jurnal Kedokteran Muhammadiyah, 5(2).
7. Hasanah, U., Dewi, N. R., Ludiana, L., Pakarti, A. T., & Inayati, A. (2023). Analisis Faktor-Faktor Risiko Terjadinya Penyakit Ginjal Kronik Pada Pasien Hemodialisis. Jurnal Wacana Kesehatan, 8(2), 96-103.

8. Zdrojewski, Ł., Zdrojewski, T., Rutkowski, M., Bandosz, P., Król, E., Wyrzykowski, B., & Rutkowski, B. (2016). Prevalence of chronic kidney disease in a representative sample of the Polish population: results of the NATPOL 2011 survey. Nephrology Dialysis Transplantation, 31(3), 433-439. https://doi.org/10.1093/ndt/gfv369
9. Purwati, S. (2018). Analisa Faktor Risiko Penyebab Kejadian Penyakit Gagal Ginjal Kronik (GGK) Di Ruang Hemodialisa RS Dr. Moewardi. (JKG) Jurnal Keperawatan Global, 3(1).
10. Arisanti, M., Sumarya, & Arsana. (2020). Kadar Gula Darah Sebagai Faktor Risiko Penyakit Ginjal Pada Pasien Diabetes Melitus Tipe 2 di Poli Dalam RSUD Bangli. Widya Biologi, 11 (1), 60 – 67.
11. Fitriyani, R. (2023). Hubungan Antara Diabetes Melitus Tipe 2 dengan Kejadian Penyakit Ginjal Kronik di RSI Sultan Agung (Studi Pada Pasien Penyakit Dalam pada Tahun 2016 – 2020). Skripsi. Universitas Islam Sutan Agung.
12. Berlin, O., Oswari, L., & Susilawati (2019). Comparison of Blood Pressure and Blood Glucose Levels in Chronic Kidney Failure Patients Before and After Hemodialysis Treatment in RSMH Palembang. Majalah Kedokteran Sriwijaya, 51 (2), 86 – 95. [Daring] Diakses pada 8 Oktober 2023 melalui https://ejournal.unsri.ac.id/index.php/mks/article/view/8540/4568
13. Muhani, N & Sari, N. (2020). Analisis Survival pada Penderia Gagal Ginjal Kronik dengan Komorbiditas Diabetes Melitus. Media Kesehatan Masyarakat Indonesia, 16 (2), 216 – 224. [Daring] Diakses pada 8 Oktober 2023 melalui https://repository.unar.ac.id/jspui/bitstream/123456789/3968/1/216-224.pdf
14. Napitupulu, D. (2022). Gambaran Kadar Glukosa Darah Pada Pasien Gagal Ginjal Kronik di Rumah Saki Elisabeth Medan Tahun 2021. Elisabeth Health Journal, 7 (1), 97 – 100.
15. Al Kamaliah, N. I., Cahaya, N., & Rahmah, S. (2021). Gambaran Karakteristik Pasien Gagal Ginjal Kronik Yang Menggunakan Suplemen Kalsium di Poliklinik Sub Spesialis Ginjal Hipertensi Rawat Jalan RSUD Ulin Banjarmasin. Jurnal Pharmascience, 8(1), 111. https://doi.org/10.20527/jps.v8i1.8599
16. Ariyani, H., Hilmawan, R. G., S., B. L., Nurdianti, R., Hidayat, R., & Puspitasari, P. (2019). Gambaran Karakteristik Pasien Gagal Ginjal Kronis Di Unit Hemodialisa Rumah Sakit Umum Dr. Soekardjo Kota Tasikmalaya. Keperawatan & Kebidanan, 3 No 2(November), 1–6.
17. Bikbov, B., Purcell, C. A., Levey, A. S., Smith, M., Abdoli, A., Abebe, M., Adebayo, O. M., Afarideh, M., Agarwal, S. K., Agudelo-Botero, M., Ahmadian, E., Al-Aly, Z., Alipour, V., Almasi-Hashiani, A., Al-Raddadi, R. M., Alvis-Guzman, N., Amini, S., Andrei, T., Andrei, C. L., ... Murray, C. J. L. (2020). Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet, 395(10225), 709–733. https://doi.org/10.1016/S0140-6736(20)30045-3

18. Cahyani, E., Prasetya, D., Abad, F., & Prihatiningsih, D. (2022). GAMBARAN DIAGNOSIS PASIEN PRA-HEMODIALISA DI RSUD WANGAYA TAHUN 2020-2021.
19. de Boer, I. H., Khunti, K., Sadusky, T., Tuttle, K. R., Neumiller, J. J., Rhee, C. M., Rosas, S. E., Rossing, P., & Bakris, G. (2022). Diabetes Management in Chronic Kidney Disease: A Consensus Report by the American Diabetes Association (ADA) and Kidney Disease: Improving Global Outcomes (KDIGO). Diabetes Care, 45(12), 3075–3090. https://doi.org/10.2337/dci22-0027
20. Fitrianasari, D. L., Tyaswati, J. E., Srisurani, I., Astuti, W., Kedokteran, F., Jember, U., Kalimantan, J., 37 Kampus, N., & Jember, T. (2022). Pengaruh Dukungan Keluarga terhadap Tingkat Depresi Pasien Chronic.
21. Harun, L., & Riyadi, M. (2023). Hubungan Penderita Diabetes Militus Terhadap Tingkat Keparahan Gagal Ginjal Kronik Pada Pasien Yang Menjalani Hemodialisis Di Rs Banjarmasin. Journal of Nursing Invention, 3(1), 25–34.
22. Hasanah, A. I., & Fauziah, R. (n.d.). Konsep Makanan Halal Dan Thayyib Dalam Perspektif Al-Qur'an Auliya Izzah Hasanah.
23. Ilmia, A., & Hasan Ridwan, A. (2023). TAFSIR QS. AL-BAQARAH AYAT 168 DAN KORELASINYA DENGAN UNDANG-UNDANG NOMOR 33 TAHUN 2014 TENTANG JAMINAN PRODUK HALAL. In KOMITMEN: Jurnal Ilmiah Manajemen (Vol. 4, Issue 2).
24. Jayanti, K. D., & Fitriyani, N. (2022). Gambaran Karakteristik Pasien Diabetes Melitus di Puskesmas Semen Tahun 2021 Diabetes Mellitus Patients Characteristic at Semen Health Center in 2021. Jurnal Riset Pengembangan Dan Pelayanan Kesehatan, 1(1), 1–8.
25. Kyneissia Gliselda, V. (2021). Diagnosis dan Manajemen Penyakit Ginjal Kronis (PGK). http://jurnalmedikahutama.com
26. Made, G. A., Dewi, L., Nyoman Margiani, N., Made, I., & Ayusta, D. (2019). RERATA UKURAN GINJAL DEWASA NORMAL DENGAN COMPUTED TOMOGRAPHY DI RSUP SANGLAH TAHUN 2017. In MEDIKA UDAYANA (Vol. 8, Issue 11). https://ojs.unud.ac.id
27. Melia-Arisanti, Sumarya, I. M., & Arsana, I. N. (2020). KADAR GULA DARAH SEBAGAI FAKTOR RISIKO PENYAKIT GINJAL PADA PASIEN DIABETES MELITUS TIPE 2 DI POLI DALAM RSUD BANGLI (BLOOD SUGAR LEVEL AS RISK FACTOR FOR KIDNEY DISEASE IN PATIENTS OF DIABETES MELITUS TYPE 2 IN POLY DALAM RSUD BANGLI). 11. https://ejournal.unhi.ac.id/index.php/widyabiologi/article/download/571/445/
28. MohBadrudin, H., & Ag, S. (2019). HUKUM BEROBAT DALAM PANDANGAN ISLAM.
29. Nor, A., 1, F., Dyah, Y., Santik, P., & Artikel, I. (2020). 33 HIGEIA 4 (1) (2020) HIGEIA JOURNAL OF PUBLIC HEALTH RESEARCH AND DEVELOPMENT Kejadian Diabetes Melitus Tipe I pada Usia 10-30 Tahun. https://doi.org/10.15294/higeia/v4i1/31763
30. Puspitasari, R. (2022). Pola Hidup Sehat Menurut Al-Qur'an:(Kajian Maudhu'i Terhadap Ayat-ayat Kesehatan). INOVATIF: Jurnal Penelitian Pendidikan, Agama, Dan Kebudayaan, 8(1), 133–163. https://doi.org/10.55148/inovatif.v8i1.268

31. Rahayu, M. (2019). POLA MAKAN MENURUT HADIS NABI SAW (SUATU KAJIAN TAHLILI). In Jurnal Diskursus Islam (Vol. 7, Issue 2).
32. Rivandi, J., & Yonata, A. (2022). Hubungan Diabetes Melitus Dengan Kejadian Gagal Ginjal Kronik. Jurnal Majority, 4(9), 27–34.
33. Tandipanyuk, G. (2021). Hubungan antara Diabetes Mellitus dengan Gagal Ginjal Kronik pada Pasien yang dirawat di RS Wahidin Sudirohusudo Periode I Januari - 30 Juni 2012. April, 1–43.
34. Yono, Y. (2020). Sikap Manusia Beriman Menghadapi Covid 19. Mizan: Journal of Islamic Law, 4(1). https://doi.org/10.32507/mizan.v4i1.616.