AFRICAN JOURNAL OF NUTRITION AND DIETETICS

https://doi.org/10.58460/ajnd.v4i01.125

Open Access

RESEARCH ARTICLE

MJM BIOLABS

Facilitators and Barriers of Adherence to Nutrition Counseling Sessions of Patients with Type 2 Diabetes at Nakuru County Referral and Teaching Hospital

Josephine Alungata[1*], Peter Chege[2], Moses Mokaya[1]

Authors' Affiliation

[1] Department of Nutrition and Dietetics, School of Medicine and Health Sciences, Kabarak University

[2] Department of Food, Nutrition and Dietetics, School of Health Sciences, Kenyatta University

*Corresponding Author: jossyalungata@gmail.com

Article History

Submitted: 05th December 2024

Accepted: 21st May 2025

Published Online: 9th August 2025

To read this paper online, please scan the QR code below:

ABSTRACT

The prevalence of diabetes is rapidly increasing, making it a major global health concern. Nutrition counseling sessions are essential for promoting healthy eating habits and dietary choices among patients with type 2 diabetes. However, adherence to these sessions remains low in Kenya. This study examined facilitators and barriers to nutrition counseling session adherence among patients with type 2 diabetes at Nakuru County Referral and Teaching Hospital. A mixed-method explanatory sequential design involved 396 patients and 4 healthcare providers. Participants were selected through probability and purposive sampling. Data collection combined cross-sectional and phenomenological approaches using questionnaires, in-depth interviews, and key informant interviews. Quantitative data were analyzed using SPSS (Version 26) for descriptive statistics, chi-square tests, and logistic regression, while qualitative data were analyzed through inductive thematic analysis. A total of 392 patients aged 51–70 years participated in the quantitative phase, and 40 patients in the qualitative in-depth interviews. Adherence to nutrition counseling sessions, defined by attending more than three sessions per year, was low, with 45.2% not attending any session in the past six months and 32.7% attending only once. Sociodemographic factors showed no significant associations with session adherence ($p > 0.05$), while health-related factors such as diabetic complications ($p = 0.036$) and regular clinic attendance ($p = 0.001$) were significant predictors. Key facilitators included positive perceptions of sessions, supportive healthcare providers, and family support, while barriers were financial constraints, comprehension issues, and logistical challenges. Health-related factors and regular clinic attendance significantly predict nutrition counseling session adherence, suggesting areas for intervention.

Keywords: Barriers, facilitators, nutrition counseling sessions, adherence, type 2 diabetes

How to Cite this paper: Alungata, J., Chege, P., & Mokaya, M. (2025). Facilitators And Barriers to Nutrition Counseling Adherence Among Patients with Type 2 Diabetes, At Nakuru County Referral and Teaching Hospital. African Journal of Nutrition and Dietetics, 4(01). https://doi.org/10.58460/ajnd.v4i01.125

INTRODUCTION

Type 2 diabetes is caused by the body's inability to properly utilize insulin, leading to a chronic health condition that affects individuals over a prolonged period (WHO, 2022). Over time, uncontrolled diabetes damages nerves and blood vessels, increasing the risk of severe complications, disability, and life-threatening outcomes (Olwendo et al., 2020). The expenses related to diabetes healthcare have already reached almost one trillion dollars and are projected to surpass this amount by the year 2030 (IDF et al., 2022). Ninety percent of all diabetes cases are attributed to type 2 diabetes (IDF et al., 2022).

Diabetes is a rapidly growing global health concern of the 21st century (IDF et al., 2022). In 2021, an estimated 537 million people aged 20–79 years had diabetes, with projections rising to 643 million by 2030 and 783 million by 2045 (IDF et al., 2022). Africa is expected to experience the highest increase among IDF regions, with cases projected to reach 55 million by 2045, a 129% rise (IDF et al., 2022). In sub-Saharan Africa, diabetes poses a major health system challenge (IDF et al., 2022). In Kenya, the current prevalence is estimated at 3.3% and is expected to rise to 4.5% by 2025 (Katambo, 2023), with Nakuru County reporting a prevalence of 6.6% (Kones et al., 2016).

Type 2 diabetes is the fourth leading cause of non-communicable disease-related deaths globally (Mohamed et al., 2018). In 2021, diabetes and its complications were responsible for the deaths of around 6.7 million adults globally, making it a significant cause of mortality (IDF et al., 2022). In 2021, diabetes caused 416,000 deaths in Africa (IDF et al., 2022). The number of deaths caused by Diabetes in Kenya was 15,285 in 2021 (IDF et al., 2022).

The rise in urbanization has led to changes in diet and lifestyle, contributing to the rising prevalence of diabetes (Olwendo et al., 2020). As societies become wealthier and more urbanized, diets shift from traditional to westernized, with higher fats, sugars, processed foods, and lower fiber, alongside more sedentary behaviors (Breewood, 2018). This shift, known as the "nutrition transition," is driving diabetes, particularly in low- and middle-income countries, through poor diets, physical inactivity, and obesity (Breewood, 2018; Hawkes et al, 2017). The transition also impacts environmental sustainability, highlighting the need for personalized nutrition counseling sessions for individuals with diabetes (Breewood, 2018; Hawkes et al, 2017).

Nutrition counseling plays a crucial role in managing diabetes. People with diabetes should engage in education, self-care, and treatment planning with healthcare providers, including developing a personalized diet plan (American Diabetes Association, 2022; Funnell et al., 2011). As part of broader nutrition interventions, nutrition counseling session is a key component of the nutrition care process (American Diabetes Association, 2022). Prioritizing diet management is essential for controlling blood glucose levels and reducing the risk of complications in type 2 diabetes (Musee et al., 2016).

The American Diabetes Association recommends three to four nutrition counseling sessions per year with a registered healthcare provider, beginning at diagnosis of type 2 diabetes or first referral, completed within three to six months, and at least one follow-up session every six to twelve months (American Diabetes Association, 2023; Evert et al., 2014). As part of the nutrition counseling sessions, patients are counseled to modify diets to suit their needs, preferences, socioeconomic status, demographics, cultural practices, and motivation to change dietary and lifestyle habits. (Musee et al., 2016; American Diabetes Association, 2016).

Providing timely and appropriate care for individuals with diabetes helps reduce the burden on healthcare systems and affected individuals (IDF et al., 2022). However, adherence to nutrition counseling sessions remains a challenge, particularly in developing countries (Jepkemoi et al., 2021). In Kenya, factors contributing to non-adherence to nutrition counseling sessions for Type 2 Diabetes patients include high healthcare costs, limited understanding of the illness, lack of family support for self-care, complicated medication regimens, and conflicting advice from healthcare providers (Musee et al., 2016; Ngari et al., 2020).

As shown, there is substantial evidence on the value of nutritional counseling for diabetes. However, most studies focus on the effectiveness of counseling rather than the relationship between healthcare providers and patients over time. Effective patient-provider interactions are crucial for the success of medical and nutritional care (Nagy et al., 2022). In Kenya, research remains limited on the factors influencing adherence to diabetes management, particularly regarding participation in nutrition counseling sessions among individuals with type 2 diabetes (Waari et al., 2018). This study examined facilitators and barriers to adherence to nutrition counseling sessions among patients with type 2 diabetes at Nakuru County Referral and Teaching Hospital.

METHODS

Study Design

This study employed a mixed-methods approach, utilizing an explanatory sequential design to examine adherence to nutrition counseling sessions among patients with type 2 diabetes. The approach began with quantitative data collection and analysis, followed by qualitative inquiry through in-depth interviews, to offer deeper insights into the findings (Creswell et al, 2019) and allow for the

integration of statistical trends, individual experiences, and perceptions.

Study Location

The research was conducted at Nakuru County Referral and Teaching Hospital, a level 5 hospital (Muga et al., 2005)in Nakuru, Kenya. The hospital provides specialized diabetes care and nutrition counseling, serving a diverse patient population. The site was purposively selected given that it is the hospital with the highest outpatient volume in the region (Kenya Bureau of Statistics, 2022).

Study Population

The study population consisted of adult patients aged 51-70 who were diagnosed with type 2 diabetes and received care at the hospital's diabetic outpatient clinic. To capture professional perspectives, healthcare providers, including a nurse, clinical officer, physician, and nutritionist who were actively involved in diabetes management and delivered nutrition counseling, were also included.

Patients were eligible if they had received at least one nutrition counseling session within the last six months, while healthcare providers were eligible if they had worked at the facility for at least six months and were directly involved in diabetes care. Patients were excluded if they were pregnant, critically ill, unable to comprehend the questions, or declined to participate. Providers with less than six months of experience or no involvement in nutrition counseling sessions were excluded.

Sampling Size Determination

The sample size for the quantitative phase was calculated using Cochran's formula (Cochran, 1977 as cited by Uakarn et al., 2021), assuming a 95% confidence interval, a 5% margin of error, and a 50% expected proportion. From a target population of 5,498 patients with type 2 diabetes, the required sample size was 360, adjusted for the finite population correction. An additional 10% was added to account for non-response, resulting in a final sample size of 396 patients.

For the qualitative phase, 40 patients out of the total sample size of 396 were selected using extreme case sampling, specifically those who had attended one to three nutrition counseling sessions in the past six months. Additionally, four key informant interviews (KIIs) were conducted with a nurse, two clinical officers, and a nutritionist, selected through maximum variation purposive sampling to capture diverse professional experiences.

Data Collection Tools

Quantitative data were collected using structured questionnaires, while qualitative data were gathered through in-depth interview guides and semi-structured key informant interview guides. Validity was ensured through expert review by a panel of seven professionals in human nutrition and dietetics from academia, public health, and private institutions.

Data Collection Procedures

Systematic sampling was used for the quantitative phase. Starting with a randomly selected patient, every 14th patient visiting the diabetic outpatient clinic was selected based on a calculated sampling interval (K = 5498/396). Data collection took place for three months, between May 2024 and July 2024, with two trained research assistants. Pre-testing of the instruments was conducted with 10% of the sample size at Naivasha Sub-County Hospital, allowing for adjustments to improve clarity, structure, and time efficiency.

Data Analysis

Quantitative data were analyzed using SPSS version 26. Descriptive statistics (frequencies and percentages) summarized sociodemographic and health-related variables. Chi-square tests examined associations, while logistic regression was employed to identify predictors of adherence to nutrition counseling sessions.

Qualitative data were analyzed using thematic inductive analysis using NVivo 12 and following Braun and Clarke's six-step approach: familiarization, coding, theme generation, review, definition, and final analysis (Braun & Clarke, 2006). Interview data were transcribed verbatim, coded, and analyzed to identify key themes related to adherence, patient-provider relationships, and contextual factors.

Ethical Considerations

The study obtained ethical approval from the Kabarak University Scientific and Ethics Review Committee (Ref: KABU01/KUREC/001/111/03/24), the National Commission for Science, Technology and Innovation (NACOSTI) (License: NACOSTI/P/24/34598), the Ministry of Health in Nakuru County (Ref: NCG/CDAP/RES/2024/1002), and Nakuru County Referral and Teaching Hospital management (Ref: NCRTH/R&EC/VOL 1/2023).

Written informed consent was obtained from all participants, ensuring that participation was voluntary. The study upheld confidentiality and anonymity throughout the research process.

RESULTS

Sociodemographic Characteristics of Respondents

The study sample comprised predominantly female participants (62%), with the highest proportion (56.8%) aged between 51 and 70. A majority identified as Protestant (74.4%), and 43.5% had attained primary-level education. More than three-quarters of the respondents

were married (76.6%), and nearly a third were self-employed (53%) (Table 1).

Table 1:
Sociodemographic Characteristics of Respondents

Respondents' characteristics	Classification	Frequency (n)	Percentage (%)
Gender	Male	149	38.0
	Female	243	62.0
Age (Age group)	21-30 years	2	0.5
	31-40 years	26	6.6
	41-50 years	55	14.0
	51-60 years	110	27.9
	61-70 years	114	28.9
	71-80 years	75	19.0
	81-90 years	11	2.8
	91-100 years	1	0.3
Religion	Catholic	81	20.6
	Protestant	293	74.4
	Islam	7	1.8
	None	13	3.3
Level of education	None	53	13.5
	Primary	171	43.5
	Secondary	123	31.3
	College	33	8.4
	University	13	3.3
Occupation	Not currently employed	143	36.1
	Employed	13	3.3
	Business	118	29.8
	Professional	28	7.1
	Farmer	92	23.2
Marital status	Single	37	9.4
	Married	301	76.6
	Divorced	4	1.0
	Widowed	51	13.0

Health Status and Diabetes-Related Characteristics

Regarding health status, 88.1% had lived with diabetes for over a year, while 59.6% reported having diabetes-related complications. A majority of the respondents (74.7%) attended diabetic clinics regularly, while only 23.0% reported attending frequent nutrition counseling sessions, and 45.2% had not received any nutrition counseling sessions in the past six months. Most of the nutrition counseling sessions were offered by nutritionists (84.4%). Additionally, 39.8% received supplementary information from sources such as media or support groups (Table 2).

Table 2:

Health Status and Diabetes-Related Characteristics of Respondents

Health-related questions	Classification	Frequency (n)	Percentage (%)
Duration since diagnosis with type 2 diabetes	Less than six months	26	6.6
	Less than one year	12	3.0
	One year ago	9	2.3
	More than one year ago	348	88.1
Presence of complications since the diagnosis of type 2 diabetes	Yes	236	59.6
	No	160	40.4
Diabetic clinic session attendance in the last six months	Once	29	7.4
	Twice	40	10.2
	Three times	30	28.9
	More than three times	292	74.7
Received nutrition counseling	Yes	371	94.2
	No	23	5.8
Number of nutrition counseling sessions attended since diagnosis	None	27	6.9
	Once	111	28.2
	Twice	70	17.8
	Three times	39	9.9
	More than three times	146	37.2
Number of nutrition counseling sessions attended in the last six months	None	177	45.2
	Once	128	32.7
	Twice	35	8.9
	Three times	23	5.9
	More than three times	29	7.4
Receive nutrition counseling often	Yes	90	23.0
	No	302	77.0
Duration of nutrition counseling session	Less than 45 minutes	281	74.7
	45 minutes	14	3.7
	More than 45 minutes	81	21.5

Adherence to Nutrition Counseling Sessions

Adherence to nutrition counseling sessions was defined as attending at least three sessions in the past six months. The study found that adherence to nutrition counseling sessions was low, where 45.2% of respondents had not attended any nutrition counseling sessions in the past six months, while 32.7% had attended only once. The study further found that a small proportion of patients attended the recommended sessions. Specifically, only 5.9% attended three sessions, 7.4% attended more than three times, and 8.9% attended twice (Table 3).

Table 3:
Number of Nutrition Counseling Sessions Attended in The Last Six Months

Number of counseling sessions (6 months)	Frequency (n)	Percentage (%)
None	177	45.2
Once	128	32.7
Twice	35	8.9
Three times	23	5.9
More than three times	29	7.4

The Content Validity Index (CVI) was calculated, with a CVI above 0.78 indicating acceptable validity. Reliability was assessed through internal consistency using Cronbach's Alpha, yielding a coefficient of 0.874, which indicated strong reliability.

The Chi-Square Test showed no significant associations between adherence to nutrition counseling sessions and sociodemographic characteristics ($p > 0.05$) (Table 4).

Table 4:
Associations of Sociodemographic Characteristics and Adherence to Nutrition Counseling Sessions

Sociodemographic characteristics	Pearson Chi-Square	p-value
Gender	5.180	.269
Age (Age group)	10.407	.845
Religion	6.934	.540
Level of education	19.060	.266
Occupation	10.407	.845
Marital Status	5.676	.922

Given that there was no significant association between adherence to nutrition counseling sessions and sociodemographic characteristics, logistic regression analysis was unnecessary. However, binary logistic regression analysis was conducted to assess how health-related characteristics influence adherence to nutrition counseling sessions (Table 5).

In summary, the duration of diabetes diagnosis showed a strong positive association with adherence [B = 1.190), ($p < 0.001$)], indicating that individuals diagnosed for longer periods are more likely to follow nutrition counseling session recommendations. Similarly, the presence of diabetes-related complications was a significant factor [(B = 0.851), ($p = 0.036$)], suggesting that patients experiencing complications may be more motivated to adhere to nutrition counseling sessions.

However, diabetic clinic attendance had a significant negative impact [B = -1.154), ($p = 0.001$)], implying that frequent clinic visits might lead to reduced adherence to nutrition counseling sessions, possibly due to conflicting advice or patient fatigue. Additionally, the duration of nutrition counseling sessions also

showed a significant negative effect (B = -0.734) (p = 0.001), suggesting that longer sessions may be overwhelming rather than beneficial for adherence.

The role of the healthcare provider in influencing adherence was not statistically significant [B = 0.958), (p = 0.497), indicating that provider-specific factors may have a limited impact on adherence to nutrition counseling sessions. Moreover, other sources of information showed a non-significant negative relationship [B = -1.083), (p = 0.113)], suggesting a slight reduction in adherence, though not at a statistically meaningful level.

Table 5:

Health-Related Characteristics Significance on Adherence to Nutrition Counseling Sessions

Variable	B	S.E	Wald	df	Sig.
Duration of diagnosis	1.190	0.290	16.822	1	0.001
Presence of Complications (Yes)	0.851	0.405	4.420	1	0.036
Diabetic Clinic Attendance	-1.154	0.358	10.381	1	0.001
Duration of nutrition counseling sessions	-0.734	0.217	11.387	1	0.001
Healthcare provider	0.958	1.410	0.462	1	0.497
Other sources of information	-1.083	0.684	2.512	1	0.113

Facilitators of Adherence to Nutrition Counseling Sessions

Patient-related factors such as positive perceptions of nutrition counseling sessions, motivation for health improvement, and observed health benefits were strong facilitators. Many patients described tangible improvements from adhering to dietary recommendations, as reported by one respondent: "*When I follow, it's good. I even feel like my body is improving. I have more energy since I started following.*" Another driver of adherence to nutrition counseling sessions was the desire to reduce medication dependency: "*I want to reduce the amount of medication I have to take, so I try to follow the diet they give me.*" (Respondent 2)

Family support played a critical role, with several participants reporting active involvement from relatives in meal planning and hospital visits. For instance, one patient shared this,
"*My wife comes with me to the sessions, and she helps me with meal preparation according to the advice we receive.*" (Respondent 3)

Patients also benefited from peer support through diabetes groups, which served as alternative sources of guidance. As one participant stated,
"*I attend a diabetes support group monthly where I get a lot of useful nutrition advice.*" (Respondent 4)

Provider-related factors, such as adequate counseling time and practical, easy-to-follow advice, were positively received. A participant affirmed,
"*The time they give us during the counseling sessions is enough; I don't feel rushed.*" (Respondent 5)

A strong patient-provider relationship further supported adherence to nutrition counseling sessions. Most participants described their providers as approachable and respectful:
"*The doctors listen to me and understand my concerns. That makes me more willing to attend nutrition counseling sessions and follow their advice.*" (Respondent 6)

Continuity of care was also valued, a patient shared.
"*If I come and do not find the doctor I like, I leave and wait for the one who is concerned and caring enough to follow up and find out my progress.*" (Respondent 7)

Barriers to Adherence to Nutrition Counseling Sessions

Despite the positive outlook, several barriers impeded adherence to nutrition counseling sessions. Financial constraints were a major challenge, particularly regarding the affordability of recommended foods. One patient commented,
"*The food they tell us to eat is expensive, and sometimes I can't afford it."* (Respondent 8)

Another added,
"*Buying food such as arrowroots is expensive when I would rather buy bread, which is cheaper and enough for the whole family.*" (Respondent 9)

Some patients struggled with understanding nutritional advice, finding the information overwhelming or overly technical. As one put it, (Respondent 10)
"*I often find it hard to understand some dietary terms and recommendations. I nod and leave without fully grasping what I must do.*"

Environmental and logistical challenges, such as limited access to specific foods, inadequate storage facilities, and work-related fatigue, also hindered adherence to nutrition counseling sessions. A participant noted,
"*To get millet, you cannot get it from Nakuru; you have to get it from far, like Busia.*" (Respondent 11)

Insurance-related issues, especially with NHIF, surfaced as significant barriers. Patients cited limited coverage and long administrative delays:
"*The queues at the NHIF station are always so long. I am too tired to wait for my nutrition counseling session by the time I finish.*" (Respondent 12)

Some participants reported negative provider interactions that affected trust and engagement. One shared,
"*You know, there are others when you go; they are very rough.*" (Respondent 13)

Additionally, patients voiced frustration over a lack of provider sensitivity to economic realities:
"*Sometimes I wish they understood how hard it is to get the food they recommend. They should ask us more about what we can get.*" (Respondent 14)

The findings reveal a multifaceted landscape of adherence to nutrition counseling sessions. Positive perceptions, family and peer support, and strong patient-provider relationships promote adherence to nutrition couseling sessions. However, financial hardship, comprehension difficulties, systemic inefficiencies, and communication gaps pose significant barriers.

DISCUSSION

This study examined facilitators and barriers to adherence to nutrition counseling session among patients with type 2 diabetes at Nakuru County Referral and Teaching Hospital. Key facilitators included positive perceptions of nutrition counseling sessions, family support, peer support, and a strong patient-provider relationship. Barriers included financial constraints, logistical challenges, lack of health literacy, and inconsistent provider-patient interactions.

However, no association was found between sociodemographic factors and adherence, contrasting with earlier studies that identified age and gender as predictors (Coughlin et al., 2020; Guo et al., 2023). Our findings suggest that health-related factors, like disease duration and complications, may be stronger predictors of adherence, aligning with studies in sub-Saharan Africa (de Terline et al., 2019; Heestermans et al., 2016). These findings highlight the importance of tailoring interventions to individual health needs rather than relying on demographic characteristics alone.

Health Status and Diabetes-Related Factors

The study found that disease duration, complications, and clinic visit frequency were significant predictors of adherence. Patients with longer disease duration or complications showed higher adherence, possibly due to increased awareness of the importance of nutrition in managing advanced disease stages (Oluma et al., 2020). However, only 23% of participants attended regular nutrition counseling sessions, indicating a gap between clinical care and dietary guidance. Short counseling sessions (often under 45 minutes) were insufficient, and longer sessions (30-60 minutes) have been suggested for better adherence (Frates & Bonnet, 2017; Mottern et al., 2022).

Reliance on informal nutritional advice indicates a gap in professional guidance. Offering accurate professional advice can improve adherence (Adu et al., 2019).

Adherence to Nutrition Counseling Sessions

The study revealed low adherence rates, with 45.2% of participants not attending any sessions in six months and only a small proportion meeting the recommended three or more sessions. This is consistent with other Sub-Saharan studies, which cite economic constraints, lack of awareness, and low motivation as barriers (Iwelomen et al., 2024; Baral et al., 2022). Strategies such as flexible scheduling, patient reminders, and integrating nutrition counseling sessions into routine care could improve adherence (Tate, 2022).

Facilitators of Adherence to Nutrition Counseling Sessions

Intrinsic motivation, driven by an understanding of the benefits of nutrition counseling sessions, significantly boosted adherence, as patients who recognized its positive impact on health were more likely to engage (Vrkatić et al., 2022). Family and friend support also played a vital role, with patients who had strong support networks adhering better to dietary advice, highlighting the potential of family-inclusive nutrition counseling session approaches (Gilliss et al., 2019).

Patients with complications adhered more to nutrition counseling sessions, possibly as a short-term response to deteriorating health. Encouraging patients to adopt dietary changes early by highlighting the preventive benefits can boost proactive engagement. By leveraging the Health Belief Model's concepts like perceived susceptibility and severity, patients are motivated to take early action, improving self-efficacy and supporting long-term adherence for better disease management and prevention (Champion et al., 2008; Alqahtani, 2015).

Respectful and empathetic communication from healthcare providers was associated with higher adherence, as clear and supportive guidance fostered trust and engagement (Heisler et al., 2002). Positive patient-provider relationships, characterized by trust, consistency, and respectful communication, were crucial for adherence, with patients who felt valued and respected adhering more consistently (Birkhäuer et al., 2017). Continuity in care, where patients saw the same healthcare provider regularly, strengthened trust and improved adherence (Kwame et al., 2021). Additionally, constructive conflict resolution helped maintain a positive relationship between patients and providers, facilitating adherence even during disagreements (Ronquillo et al., 2023).

Barriers to Adherence to Nutrition Counseling Sessions

Several barriers hindered patients' adherence to nutrition counseling sessions. Financial constraints were a major challenge, as many patients could not afford the recommended foods or cover transportation costs to attend sessions. This was especially difficult for low-income individuals, a finding supported by previous studies that identified financial hardship as a major obstacle to healthcare access and dietary compliance (Omotosho et al., 2024; Pourhabibi et al., 2022). Logistical challenges, including long travel distances, inflexible clinic schedules, and competing work or family obligations, further limited attendance at nutrition counseling sessions (Pourhabibi et al., 2022).

Limited health literacy, particularly among those with lower levels of education, also hindered understanding and implementation of dietary guidance, echoing research showing that low health literacy is linked to poor adherence (Ahmed et al., 2023). Patients often encountered cultural mismatches between prescribed diets and their traditional food practices, making it harder to follow recommendations unless the nutrition counseling session was culturally sensitive (Goyan et al., 2015). Another critical barrier was ineffective communication from healthcare providers, including the use of overly technical language and inadequate explanations, which left patients confused and less likely to adhere (Heisler et al., 2002).

Furthermore, inefficiencies within the health insurance system, particularly the National Hospital Insurance Fund stations (now the Social Health Insurance Fund- SHIF), such as long wait times, unclear procedures, and administrative hurdles, discouraged patients from attending sessions and contributed to disengagement (Allen et al., 2017; Bourgeois et al., 2024). Negative patient-provider interactions, including inconsistent contact with the same provider and a lack of trust due to poor communication, weakened motivation, and reduced adherence (Panahi et al., 2022). Finally, conflicts during nutrition counseling sessions, especially when providers failed to manage disagreements respectfully or clearly, led to patient frustration and lower follow-through on recommendations (Ronquillo et al., 2023).

Conclusion

Health-related factors and regular clinic attendance are significant predictors of adherence to nutrition counseling sessions. The leading facilitators for adherence to nutrition counseling sessions are supportive healthcare providers and family support, while financial status and comprehension are leading barriers.

Recommendations

To strengthen the delivery of nutrition counseling sessions and improve patient outcomes, policymakers should prioritize subsidized nutrition counseling sessions and diabetes management services to make them more accessible and affordable. Healthcare facilities should integrate nutrition counseling sessions as a mandatory part of every clinic visit, ensuring they are regular, sufficiently long, and culturally tailored. Follow-up strategies, such as SMS reminders or phone calls, should be used to support attendance and reinforce key messages from the sessions. Training programs for healthcare providers should emphasize communication skills, conflict management, and culturally sensitive approaches during nutrition counseling sessions. Future research should adopt longitudinal study designs and include diverse healthcare settings to enhance the generalizability of findings.

Acknowledgements

I extend my sincere gratitude to the Nakuru County Department of Health Services, Dr. Osoro of Naivasha Sub-County Hospital, the diabetes clinic staff at Nakuru County Referral and Teaching Hospital, the patients with type 2 diabetes, my data collection assistants, and my parents, Mr. and Mrs. Elungata, for their unwavering support throughout this study.

Conflict of Interest

The authors declare no conflicts of interest.

REFERENCES

Adu, M. D., Malabu, U. H., Malau-Aduli, A. E. O., & Malau-Aduli, B. S. (2019). Enablers and barriers to effective diabetes self-management: A multi-national investigation. PLoS ONE, 14(6). https://doi.org/10.1371/journal.pone.0217771

Ahmed, S., Kehyayan, V., Abdou, M., & Bougmiza, I. (2023). Prevalence and determinants of health literacy among the adult population of Qatar. Frontiers in Public Health, 11. https://doi.org/10.3389/fpubh.2023.1278614

Allen, E. M., Call, K. T., Beebe, T. J., McAlpine, D. D., & Johnson, P. J. (2017). Barriers to Care and Health Care Utilization among the Publicly Insured. Medical Care, 55(3), 207–214. https://doi.org/10.1097/MLR.0000000000000644

American Diabetes Association. (2022). Standards of Medical Care in Diabetes—2022 Abridged for Primary Care Providers. Clinical Diabetes, 40(1), 10–38. https://doi.org/10.2337/CD22-AS01

American Diabetes Association. Standards of Care in Diabetes—2023 Abridged for P, rimary Care Providers. (2023). Clinical Diabetes, 41(1), 4–31. https://doi.org/10.2337/CD23-AS01/148029/STANDARDS-OF-CARE-IN-DIABETES-2023-ABRIDGED-FOR

Birkhäuer, J., Gaab, J., Kossowsky, J., Hasler, S., Krummenacher, P., Werner, C., & Gerger, H. (2017). Trust in the health care professional and health outcome: A meta-analysis. PLoS ONE, 12(2). https://doi.org/10.1371/journal.pone.0170988

Bourgeois, A., Horrill, T., Mollison, A., Stringer, E., Lambert, L. K., & Stajduhar, K. (2024). Barriers to cancer treatment for people experiencing socioeconomic disadvantage in high-income countries: a scoping review. BMC Health Services Research, 24(1). https://doi.org/10.1186/s12913-024-11129-2

Breewood, H. (2018). What is the nutrition transition? https://doi.org/10.56661/39A7336F

Champion, V.L. and Skinner, C.S. (2008) The Health Belief Model. In Glanz, K., Rimer, B.K. and Viswanath, K. Eds., Health behavior and health education Theory, research, and practice. 4th Edition, Jossey-Bass, San Francisco, 189-193. - References - Scientific Research Publishing. (n.d.). Retrieved April 28, 2025, from https://www.scirp.org/reference/referencespapers?referenceid=453583

Chepkoech Kones, J. (2016). Foot self-care behavior among type 2 diabetes mellitus patients in Nakuru, Kenya.

Coughlin, S. S., Vernon, M., Hatzigeorgiou, C., & George, V. (2020). Health Literacy, Social Determinants of Health, and Disease Prevention and Control.

De Terline, D. M., Kane, A., Kramoh, K. E., Toure, I. A., Mipinda, J. B., Diop, I. B., Nhavoto, C., Balde, D. M., Ferreira, B., Houenassi, M. D., Ikama, M. S., Kingue, S., Kouam, C. K., Takombe, J. L., Limbole, E., Kuate, L. M., N'guetta, R., Damorou, J. M., Sesso, Z., … Antignac, M. (2019). Factors associated with poor adherence to medication among hypertensive patients in twelve low and middle income Sub-Saharan countries. PLoS ONE, 14(7). https://doi.org/10.1371/journal.pone.0219266

Diabetes. (n.d.). Retrieved October 10, 2022, from https://www.who.int/news-room/fact-sheets/detail/diabetes

Evert, A. B., Boucher, J. L., Cypress, M., Dunbar, S. A., Franz, M. J., Mayer-Davis, E. J., Neumiller, J. J., Nwankwo, R., Verdi, C. L., Urbanski, P., & Yancy, W. S. (2014). Nutrition therapy recommendations for the management of adults with diabetes. In Diabetes Care (Vol. 37, Issue SUPPL.1). American Diabetes Association Inc. https://doi.org/10.2337/dc14-S120

Frates, E. P., & Bonnet, J. (2017). Behavior Change and Nutrition Counseling. Nutrition in Lifestyle Medicine, 51–84. https://doi.org/10.1007/978-3-319-43027-0_3

Gilliss, C. L., Pan, W., & Davis, L. L. (2019). Family Involvement in Adult Chronic Disease Care: Reviewing the Systematic Reviews. Journal of Family Nursing, 25(1), 3–27. https://doi.org/10.1177/1074840718822365

Goyan et al. (2015). Diet Counseling in a Multicultural Society.

Guo, A., Jin, H., Mao, J., Zhu, W., Zhou, Y., Ge, X., & Yu, D. (2023). Impact of health literacy and social support on medication adherence in patients with hypertension: a cross-sectional community-based study. BMC Cardiovascular Disorders, 23(1). https://doi.org/10.1186/s12872-023-03117-x

Hawkes Harris, J., Gillespie, S., C. (2017). Title: Urbanization and the Nutrition Transition. 4, 34–41. https://doi.org/10.2499/9780896292529_04

Heestermans, T., Browne, J. L., Aitken, S. C., Vervoort, S. C., & Klipstein-Grobusch, K. (2016). Determinants of adherence to antiretroviral therapy among HIV-positive adults in sub-Saharan Africa: a systematic review. https://doi.org/10.1136/bmjgh-2016

Heisler, M., Bouknight, R. R., Hayward, R. A., Smith, D. M., & Kerr, E. A. (2002). The Relative Importance of Physician Communication, Participatory Decision Making, and Patient Understanding in Diabetes Self-management.

IDF Diabetes Atlas 2022 Reports | IDF Diabetes Atlas. (n.d.). Retrieved April 25, 2023, from https://diabetesatlas.org/2022-reports/

Iwelomen, O., Toniolo, J., Preux, P. M., & Beloni, P. (2024). Therapeutic patient education programs on diabetes in sub-Saharan Africa: A systematic review. PLoS ONE, 19(6 June). https://doi.org/10.1371/journal.pone.0299526

Jepkemoi, G., Gichunge, C., & Masibo, P. (2021). Determinants of Adherence to Dietary Guidelines among Type 2 Diabetes Mellitus Patients at Moi Teaching and Referral Hospital-Kenya. African Journal of Food, Agriculture, Nutrition and Development, 21(3), 17752–17763. https://doi.org/10.18697/ajfand.98.19370

Katambo Daniel. (2023, June 23). Diabetes Statistics in Kenya - Afyacode Diabetes Management. https://afyacode.com/diabetes-statistics-in-kenya/

Kenya Bureau of Statistics. (2022). Statistical Abstract.

Kwame et al. (2021). A literature-based study of patient-centered care and communication in nurse-patient interactions: barriers, facilitators, and the way forward. In BMC Nursing (Vol. 20, Issue 1). BioMed Central Ltd. https://doi.org/10.1186/s12912-021-00684-2

M. J. Alqahtani, M. (2015). Understanding the Sociocultural Health Belief Model Influencing Health Behaviors among Saudi Stroke Survivors. Neuroscience and Medicine, 06(04), 149–159. https://doi.org/10.4236/NM.2015.64023

Mottern, M., Kharmats, A., Curran, M., Berube, L., Popp, C., Hu, L., Vanegas, S., Bergman, M., Pompeii, M. Lou, St-Jules, D., & Sevick, M. A. (2022). Impact of the COVID-19 Pandemic on Dietary Counseling Session Attendance and Self-Monitoring Adherence Dur034 a Behavioral Weight Loss Intervention. Current Developments in Nutrition, 6, 220. https://doi.org/10.1093/CDN/NZAC048.034

Muga, R., Kizito, P., Mbayah, M., & Gakuruh, T. (2005). Overview of the Health System in Kenya. In Overview of the Health System in Kenya.

Musee C., Omondi D., & W., O. (2016). Dietary Adherence Pattern in the Context of Type 2 Diabetic Management within Clinical Setting, Kenya. International Journal of Diabetes Research, 5(2), 26–34. https://doi.org/10.5923/J.DIABETES.20160502.02

Nagy, A., McMahon, A., Tapsell, L., & Deane, F. (2022). The therapeutic relationship between a client and dietitian: A systematic integrative review of empirical literature. In Nutrition and Dietetics (Vol. 79, Issue 3, pp. 303–348). John Wiley and Sons Inc. https://doi.org/10.1111/1747-0080.12723

Ngari, D. M., Mbisi, A. M., Njogu, T. W., Ngari, D. M., Mbisi, A. M., & Njogu, T. W. (2020). Social Cultural and Economic Factors Affecting the Practice of Secondary Prevention among Patients with Type 2 Diabetes Mellitus at Consolata Nkubu and Meru Level Five Hospital in Meru County. Open Journal of Clinical Diagnostics, 10(1), 1–17. https://doi.org/10.4236/OJCD.2020.101001

Oluma, A., Mosisa, G., Abadiga, M., Tsegaye, R., Habte, A., & Abdissa, E. (2020). Predictors of adherence to self-care behavior among patients with diabetes at public hospitals in West Ethiopia. Diabetes, Metabolic Syndrome and Obesity, 13, 3277–3288. https://doi.org/10.2147/DMSO.S266589

Olwendo, A., Otieno, G., & Rucha, K. (2020). Prevalence and Complications Associated with Diabetes Mellitus at the Nairobi Hospital, Nairobi City County, Kenya. J Health Inform Afr, 7(2), 47–57. https://doi.org/10.12856/JHIA-2020-v7-i2-290

Omotosho et al. (2024). Factors Influencing Therapeutic Non-Adherence Behavior Among Patients with Type 2 Diabetes in Two Public Hospitals in the Gambia: A Cross-Sectional Study. Diabetes, Metabolic Syndrome and Obesity, Volume 17, 2683–2692. https://doi.org/10.2147/dmso.s464761

Panahi, S., Rathi, N., Hurley, J., Sundrud, J., Lucero, M., & Kamimura, A. (2022). Patient Adherence to Health Care Provider Recommendations and Medication among Free Clinic Patients. Journal of Patient Experience, 9. https://doi.org/10.1177/23743735221077523

Pourhabibi, N., Sadeghi, R., Mohebbi, B., Shakibazadeh, E., Sanjari, M., Tol, A., & Yaseri, M. (2022). Factors affecting nonadherence to treatment among type 2 diabetic patients with limited health literacy: Perspectives of patients, their families, and healthcare providers. Journal of Education and Health Promotion, 11(1), 388. https://doi.org/10.4103/jehp.jehp_804_22

Roglic, G., & World Health Organization. (n.d.). Global report on diabetes.

Ronquillo, Y., Ellis, V. L., & Toney-Butler, T. J. (2023). Conflict Management. Clinical Laboratory Management: Third Edition, 144–150. https://doi.org/10.1002/9781683673941.ch10

Tate, C. (2022). Behavioral Approaches to Nutrition Counseling in the Primary Care Setting. Medical Clinics of North America, 106(5), 809–818. https://doi.org/10.1016/j.mcna.2022.06.002

Vrkatić, A., Grujičić, M., Jovičić-Bata, J., & Novaković, B. (2022). Nutritional Knowledge, Confidence, Attitudes towards Nutritional Care and Nutrition Counselling Practice among General Practitioners. In Healthcare (Switzerland) (Vol. 10, Issue 11). MDPI. https://doi.org/10.3390/healthcare10112222

Waari, G., Mutai, J., & Gikunju, J. (2018). Medication adherence and factors associated with poor adherence among type 2 diabetes mellitus patients on follow-up at Kenyatta National Hospital, Kenya. Pan African Medical Journal, 29. https://doi.org/10.11604/pamj.2018.29.82.12639