Research Square

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Willing but Wavering; Lifestyle Adherence and Determinants Among Diabetic Care

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Research Article

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The authors declare no competing interests.

The research was approved by the KNUST ethical committee whiles the participants consent was sought before responding to each questionnaire

Background

Diabetes causes around 2.9 million to 5.1 million deaths in persons aged 20-79 years worldwide (Roglić et al., 2005; IDF Diabetes Atlas Group, 2015), more recent data suggest this number has decreased slightly to 4.2 million deaths in 2019 (Saeedi et al., 2020). Globally, the diabetic patient population has been reported to be 6.3 percent of the global population (Fenglin et al, 2022). embracing and maintenance of physical activity are key focuses for blood glucose management and overall health in people with diabetes and prediabetes; nevertheless, guidelines and precautions differ based on individual characteristics and health status. Chen et al. (2015) promotes physical activity and exercise for persons with type 1 diabetes, type 2 diabetes, gestational diabetes mellitus, and prediabetes.), Dietetic adherence among type 2 diabetes (T2D) patients in Ghana has various problems, including restricted access to nutritious foods, budgetary constraints, and a lack of diabetes management education (Wilson et al., 2024 & Hushie, 2019). barriers to dietary self-care include misconceptions about the causes of diabetes, cultural beliefs, social stigma and inadequate family support (Mogre et al., 2019). access to information, perceived benefits, and social support all help to promote dietary adherence (Wilson et al., 2024).

According to Hushie (2019), patients have difficulty managing their meals during social events, rejecting suggested foods and altering their normal diets. Nonetheless, some patients exhibit good eating habits and sufficient meal planning abilities (Opoku-Addai et al., 2022), significant gaps exist in the understanding of how fruits, meal portioning and processed foods affect blood sugar levels (Doherty et al., 2014). To enhance adherence, interventions should focus on building positive attitudes, overcoming behavioral control barriers, personalizing nutritional instruction to patients' requirements, and offering mental health support (Mogre et al., 2019 & Hushie, 2019)

However, due to a number of issues, including socioeconomic, cultural, psychological and healthcare system-related difficulties, diabetes patients' adherence to lifestyle adjustment is still below ideal (Almutairi et al., 2020), the importance of dietary management in diabetes care has changed significantly over the past few decades, moving from basic carbohydrate-counting approaches to more complex, individualized nutrition therapy models. Understanding the factors that influence adherence to lifestyle modifications is essential to creating focused interventions that improve diabetes management outcomes (Evert et al., 2019). despite extensive data supporting the efficacy of proper dietary adjustments, adherence to prescribed regimens remains low, with global surveys ranging from 24% to 62% (Almutairi et al., 2020; Mogre et al., 2017).

Study by Mohammed et al. (2025) found that 62.5% did not adhere to the recommended diet. Lack of nutritional information (83.38%) and inability to buy a balanced diet (71.33%) were identified impediments to implementing dietary guidelines. More than half (54.7%) did not meet the recommended fasting blood glucose target, indicating poor dietary adherence and glycemic management. adherence to dietary recommendations among individuals with type 2 diabetes faces several challenges across countries. Common barriers include a lack of comprehension of dietary rules (Waqar Ahmad, 2024). Socio-demographic factors such as age, gender, education, and income have a substantial impact on adherence to dietary regimens. According to research, older adults may experience obstacles owing to physical limits and a lack of knowledge. Women tend to stick to certain eating behaviors more closely than males. Higher levels of education and income are associated with improved dietary adherence. Sociodemographic characteristics have a major impact on diabetes management and self-care practices in type 2 diabetes. Education level is consistently linked to better diabetes control and self-care habits (Bhatti et al., 2018; Muoki et al., 2021 &Al-Dwaikat et al., 2023). Lifestyle modification and nutritional management continue to

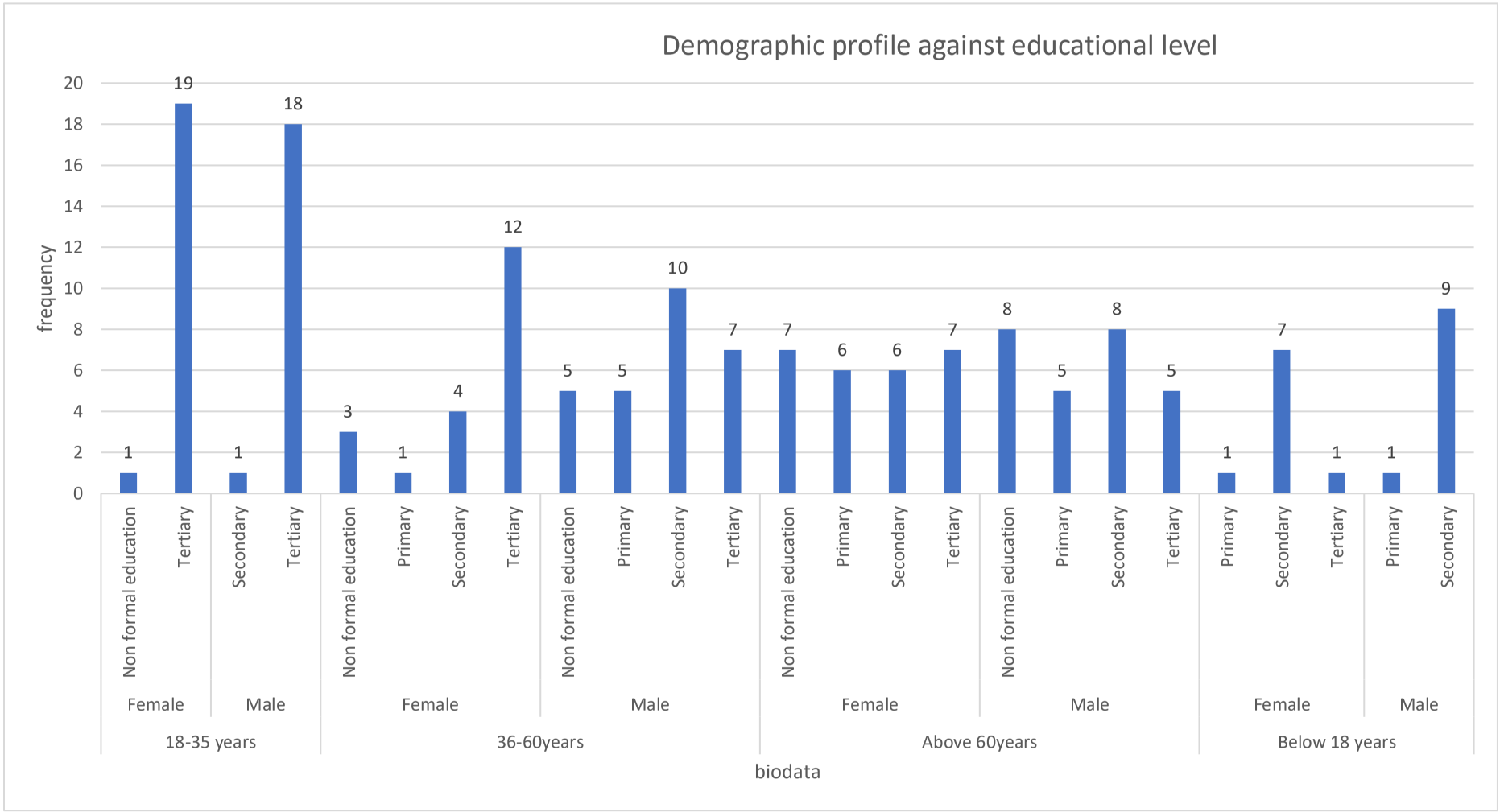
be important components of comprehensive diabetes therapy, with strong evidence supporting their effectiveness in improving glucose control, lowering complications, and improving quality of life. Modern techniques stress personalized nutrition therapy that takes into account personal preferences, cultural contexts, and practical limits while supporting metabolic goals.

Demographic background of the respondent.

The study included 157 diabetic individuals who visited the diabetic clinic. the bulk of respondents (n=52, 33.3%) were over the age of 60, representing the older population living with diabetes. 47 respondents (29.9%) were between the ages of 36 and 60, whereas 39 patients (24.8%) were between the ages of 18 and 35. A tiny minority (n = 19, 12.1%) were under the age of 18. This age distribution reflects Ghana's changing diabetes epidemiology, with younger adult populations experiencing an increase in prevalence due to lifestyle changes and urbanisation, which is consistent with findings by Doherty et al. (2014) and Mogre et al. (2019) on the rising burden of type 2 diabetes in urban Ghanaian settings. the sample comprised 82 males (52.2%) and 75 females (47.8%), showing relatively balanced gender representation. This near-equal distribution allows for meaningful gender-based comparisons in adherence patterns, addressing the documented gender differences in diabetes self-care practices noted by Al-Dwaikat et al. (2023).

Respondents' educational attainments differed significantly. The majority (n=69, 43.9%) were tertiary educated, representing St. Michael's Hospital's urban and peri-urban catchment areas. 45 respondents reported secondary education (28.7%), 19 reported primary education (12.1%), and 24 claimed non-formal education (15.3%). This educational profile differs from that found in typical rural Ghanaian settings, which may influence the generalizability of the findings. The large number of tertiary-educated respondents is consistent with the hospital's placement on the Kumasi-Atonsu route, which serves a more educated population than isolated rural areas. Employment

patterns revealed that self-employed workers made up the largest category (n=79, 50.3%), followed by public sector workers (n=50, 31.8%) and private sector employees (n=28, 17.8%).The preponderance of self-employment mirrors Ghana's job environment in peri-urban areas surrounding Kumasi, mostly in trading and farming, as indicated in the study setting description, with a significant share experiencing specific issues in time management and income security. The income distribution shows great economic variety among respondents. those earning less than 2,500 GHS made up 36.9% (n=58), representing the lower income category. The middle-income group earning 2,500-5,000 GHS formed 50.3% (n=79), while higher earners exceeding 5,000 GHS composed 12.7% (n=20). this socioeconomic stratification is significant for understanding financial barriers to lifestyle modification adherence, especially since healthier foods are frequently more expensive than traditional carbohydrate-rich staples. marital status distribution showed that married individuals comprised 47.1% (n=74), single individuals 32.5% (n=51), widowed 10.2% (n=16), and divorced 10.2% (n=16). The predominance of married respondents has implications for social support structures available for diabetes management. Study by Al-Dwaikat et al. (2023) indicates that married individuals generally demonstrate better adherence to dietary guidelines due to a family support system


Demographic profile against educational level
frequency
20
18
16
14
12
10
8
6
4
2
0
1
19
1
18
3
1
4
12
5
5
10
7
7
6
6
7
8
5
8
5
1
7
1
1
9
Non formal education
Tertiary
Secondary
Tertiary
Non formal education
Primary
Secondary
Tertiary
Non formal education
Primary
Secondary
Tertiary
Non formal education
Primary
Secondary
Tertiary
Non formal education
Primary
Secondary
Tertiary
Primary
Secondary
Tertiary
Primary
Secondary
Female
Male
Female
Male
Female
Male
Female
Male
18-35 years
36-60years
Above 60years
Below 18 years
biodata

Adherence Levels to Lifestyle Modifications

To determine the proportion of diabetic patients, who adhere to recommended lifestyle modifications. Adherence was assessed across three primary domains: dietary modifications, physical activity and medication regimens. When asked, "Do you follow the recommended lifestyle modifications (diet and exercise) for diabetes management?" respondents exhibited a wide range of adherence patterns. The majority of respondents, (44,6%), said "yes," indicating overall adherence to lifestyle advice. At the same time, a significant number indicated "Yes" 77 people (49%), indicating intermittent or partial adherence, while a lesser proportion reported "Rarely" 8 people (5.1%) and "Never" 2 people (1.3%), indicating minimum adherence, the global literature indicates adherence rates ranging from 24% to 62% among diabetic populations (Almutairi et al., 2020; Mogre et al., 2017). The relatively high proportion reporting "Sometimes" adherence suggests that many patients understand recommendations and attempt to follow them, but face barriers preventing consistent implementation. This finding is consistent with Mohammed et al. (2025) as well, W.H.O. reported that 62.5% of Ethiopian diabetic patients were poorly adherent to recommended diets, indicating that suboptimal adherence is a widespread challenge across sub-Saharan Africa.

The responses to the question "How often do you follow the dietary recommendations given by your healthcare provider?" revealed a range of adherence levels. "Always" was reported by 46 (29.3%), "Most of the times" by 78 (49.6%), "Occasionally" by 30 (19.1%), and "Never" by 3 (1.9%). The combined percentage reporting "Always" or "Most of the time" (79.3%) is positive. When asked, "In the last 7 days, how many days did you follow a healthy eating plan recommended by your healthcare provider?" replies differed greatly. The average adherence rate was 4.2 days per week, with responses ranging from 0 to 7 days. Respondents 49 (31.2%) reported following

the plan 5-7 days a week, while the majority of 76 (48.4%) reported 3-4 days and 32 (20.4%) reported 0-2 days. this pattern indicates that while many patients make efforts to follow dietary plans, consistent daily adherence remains challenging for the majority.the marginally better adherence to fruit and vegetable consumption may reflect the relative simplicity of this recommendation compared to comprehensive meal planning. However, the data also suggests economic barriers, as fruits and vegetables can be expensive in Ghanaian markets, particularly out of season. This finding aligns with investigation by Mahmmoed et al. (2020), indicating that patients demonstrate better understanding and compliance with recommendations perceived as directly impacting their condition.

Physical activity data show lower adherence compared to dietary changes, the predominance of "3-4 times per week" exercise suggests that many patients are physically active but not meeting daily activity recommendations emphasised in diabetes management guidelines (American Diabetes Association, 2016). particularly for everyday activities. this pattern is consistent with previous research revealing a variety of hurdles to exercise adherence, including a lack of time, physical restrictions, and environmental constraints (Jadawala et al., 2017). The American Diabetes Association (2016) emphasizes the necessity of both scheduled exercise and increased daily mobility, indicating that existing adherence patterns may be unsatisfactory.

When compared to lifestyle changes, responses to the question "How often do you take your diabetes medication as prescribed?" showed noticeably higher adherence. "Always (100%)" was reported by 61.1% (n=96), "Often (80-99%)" by 29.3% (n=46), "Sometimes (50-79%)" by 5.7% (n=9), and "Rarely (Below 50%)" by 3.8% (n=6). Excellent medication adherence in this cohort is demonstrated by the combined percentage of respondents who answer "Always" or "Often" (90.4%). A noteworthy finding is the sharp contrast between reduced lifestyle adherence and strong

medication adherence (about 91.0% taking meds "Always" or "Often"). Numerous research have shown the medication-lifestyle adherence gap, which represents a number of crucial dynamics (Mumu et al., 2014). First, compared to dietary and activity changes, taking medication is easier and needs less persistent effort. Second, drugs produce instantaneous reinforcement by having quick, quantifiable impacts on blood glucose. Third, pharmacological management is frequently emphasized by healthcare systems and clinicians, thereby conveying the idea that drugs are the main course of therapy. Lastly, medication therapies may be given precedence over lifestyle alterations in cultural medical models, which see lifestyle changes as supplemental rather than equally important

The majority of study participants (59%) cited the high cost of recommended food staff as a barrier to not following their doctor's dietary recommendations. Only 14% of respondents said peer pressure had an impact on their adherence, suggesting that socioeconomic factors play a significant role in adherence and are a major determinant of lagging adherence in lifestyle modification.

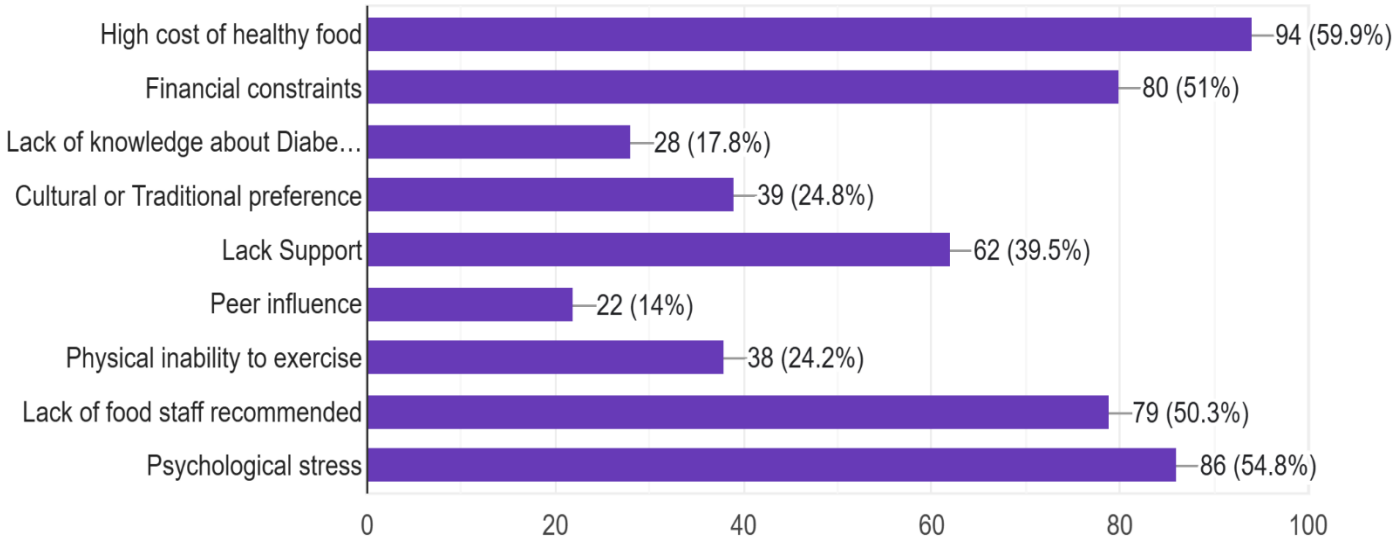


Figure 1; What are the main barriers that prevent you from fully adhering to lifestyle modification

The majority of respondents were able to maintain the lifestyle change because of the frequent check-ups and guidance from the medical professionals, who encouraged them to do so. However, the high cost of the suggested foods attracted them due to financial constraints. Knowledge and confidence were found to be important elements. 45.2% of respondents were moderately confident in their diabetes management lifestyle modifications, compared to 41.4% who were very confident. Over 77% of respondents expressed confidence in controlling diabetes by lifestyle modifications, and 47.8% reported "a lot" and 36.9% "sometimes," indicating a high level of knowledge of the effects of diet and exercise. However, 75.2% of respondents cited financial limitations as a significant obstacle, indicating financial difficulties in obtaining healthier dietary options and maintaining advised behaviors. adherence is further modulated by demographic factors, such as age, education, and kind of job; younger persons make up the majority, and greater education levels may assist a better knowledge of lifestyle implications.

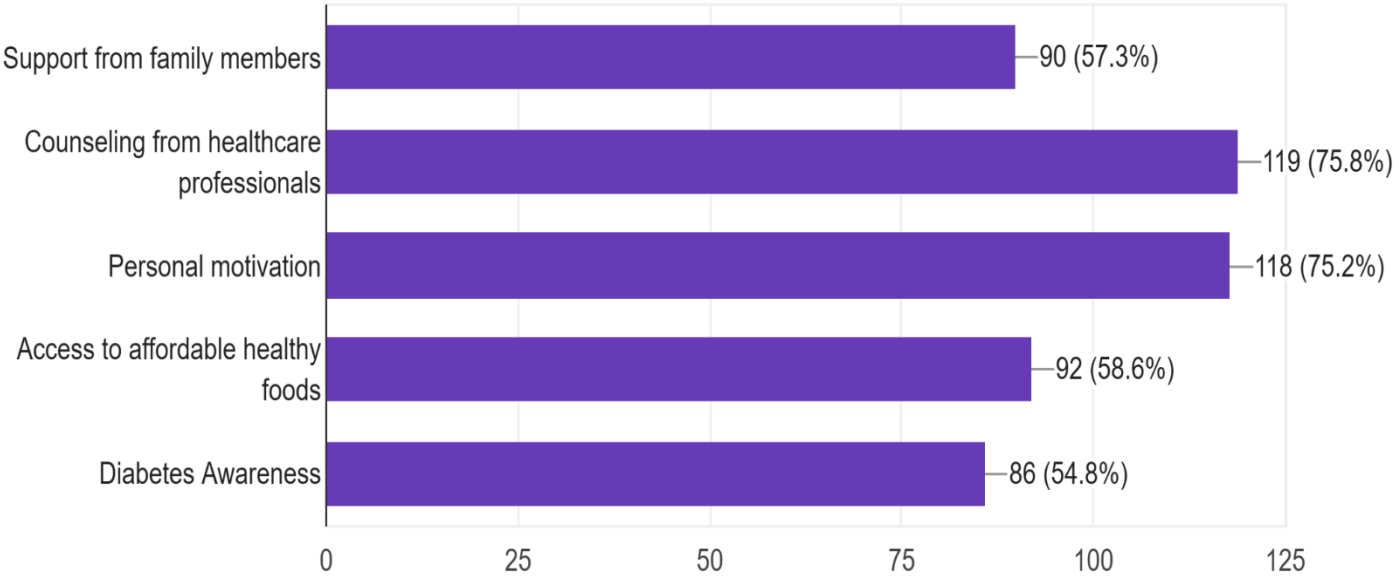


Figure 2 ; *What factors encourage or facilitate you to adhere to lifestyle modification*

This study demonstrates that diabetic patients' adherence to lifestyle modifications is still subpar even when they take their prescriptions as directed. Psychosocial obstacles, ethnic food preferences, insufficient patient education, and financial limitations all significantly impede adherence to suggested diet and exercise regimes. Even while most patients are aware of the benefits of changing their lifestyle and have some degree of confidence in managing their diabetes, practical challenges such as the high cost of nutritious meals and a lackluster support network prevent constant adherence. Customized, comprehensive therapies that address economic, educational, and emotional issues are required to improve diabetes management and patient outcomes. The findings support the multidimensional nature of adherence, which is impacted by patient knowledge, sociodemographic characteristics, and environmental support.

Healthcare professionals and facility administrators should reinforce follow-up protocols through regular, personalized patient contact monitoring and promote lifestyle modification adherence. Implement educational programs that emphasize the importance of lifestyle changes in addition to medication to close the adherence gap. policymakers and health system leaders should improve funding for diabetes education, offer subsidies for wholesome food options and expand access to qualified diabetes educators and nutritionists in healthcare facilities. Promote culturally appropriate education that considers local dietary traditions and practical healthy living strategies. Fund more studies on context-specific barriers and facilitators to lifestyle adherence and evaluate innovative intervention models, like peer support groups and technology-based reminders, to enhance long-term behavioral change in diabetes treatment.

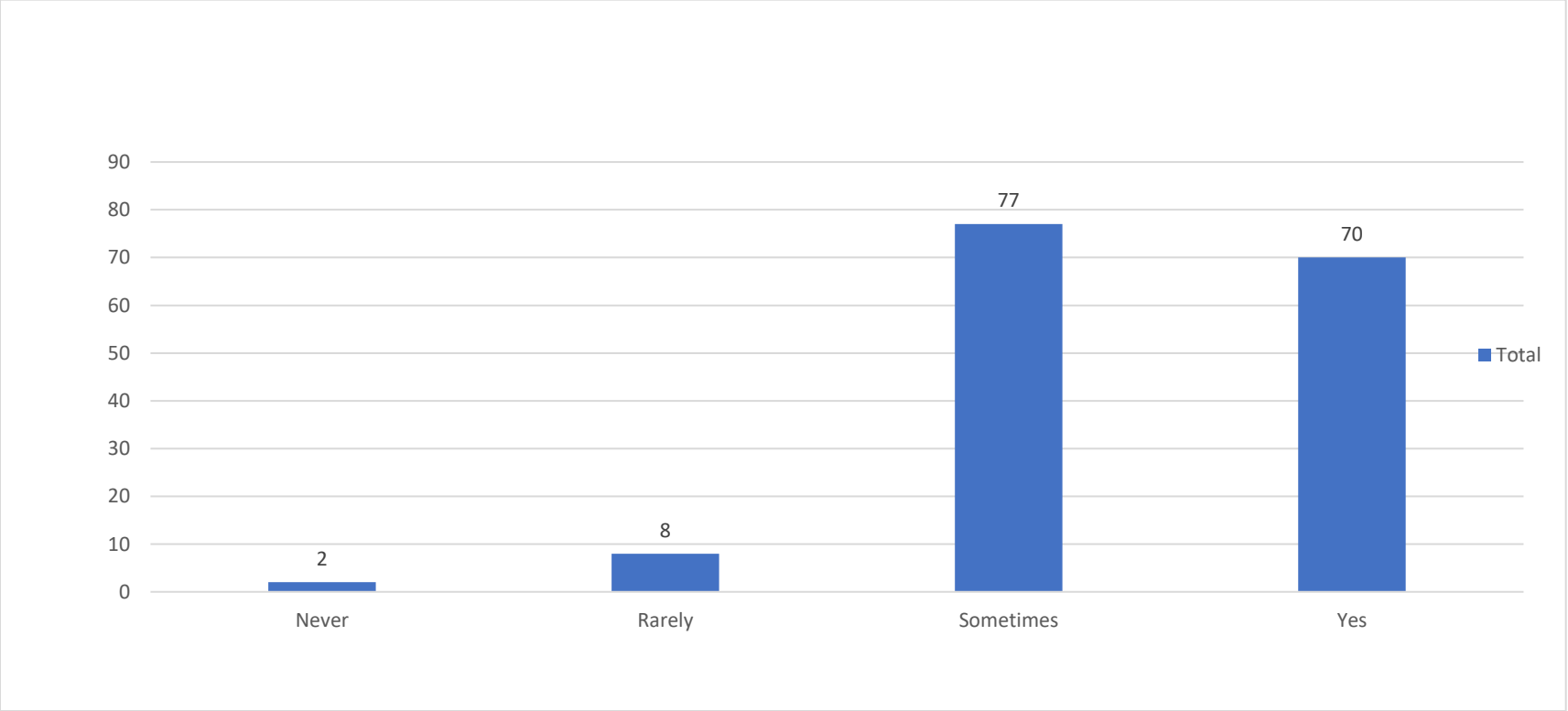


Figure 3; Do you adhere to the recommended lifestyle modifications (diet and exercise) prescribed for managing your diabetes?

Table 1 , RESULT TABLE

Name	Variable	Frequency (N)	Percentage (%)
Gender	Male	82	47.8
	Female	75	52.2
Age	Below 18years	19	12.1
	18-35years	39	24.8
	36-60years	47	29.9
	Above 60	52	33.3
Level of education	No formal education	24	15.3
	Primary	19	12.1
	Secondary	45	28.7
	Tertiary	69	43.9
Employment	Public Sector	50	31.8
	Private Sector	28	17.8
	Self-Employment	79	50.3
Monthly Income	Below 2500gh	58	36.9
	2500 -5000gh	79	50.4
	Above 5000gh	20	12.6
Marital status	Married	74	47.1
	Single	51	32.5
	Widow	16	10.2
	Divorce	16	10.2
0-7, exercise rates	0	11	7
	1	8	5.1
	2	21	13.4
	3	42	26.8
	4	25	15.9
	5	29	18.5
	6 & 7	**21**	**13.3**

Areas	Variable	Frequency (N)	Percentage (%)
Confidence level in lifestyle changes in diabetes management	Very confident	65	41.4
	Somewhat	71	45.2
	Neutral	15	9.6
	Not confident	6	3.8
Knowledge about the impact of diet and exercise on diabetes	A lot	75	47.8
	Sometimes	58	36.9
	Little	21	13.4
	None	3	1.9
How confident in knowledge managing diabetes through lifestyle changes	Very confident	54	34.4
	Confident	67	42.7
	Somewhat	30	19.1
	Not confident	6	3.8
Believe financial constraints affect lifestyle modification plans	Yes	118	75.2
	No	39	24.8
How often do you engage in exercise as recommended	Occasionally	61	38.9
	Daily	38	24.2
	3-4 times a day	54	34.4
	Never	4	2.5
How often do you follow dietary recommendations given	Always	46	29.3
	Mostly	78	49.7
	Occasionally	30	19.1
	Never	3	1.9
Total		**157**	**100**

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