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Abstract

Purpose: To aim of the study was to analyze the influence of health education programs on medication adherence among diabetic patients in Ghana.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: Findings show that health education programs significantly improve medication adherence among diabetic patients in Ghana by increasing patients' knowledge, awareness of complications, and self-management practices. Patients who receive regular and structured diabetes education are more likely to follow prescribed medication regimens compared to those with limited or no education. However, inconsistencies in program delivery and limited reach, especially in rural areas, reduce the overall effectiveness of these interventions.

Unique Contribution to Theory, Practice and Policy: Health belief model (HBM), social cognitive theory (SCT) & health action process approach (HAPA) may be used to anchor future studies on the influence of health education programs on medication adherence among diabetic patients in Ghana. Healthcare facilities should implement standardized and structured diabetes education programs that are delivered consistently at every patient contact point, including outpatient clinics and community outreach services. Policies should support the allocation of dedicated funding for diabetes education programs, including training of healthcare providers and development of educational materials.

Keywords: *Health Education Programs, Medication Adherence, Diabetic Patients*

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INTRODUCTION

Medication adherence among diabetic patients refers to the extent to which individuals with diabetes take their prescribed antidiabetic medications consistently in accordance with healthcare provider instructions. It is a critical component of diabetes management because poor adherence leads to uncontrolled blood glucose levels, complications such as neuropathy and cardiovascular disease, and increased healthcare costs. Globally, adherence to diabetes medication remains suboptimal, with studies reporting average adherence rates ranging between 36% and 90%, depending on population and healthcare system support (Gow, 2023). In developed economies, adherence is generally higher due to better access to healthcare services, insurance coverage, and patient education programs. Research emphasizes that factors such as patient-provider communication, treatment complexity, and health literacy strongly influence adherence behavior and long-term glycemic control (Lee & Howard, 2022; Shariful Islam, 2022).

In the United States, studies show that medication adherence among adults with type 2 diabetes ranges between 60% and 75%, with higher adherence linked to insurance coverage and use of digital reminder systems that improve self-management. In the United Kingdom, adherence levels are estimated at about 65%–70%, with the NHS structured care programs contributing to improved medication consistency and reduced diabetes complications over time. Japan reports comparatively higher adherence levels, estimated at around 70%–80%, largely due to strong universal healthcare coverage and regular follow-up systems. However, despite these improvements, non-adherence remains a concern, especially among elderly patients and those with multiple comorbidities (Asiri, 2023). These trends show that even in developed economies, sustained behavioral and system-level interventions are required to optimize diabetes medication adherence and long-term outcomes.

In developing economies, medication adherence among diabetic patients is generally lower, often ranging between 40% and 60%, due to limited access to medicines, financial constraints, and weak health systems. Countries such as India and Indonesia report significant challenges in sustaining long-term adherence, particularly among rural populations where access to pharmacies and follow-up care is limited. Studies indicate that cost of medication, lack of diabetes education, and cultural beliefs strongly influence non-adherence behaviors in these settings. Despite these challenges, digital health interventions and community-based diabetes programs have shown gradual improvements in adherence levels in some urban areas. However, overall adherence remains inconsistent due to disparities in healthcare infrastructure and patient support systems (Lee & Howard, 2022; WHO, 2024).

In Sub-Saharan Africa, medication adherence among diabetic patients is particularly low, with estimates often below 50% in many public health facilities. Countries such as Nigeria, Kenya, and Ghana face challenges including high medication costs, irregular drug supply, and inadequate patient follow-up systems. Studies show that many patients discontinue treatment due to financial hardship or reliance on traditional medicine practices. Nevertheless, community health interventions and mobile health programs have demonstrated some improvement in adherence in urban and semi-urban populations. Despite these efforts, weak healthcare infrastructure and limited diabetes education continue to hinder optimal medication adherence and glycemic control across the region (WHO, 2024).

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Health education programs refer to structured interventions designed to improve individuals' knowledge, attitudes, and behaviors toward disease prevention and self-management. In diabetes care, these programs aim to enhance patients' understanding of the disease, medication use, diet control, and lifestyle modification to improve glycemic control. Four common types of health education programs include individual counseling sessions, group-based diabetes education classes, mobile health (mHealth) education programs, and community outreach education programs. Individual counseling helps patients understand their medication regimen and reinforces adherence through personalized guidance. Evidence shows that tailored education significantly improves self-care behaviors and medication adherence among diabetic patients by increasing awareness and perceived importance of treatment (Powers, 2020).

Group-based education programs provide peer support and shared learning experiences that encourage patients to adhere to medication schedules and lifestyle recommendations. Mobile health education programs, including SMS reminders and smartphone applications, improve adherence by providing continuous prompts and real-time feedback on medication use. Community outreach programs extend diabetes education to rural populations, improving access to information and reducing misconceptions about medication use. These combined interventions enhance medication adherence by improving health literacy, motivation, and patient engagement in self-care. Research indicates that structured diabetes education programs significantly improve medication adherence rates and reduce diabetes-related complications (Chrvala, 2019; Beck, 2020).

Problem Statement

Medication adherence among diabetic patients remains a major public health challenge in Ghana, despite the availability of effective treatment guidelines and increasing health education initiatives. Evidence from recent studies indicates that a substantial proportion of patients with type 2 diabetes still exhibit poor adherence to prescribed medication, which undermines glycemic control and increases the risk of complications such as neuropathy, cardiovascular diseases, and kidney failure (Arhin, 2026). For instance, a study conducted at the Upper West Regional Hospital found that approximately 51.5% of diabetic patients had poor medication adherence, highlighting a persistent gap in effective diabetes self-management (Arhin, 2026). This situation is further compounded by socio-economic barriers, medication costs, and limited patient understanding of disease management. Although health education programs are widely implemented in Ghanaian health facilities, their effectiveness in improving medication adherence remains inconsistent and not well established across different populations.

Furthermore, while previous studies have identified factors influencing medication adherence such as education level, income, and duration of illness, limited attention has been given to the specific influence of structured health education programs on sustaining long-term adherence among diabetic patients in Ghana (Afaya, 2020). Most existing research focuses on general determinants of adherence rather than evaluating how targeted educational interventions such as counseling, group education, and community-based programs translate into improved medication-taking behavior. Additionally, there is insufficient evidence comparing adherence outcomes before and after exposure to structured health education interventions within routine clinical settings. This creates a critical knowledge gap regarding the effectiveness of health education programs as a

behavioral intervention strategy in diabetes management. Therefore, this study seeks to examine the influence of health education programs on medication adherence among diabetic patients in Ghana in order to inform policy and improve diabetes care outcomes.

Theoretical Review

Health Belief Model (HBM)

The health belief model, developed by Rosenstock (1966), explains health behavior based on individuals' perceptions of susceptibility, severity, benefits, and barriers to action. The main theme is that people are more likely to adopt positive health behaviors, such as medication adherence, when they believe they are at risk of complications and that treatment is beneficial. In the context of diabetes, health education programs increase patients' awareness of disease risks and benefits of adherence, thereby improving medication-taking behavior. This theory is relevant because it explains how structured education influences beliefs that directly affect adherence decisions among diabetic patients in Ghana. Recent studies show that belief-driven interventions significantly improve adherence behaviors in chronic disease management (Opoku, 2023).

Social Cognitive Theory (SCT)

Social cognitive theory, developed by Albert Bandura, emphasizes that behavior is influenced by the interaction of personal factors, environmental influences, and behavior itself. The main theme is observational learning, self-efficacy, and reinforcement. Health education programs improve medication adherence by increasing patients' confidence (self-efficacy) and providing role models or peer support through group education sessions. This theory is relevant because diabetic patients in Ghana often rely on peer and provider interactions to learn self-management behaviors. Evidence shows that self-efficacy is a strong predictor of adherence among diabetes patients exposed to structured education interventions (Rao, 2023).

Health Action Process Approach (HAPA)

The health action process approach, developed by Ralf Schwarzer, explains health behavior change as a two-phase process: motivational and volitional stages. The main theme is that intention alone is not enough; individuals must also develop action planning and coping strategies to sustain behavior. Health education programs support diabetic patients by helping them form intentions (knowledge) and translate them into consistent medication-taking habits (action planning). This theory is relevant because medication adherence requires both motivation and sustained behavioral control. Recent behavioral health studies highlight HAPA as effective in explaining adherence behavior in chronic disease management contexts (Schwarzer, 2021).

Empirical Review

Afaya (2020) assessed medication adherence and self-care behaviors among patients with type 2 diabetes in Ghana. The study employed a cross-sectional survey design using structured questionnaires administered to diabetic patients in selected health facilities. Data analysis was conducted using descriptive and inferential statistics to determine factors influencing adherence. The findings revealed that medication adherence levels were moderate and significantly influenced by patients' exposure to health education and counseling services. Patients who received regular diabetes education demonstrated better understanding of medication use and improved self-care

practices. The study also found that inadequate knowledge about diabetes management contributed to poor adherence among some patients. The researchers concluded that health education plays a vital role in improving medication adherence. They recommended strengthening diabetes education programs within routine clinical care to enhance patient outcomes.

Osei-Yeboah (2018) examined the relationship between medication adherence and glycemic control among diabetic patients in Ghana. The study used structured questionnaires and clinical records to collect data from patients attending diabetic clinics. The findings showed that patients who regularly attended health education sessions had higher levels of medication adherence compared to those who did not. Improved adherence was also associated with better glycemic control and reduced complications. The study further revealed that lack of continuous patient education contributed to poor adherence behaviors. The researchers noted that many patients had insufficient understanding of long-term diabetes management. They concluded that structured health education significantly improves treatment adherence. The study recommended continuous patient education as part of routine diabetes care in Ghanaian hospitals.

Atinga (2019) explored factors influencing long-term medication adherence among diabetic patients in Ghana. The study used in-depth interviews with diabetic patients attending outpatient clinics. Thematic analysis was used to analyze the qualitative data collected. The findings revealed that lack of adequate health education was a major barrier to medication adherence. Many patients reported misunderstanding prescription instructions due to insufficient counseling from healthcare providers. Cultural beliefs and reliance on alternative medicine also contributed to non-adherence. The study found that patients who received clear and consistent education from healthcare providers were more likely to adhere to treatment. The researchers concluded that patient-centered health education is essential for improving adherence. They recommended strengthening communication between healthcare providers and patients to enhance understanding of diabetes management.

Seidu (2021) investigated medication adherence among diabetic patients at Kintampo Municipal Hospital using a quantitative cross-sectional design. The study utilized the Morisky Medication Adherence Scale to measure adherence levels among respondents. Data was analyzed using descriptive and regression analysis techniques. The findings indicated that patients who had received structured health education were more likely to adhere to their medication regimen. Health education was found to improve patients' awareness of disease complications and the importance of regular medication intake. However, the study also identified gaps in the consistency and quality of education provided. Some patients reported receiving limited counseling during clinic visits. The study concluded that health education significantly influences medication adherence. It recommended expanding structured diabetes education programs in outpatient settings.

Arhin (2026) examined medication adherence among type 2 diabetic patients. The study used structured questionnaires and logistic regression analysis to identify predictors of adherence. Findings revealed that a significant proportion of patients had poor medication adherence. The study identified inadequate health education as a key factor contributing to non-adherence. Patients who had received regular diabetes education were more likely to adhere to medication schedules. The study also found that limited understanding of disease management led to inconsistent

medication use. The researchers concluded that health education is essential for improving adherence outcomes. They recommended intensified and structured diabetes education interventions in healthcare facilities.

Bruce (2018) assessed the impact of health education on medication adherence among diabetic patients. The study used structured questionnaires to collect data from patients attending diabetes clinics. The findings showed that patients who participated in regular health education sessions had higher adherence rates compared to those who did not. Health education improved patients' understanding of medication schedules and disease management. The study also found that lack of education contributed to forgetfulness and intentional non-adherence. Patients who received continuous counseling demonstrated better glycemic control. The researchers concluded that structured health education improves medication adherence. They recommended strengthening hospital-based diabetes education programs to enhance patient outcomes.

Connell (2020) conducted a systematic review of studies on diabetes self-management and medication adherence in Ghana. The study synthesized findings from multiple peer-reviewed articles using secondary data analysis. The review found that health education programs significantly improved medication adherence among diabetic patients. It also showed that patients who received continuous education were more likely to adhere to prescribed treatment regimens. However, the study noted inconsistencies in the delivery and quality of health education across health facilities. Some regions had limited access to structured diabetes education programs. The study concluded that health education is a key determinant of medication adherence. It recommended the integration of standardized diabetes education programs into national healthcare systems in Ghana.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gap

The reviewed studies (Afaya , 2020; Osei-Yeboah , 2018; Atinga , 2019; Seidu, 2021; Bruce, 2018; Connell, 2020) consistently establish that health education influences medication adherence among diabetic patients. However, most of the studies conceptualize health education in a broad and general sense without clearly distinguishing its different components such as individualized counseling, group education sessions, digital health education, and community outreach programs. Similarly, medication adherence is often treated as a single outcome variable without breaking it down into dimensions such as intentional vs. unintentional non-adherence or short-term vs. long-term adherence behavior. There is also limited integration of behavioral theories such as the Health

Belief Model or Social Cognitive Theory to explain how health education translates into sustained adherence behavior. This creates a conceptual gap in fully understanding the mechanisms through which health education programs influence medication adherence among diabetic patients.

Contextual Gap

Although the reviewed studies confirm the importance of health education, most are conducted within hospital outpatient clinics and teaching hospitals (e.g., Bruce, 2018; Seidu, 2021; Afaya, 2020), with limited attention to community-based or rural primary healthcare settings. This means the influence of health education programs in non-hospital environments, where access to structured diabetes education may be weaker, remains underexplored. Additionally, most studies rely heavily on patient self-reports without incorporating healthcare provider perspectives on the effectiveness and delivery of education programs. There is also limited assessment of the quality, consistency, and content variation of health education programs across different health facilities. This contextual gap limits understanding of how real-world implementation differences affect medication adherence outcomes.

Geographical Gap

The studies reviewed are largely concentrated in specific regions of Ghana, particularly the southern and middle belts, with limited representation from northern and more rural and underserved regions such as Upper East and Upper West. For example, Arhin (2026) provides evidence from Upper West, but most other studies are urban-based or facility-centered, creating regional imbalance in the evidence base. This geographical concentration limits the generalizability of findings across the entire country, as healthcare access, literacy levels, and cultural beliefs vary significantly between regions. There is also a lack of comparative studies across different ecological zones in Ghana to determine whether health education programs have uniform effects on medication adherence. Therefore, a national-level understanding of how geography influences the effectiveness of health education programs on medication adherence is still lacking.

CONCLUSION AND RECOMMENDATIONS

Conclusions

The influence of health education programs on medication adherence among diabetic patients in Ghana is significant, as evidence consistently shows that patients who receive structured diabetes education are more likely to adhere to prescribed medication regimens. Health education improves patients' understanding of diabetes, enhances awareness of complications associated with poor adherence, and strengthens self-management behaviors. It also helps to address misconceptions, cultural beliefs, and knowledge gaps that often contribute to intentional or unintentional non-adherence. However, the effectiveness of these programs varies across health facilities due to inconsistencies in delivery methods, limited resources, and differences in healthcare provider engagement.

Overall, while health education programs have demonstrated positive effects on medication adherence, challenges such as inadequate coverage, irregular counseling sessions, and limited reach to rural populations still hinder optimal outcomes. Strengthening and standardizing diabetes

education interventions within both hospital and community settings is essential to achieving sustained improvements in adherence. Integrating structured education into routine diabetes care, supported by trained healthcare providers and consistent monitoring, can significantly enhance treatment outcomes. Therefore, health education programs remain a key strategy for improving medication adherence and reducing diabetes-related complications in Ghana.

Recommendations

Theory

Future research should strengthen the theoretical understanding of how health education influences medication adherence by integrating behavioral theories such as the health belief model, social cognitive theory, and the theory of planned behavior into diabetes education studies in Ghana. This will help explain not only whether health education works, but also how and why it influences adherence behavior among diabetic patients. Researchers should also consider developing a context-specific conceptual model that incorporates cultural beliefs, health literacy, and socioeconomic status as mediating factors. This would improve the explanatory power of existing theories in low- and middle-income settings like Ghana. Such theoretical advancement will provide a stronger foundation for understanding sustained medication adherence behavior.

Practice

Healthcare facilities should implement standardized and structured diabetes education programs that are delivered consistently at every patient contact point, including outpatient clinics and community outreach services. Nurses and diabetes educators should be trained regularly to deliver patient-centered education that is tailored to literacy levels and cultural backgrounds. The use of multiple education strategies such as group counseling, visual aids, SMS reminders, and peer support systems should be encouraged to reinforce medication adherence. Hospitals should also establish monitoring systems to evaluate the effectiveness of health education programs on patient outcomes. These practical interventions will enhance patient understanding, improve self-management, and increase long-term medication adherence.

Policy

The Ghana health service and ministry of health should institutionalize diabetes health education as a mandatory component of chronic disease management at all levels of care. Policies should support the allocation of dedicated funding for diabetes education programs, including training of healthcare providers and development of educational materials. In addition, national guidelines should be developed to standardize the content and delivery of health education programs across all health facilities to ensure consistency and quality. Policymakers should also promote community-based diabetes education initiatives to reach rural and underserved populations. Strengthening these policy measures will ensure equitable access to health education and improve medication adherence outcomes nationwide.

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