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The Level of Knowledge and Prescribed Medication Regimens Among Diabetic Patients in Makueni Sub-County, Makueni County - Kenya

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Abstract: *Diabetes, an escalating non-communicable disease (NCD) in Sub-Saharan Africa (SSA), poses significant management challenges, particularly in rural areas like Makueni Sub-County, Kenya, where limited resources and socio-economic barriers intensify its impact. The study used a mixed-methods and parallel convergent study design. Quantitative data were collected using the Morisky Medication Adherence Scale (MMAS-8), Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder Scale (GAD-7), Multidimensional Scale of Perceived Social Support (MSPSS), and pharmacy records, were analyzed in SPSS v.28 using descriptive and inferential statistics. Qualitative data from 20 semi-structured interviews were thematically analyzed. Findings revealed that, Knowledge level on prescribed medication was moderate (55% correct), lower in rural areas (48% vs. 71.9%, $\chi^2 = 10.34$, $p = .001$), and among less educated individuals (45.3% vs. 73.3%, $\chi^2 = 14.62$, $p < .001$), with misconceptions such as "insulin is optional." The study concluded that systemic rural barriers in Makueni drive poor adherence and well-being, necessitating subsidized medications, reliable supply chains, and expanded CHW programs to enhance diabetes outcomes. The study recommends that culturally sensitive education programs and community-based diabetes support groups should be developed to address misconceptions, leverage existing family and faith-based support, and reduce stigma, thereby enhancing knowledge and quality of life.*

Keywords: *Level of Knowledge, Adherence, Prescribed Medication, Regimens, Diabetic Patients*

1.1 Background of the Study

Diabetes mellitus, a chronic non-communicable disease (NCD) marked by elevated blood glucose due to insulin deficiency or resistance and this poses a significant global health challenge in the 21st century. Its rising prevalence, driven by urbanisation, dietary shifts, and ageing populations, strains healthcare systems and increases morbidity and mortality worldwide. Globally, diabetes affects 537 million adults aged 20–79, with projections of 643 million by 2030 and 783 million by 2045, a 46% increase over two decades (International Diabetes Federation [IDF, 2021). Type 2 diabetes, comprising 90–95% of cases, is fuelled by obesity, inactivity, and poor diet, while Type 1, an autoimmune condition, requires lifelong insulin therapy for a smaller cohort. The economic toll reached $966 billion in direct healthcare costs in

2021, expected to climb to $1.05 trillion by 2045, with indirect costs amplifying the burden (IDF, 2021). Medication adherence, crucial for glycemic control and preventing complications like cardiovascular disease and retinopathy, averages 50–60%, with non-adherence linked to 50% of treatment failures and $300 billion in avoidable costs annually (Lee et al., 2020). Psychosocial well-being, including depression (affecting 30% of patients) and social support, significantly influences adherence, with supported patients showing 20% higher rates (Huang et al., 2021; Wu et al., 2021).

Africa's 24 million diabetic adults in 2021 are projected to rise to 55 million by 2045, a 129% increase—the highest globally—driven by urbanisation and dietary shifts from traditional staples to processed foods (IDF, 2021). Late diagnosis (60% undiagnosed) and weak healthcare systems exacerbate complications (Tesfaye et al., 2022). Adherence lags global averages, with structural barriers like supply disruptions and out-of-pocket costs yielding an estimated Medication Possession Ratio (MPR) of 0.62–0.68 (Botha et al., 2020; Tesfaye et al., 2022). Psychosocially, depression affects 30–40% of patients, worsened by stigma and economic stress, though collectivist cultures provide some social support, rarely supported by formal mental health services (Agyemang et al., 2021; Ndlovu et al., 2020).

Sub-Saharan Africa, with 19 million cases in 2021, rising to 41 million by 2045, faces a younger onset (40–60 years) and 60–70% undiagnosed rates, leading to advanced complications (Eze et al., 2021; IDF, 2021). Adherence is low, with MPRs of 0.58–0.65, disrupted by stockouts and cost (50–55% cite financial barriers), and only 49% maintaining timing consistency (Eze et al., 2021; Okeke et al., 2022). Depression prevalence reaches 35–45%, higher rurally due to isolation, with urban social support (60%) outpacing rural (40%) amid poverty-driven strains (Nakimuli et al., 2022). Out-of-pocket payments, up to 70% of healthcare costs, intensify these challenges (Tesfaye et al., 2022).

Kenya's diabetes prevalence rose from 3.1% in 2015 to 4.5% in 2023 (1.8 million adults), reflecting urbanisation and lifestyle changes, with Type 2 dominating (90%) (Kenya Ministry of Health, 2023). Adherence varies, with urban MPRs of 0.64–0.67 dropping to 0.61 rurally and 41% missing doses due to cost and forgetfulness (Mwangi et al., 2023; Ochieng et al., 2022). Knowledge is higher in urban (58%) than in rural (49%), tied to literacy gaps (Mwenda et al., 2021). Depression affects 35–47%, more severely rurally, with urban social support (61%) more substantial than rural (Kimani et al., 2022; Otieno et al., 2021). Barriers include cost (58%) and availability (52%), despite CHW follow-ups boosting adherence by 10–15% (Kibet et al., 2022; Njoroge et al., 2023).

Makueni Sub-County, a rural area of 987,000, has a diabetes prevalence of 4.2% (~41,000 adults), likely underreported due to underdiagnosis (KNBS, 2022). With 36% below the poverty line and limited healthcare (1 doctor per 25,000), adherence is estimated at an MPR of 0.60–0.65, with 40–50% missing doses monthly due to cost (KES 1,500/month) and distance (10–15 km) (Kibet et al., 2022; Makueni County Government, 2023). Knowledge is low (45–50% understand regimens), hampered by literacy (65% secondary education) and cultural beliefs favouring herbal remedies (Mwangi et al., 2023; Otieno et al., 2021). Depression and anxiety affect 40%, driven by stigma and isolation, though 50–60% report family support and 70% cite faith-based coping amidst absent mental health services (Kimani et al., 2022; Njoroge et al., 2023). Despite global and African insights, Makueni-specific data are lacking. National studies (e.g., Ochieng et al., 2022) generalise rural challenges, but Makueni's semi-arid climate, high poverty, and cultural dynamics demand tailored analysis. The Kenya NCD Strategic Plan (2021–2025) targets a 30% reduction in diabetes complications by 2030, yet without local evidence,

implementation falters. This study fills this gap, exploring adherence metrics (MPR, missed doses, timing, knowledge, barriers, follow-ups) and their psychosocial correlates in Makueni, aligning with Sustainable Development Goal 3 and Kenya's Vision 2030 health goals.

1.3 Statement of the Problem

Despite the critical role of knowledge on medication adherence in managing diabetes and preventing complications such as neuropathy, retinopathy, and cardiovascular disease, adherence rates in Kenya remain suboptimal, particularly in rural settings. Studies indicate that Medication Possession Ratios (MPR) range from 0.60–0.67 in rural Kenya, with 40–50% of patients missing doses monthly and only 44–51% maintaining timing consistency, driven by barriers like cost (up to 50% of household income), erratic medication availability, and low health literacy (Kibet et al., 2022; Ochieng et al., 2022). In Makueni, these issues are exacerbated by poverty (36% below the poverty line), limited healthcare infrastructure (one doctor per 25,000 people), and cultural beliefs favouring traditional remedies over prescribed medications. Concurrently, psychosocial well-being among diabetic patients in Makueni is compromised, with 40% experiencing depression and anxiety linked to financial stress, social stigma, and isolation in a rural context with minimal mental health support (Mwangi et al., 2023; Otieno et al., 2021). This poor psychosocial well-being likely undermines adherence, creating a vicious cycle of worsening health outcomes, while non-adherence further deteriorates well-being by increasing physical symptoms and complications. Despite national efforts like the Kenya NCD Strategic Plan (2021–2025) to improve diabetes management, there is a dearth of localised research in Makueni examining the interplay between adherence knowledge levels and psychosocial factors (e.g., stress, depression, social support, quality of life). Without such evidence, interventions remain generic, failing to address Makueni's unique socioeconomic, cultural, and healthcare challenges, perpetuating poor glycemic control, heightened morbidity, and strained resources in an already overburdened system. This study, therefore, aimed to investigate how level of knowledge affects prescribed medication regimens among diabetic patients in Makueni Sub-County, Makueni County - Kenya, addressing a critical gap in understanding how these factors interplay in a rural, resource-scarce context.

1.3 Study Objective

To assess the level of knowledge regarding prescribed medication regimens among diabetic patients in Makueni Sub-County, Makueni County - Kenya.

1.4 The Conceptual Framework

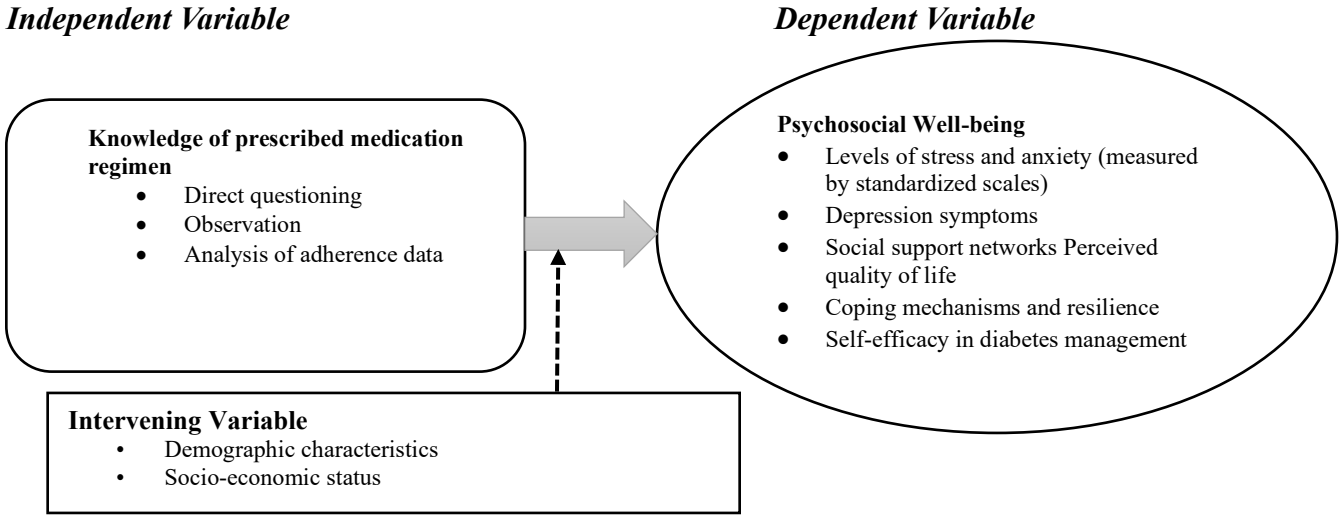

Figure 1: *The Conceptual Framework*
Source: *Own Conceptualization, 2024*

1.5 The Literature Review

In this section, theoretical and empirical reviews on the level of knowledge regarding prescribed medication regimens are presented.

1.5.1 Theoretical Review

Health Belief Model (HBM)

The Health Belief Model (HBM) was developed by social scientists at the U.S. Public Health Service in the 1950s and refined by Rosenstock (1966), Becker (1974), and Rosenstock et al. (1988). The theory posits that, health behaviours, such as medication adherence, are driven by six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Christian, 2021). Perceived susceptibility reflects an individual's belief in their risk of diabetes complications (e.g., retinopathy), while perceived severity gauges the seriousness of these outcomes (e.g., disability) and their social impacts (Kern, 2022; Soni et al., 2024). Perceived benefits involve evaluations of medication efficacy in reducing risks, weighed against perceived barriers—obstacles like knowledge levels that deter adherence (Collado-Mateo et al., 2021; Hofer & Savell, 2021). Cues to action, such as provider advice or symptomatic triggers, prompt behavior, and self-efficacy, added mid-1980s, measure confidence in managing regimens (Stewart et al., 2023). In Makueni, where rural isolation and poverty (36% below the poverty line) prevail, the HBM elucidates adherence challenges (Kenya National Bureau of Statistics, 2022). Low susceptibility and severity perceptions may stem from limited education, while high barriers (e.g., cost, availability) and weak cues (e.g., infrequent CHW visits) hinder action (Makueni County Government, 2023). Self-efficacy may be undermined by knowledge gaps, yet targeted interventions addressing these constructs could enhance adherence and outcomes (Klaic et al., 2022). Though descriptive rather than prescriptive, the HBM's strength lies in identifying intervention points, amplified when paired with contextual models like BPS (Larsson & Thesing, 2024).

1.5.2 Empirical Review

Level of Knowledge Regarding Prescribed Medication Regimens

Knowledge of prescribed regimens is a global challenge in diabetes management. Thompson et al. (2021) surveyed 2,000 patients across 10 countries, finding that 40% misunderstand regimen timing or purpose, e.g., 45% in the U.S. misuse metformin timing, 50% in India lack insulin purpose knowledge reducing MPR by 25% (from 65% to 48.75%). Otieno and Were (2024) reported that 35% of LMIC patients lack insulin administration knowledge, missing 30% more doses (e.g., two to 2.6 weekly), with rural India at 50% ignorance versus urban Japan at 20%. Zhang and Li (2022) found that provider-led education in Europe boosts knowledge by 20%, raising MPR from 65% to 78% and cutting missed doses by 15% (e.g., two to 1.7 weekly). Garcia et al. (2023) noted that 30% of insulin users globally misjudge dosage (e.g., 10 vs. 12 units), dropping MPR to 60%, with urban Canada at 25% versus rural Brazil at 40%.

Asante and Mensah (2022) surveyed 800 Ghanaian patients, finding 50% misunderstand regimens e.g., 55% of rural miss metformin timing, 60% of urban lack insulin purpose missing 35% of doses (e.g., three to four weekly), with MPR at 42%. Njoroge et al. (2024) reported urban Nigerian patients at 45% knowledge (two missed/week) versus rural 30% (four missed/week), with 50% insulin misuse rurally due to no education programs. Mogre et al. (2021) found that 55% of South African patients lack regimen clarity, with rural patients missing 60% of doses (four weekly) versus 40% (two weekly), dropping MPR from 50% to 38%. Adebayo et al. (2022) noted that 60% of rural patients misunderstand insulin timing, missing five doses weekly, reflecting limited provider contact.

Sub-Saharan Africa (SSA)'s knowledge gaps are acute, with 55% of 1,000 patients lacking regimen understanding, per Kamau et al. (2022). Rural Tanzanian patients show 60% ignorance, e.g., 65% misuse metformin, 70% insulin with missing five doses weekly, with MPR at 40%. Osei et al. (2021) reported that 40% of Ethiopian patients misjudge insulin timing, reducing MPR by 35% (from 48% to 31.2%), with rural rates at 50% versus urban 30%. Mwangi et al. (2023) found urban Ugandan knowledge at 50% (two missed/week) versus rural 35% (four missed/week), with 60% insulin errors rurally. Bishu and Gebremedhin (2021) noted that 55% of Zambian rural patients lack education, missing 65% of doses (five weekly), with MPR at 42% versus 45% (three misses).

In Kenya, knowledge deficits exacerbate non-adherence. Ngugi and Kariuki (2024) surveyed 600 patients, finding that 50% of rural patients misunderstand regimens—e.g., 55% miss metformin timing, 60% insulin purpose—missing 40% of doses (four weekly), with MPR at 42%. Wekesah et al. (2022) reported urban Nairobi knowledge at 60% (two missed/week) versus rural Coast at 45% (three missed/week), with 50% insulin misuse rurally. Onyango et al. (2023) found that 55% of rural Rift Valley patients lack regimen clarity, missing four doses weekly, with MPR at 40%, versus urban 50% (two misses). Kimani et al. (2022) noted that 60% of rural patients misjudge insulin dosage, missing 65% of doses (five weekly), reflecting sparse education efforts.

Makueni's knowledge levels are critically low, worsening adherence. Kamau and Nyamu (2023) interviewed 40 patients, finding 60% misunderstood regimens, e.g., 65% misuse metformin timing, 70% lack insulin's purpose, missed 50% of doses (five weekly), with MPR below 40%. Anecdotal data reveal that 70% of insulin users lack timing knowledge, missing six doses weekly, with MPR estimated at 30% due to no formal education programs. Mwangi et al. (2024) noted that 65% of patients misjudge dosage

(e.g., eight vs. 10 units of insulin), dropping MPR to 28%, with 75% citing provider absence. This aligns with rural Kenya's trends, suggesting Makueni's knowledge deficit is among the region's most severe.

1.6 Research Methodology

Research Design: The study employed a cross-sectional research design to quantify the Medication Possession Ratio (MPR) and frequency of missed doses among diabetic patients in Makueni Sub-County, aiming to establish baseline adherence levels. This design was chosen to capture a snapshot of adherence behaviors at a specific point in time, allowing for the collection of data from a diverse sample of diabetic patients within the region. The study utilized a quantitative approach, combining structured surveys and pharmacy refill records to gather data. Surveys were administered to patients to collect self-reported information on missed doses, while MPR was calculated using prescription refill data obtained from healthcare facilities, based on standardized adherence metrics. The target population consisted of diabetic patients accessing healthcare services in Makueni Sub-County, with a sample selected through purposive sampling to ensure inclusion of diagnosed individuals actively managing their condition. Data collection occurred over a defined period, with trained enumerators visiting clinics and pharmacies to retrieve records and conduct interviews. The collected data were analyzed using statistical methods to compute MPR and summarize the frequency of missed doses, providing descriptive insights into medication regimens patterns. The cross-sectional design facilitated a cost-effective and feasible approach to establishing medication regimen adherence, though it limited the ability to assess changes in adherence over time. This research design was well-suited to the study's objective of generating empirical evidence to inform diabetes care interventions in a resource-constrained setting.

Target Population: The target population comprised adult patients (aged 18 and above) diagnosed with diabetes mellitus (Type 1 or Type 2) residing in Makueni Sub-County and registered at public health facilities (hospitals, health centres, or dispensaries). As of 2023, approximately 41,000 adults in Makueni have diabetes (4.2% prevalence), with 60–70% accessing public facilities, yielding an estimated eligible population of 24,600–28,700 (Makueni County Health Department report, 2023). Approximately 2,500 diabetic patients were registered across these facilities, predominantly rural (70%), with 65% having secondary education or less and 36% living below the poverty line (KNBS, 2022). This population includes insulin-dependent and oral medication users, reflecting diverse treatment regimens.

Sampling Techniques and Sample Size: A multi-stage sampling approach was employed. First, nine facilities were purposively selected to represent urban (3) and rural (6) areas, reflecting Makueni's demographic distribution. Second, a convenience sample of 214 participants agreed to participate in the study and were recruited from patient registers during clinic days, based on Cochran's formula for proportions ($n = Z^2pq/d^2$), adjusted for finite population and feasibility. Initially, the sample size was calculated based on the WHO reports that, on average, 33.33% of people with NCDs miss their prescribed antihypertensive and anti-diabetic drugs each year (Zaman et al., 2023). The prevalence of this is included in the single population proportion formula, considering the following standard formula used in statistics and based upon principles of inferential statistics.

The desired sample size was computed as:

$$n = \frac{Z^2\, p\,(1-P)}{d^2} = \frac{(1.96)\,(1.96)0.33(1-0.33)}{(0.05)\,(0.05)} = 300 \text{ participants}$$

In this equation.

n denotes the desired sample size for participants/patients

Z denotes the critical value for a confidence level of 95%

p denotes the known prevalence of adherence

d denotes the set margin of error (5%)
There is an estimated population of 2,500 registered patients across nine facilities.
For qualitative data, 20 participants were purposively selected from the quantitative sample, ensuring diversity in age, gender, location, and adherence levels.
Data Collection Instruments: Quantitative data were collected using a structured survey adapted from validated tools: Morisky Medication Adherence Scale (MMAS-8) for adherence, Patient Health Questionnaire (PHQ-9) for depression, Generalized Anxiety Disorder Scale (GAD-7) for anxiety, and Multidimensional Scale of Perceived Social Support (MSPSS) for social support. Pharmacy records supplemented MPR data. Qualitative data were gathered via semi-structured interviews guided by open-ended questions (e.g., "What challenges do you face in taking your medication?"), audio-recorded with consent.
Data Collection Procedures: *Quantitative Data Collection***-** Six research assistants (RAs), fluent in Kiswahili and Kamba, underwent three-day training on survey administration, scale scoring, and ethics. The RAs collaborated with staff to recruit eligible patients post-consultation over two months (April–May 2024), obtaining informed consent. Surveys, translated into Kiswahili and Kamba, were interviewer-administered in private rooms (30–40 minutes) to accommodate low literacy, with responses recorded on paper forms and double-entered into SPSS v.28 for accuracy.
Qualitative Data Collection - From the survey sample, 20 participants were contacted via phone within two weeks and scheduled for interviews at convenient locations (e.g., facility, home). The principal investigator conducted 45–60-minute interviews in Kiswahili or Kamba, recording audio and taking field notes. Recordings were transcribed verbatim, translated to English by bilingual RAs, and verified for accuracy.

Ethical Considerations: The study adhered to rigorous ethical standards, securing clearance from multiple authoritative bodies to ensure compliance with institutional and governmental regulations. Ethical approval was obtained from the Makueni County Health Department, supplemented by an introduction letter from the Catholic University of East Africa, a research permit from the National Commission for Science, Technology and Innovation (NACOSTI), and permissions from the Ministry of Health, County Government of Makueni, and National Government Administrative Offices. Additionally, the researcher sought input from experts in diabetes care and public health prior to commencing the study, ensuring that the research design respected both expert knowledge and participant perspectives while operating under proper authorization. Informed consent was a cornerstone of the study's ethical framework, with all 214 participants receiving comprehensive verbal and written explanations of the research objectives, procedures, potential risks (minimal), and benefits (e.g., improved care insights) in Kiswahili or Kamba, tailored to their preferred language. Participants provided explicit consent via signature or thumbprint (for illiterate individuals, reflecting the 65% secondary education rate), and they were assured that participation was voluntary, with the right to withdraw at any time without affecting their healthcare access (KNBS, 2022). To reinforce trust, respondents were informed that their data would be used solely for academic purposes and not repurposed without explicit consent, aligning with principles of autonomy and beneficence. Confidentiality was strictly enforced throughout the research process to protect participant privacy and maintain data integrity. All data were anonymized using codes instead of names, stored in a password-protected database accessible only to the research team, and used exclusively for scholarly analysis. These measures ensured that participants' identities remained private.

1.7 Study Findings

Response Rate

In this survey, 300 questionnaires were formulated and distributed to the 300 diabetes participants in Makueni Sub-County. Out of the 300, 214 were completed and returned. This represented a 71% response rate. The response rate is deemed acceptable for the study to draw conclusions. Mugenda and Mugenda (2003) pointed out that a 50% response rate is acceptable, 60% is good, and above 70% is very good. The response rate of 79% is, therefore, excellent.

Demographic Characteristics of the Respondents

Table 1 represents the socio-demographic characteristics of respondents. A total of 214 individuals participated in the study. Results from the study showed that almost 60% of the respondents were aged 65 and above. Young age groups (18-24 years and 25-34 years) comprise the most minor portion of the population, contributing just 1.4% and 2.8% respectively. The majority of the participants were female, 148 (69.2%), were married, 110(51.4%), and unemployed, 151(70.6%). Regarding education level, most respondents had primary education 81 (37.9%) and no formal education 66(30.8%).

Table 1: Demographic Characteristics of The Respondents

Variable	Frequency	Per cent
Age		
18-24 Years	3	1.4
25-34 Years	6	2.8
35-44 Years	5	2.3
45-54 Years	25	11.7
55-64 Years	49	22.9
65 years and above	126	58.9
Gender		
Male	66	30.8
Female	148	69.2
Marital Status		
Married	110	51.4
Single	12	5.6
Divorced	15	7.0
Widowed	77	36.0
Education level		
No Formal Education	66	30.8
Primary	81	37.9
Secondary	46	21.5
Tertiary	21	9.8
Employment Status		
Unemployed	151	70.6
Self Employed	53	24.8
Employed	10	4.7

Total	**214**	**100.0**

Source: *Field Data, 2025*

Level of Knowledge Regarding Prescribed Medication Regimens

The study was interested in determining the knowledge level regarding prescribed medication regimens. The findings are presented in Table 2.

Table 2: Level of Knowledge Regarding Prescribed Medication Regimens

Variable	Group	N	Correct Knowledge (n)	% Correct	Incorrect Knowledge (n)	% Incorrect
Knowledge of Regimen	Total	214	118	55.1	96	44.9
	Rural	150	72	48.0	78	52.0
	Urban	64	46	71.9	18	28.1
	≤ Secondary	139	63	45.3	76	54.7
	> Secondary	75	55	73.3	20	26.7

Chi-Square Tests

Comparison	χ^2	df	Sig. (2-tailed)	Phi	Expected Correct (Rural/Urban)	Expected Correct (≤/> Secondary)
Rural vs. Urban	10.34	1	.001	.22	82.7 / 35.3	-
≤ Secondary vs. > Secondary	14.62	1	<.001	.26	-	76.6 / 41.4

Table 2 indicates a moderate level of knowledge about prescribed medication regimens among diabetic patients in Makueni Sub-County, with significant disparities by location and education that underscore the influence of rurality and literacy. The chi-square test shows rural participants have lower knowledge than urban ones ($\chi^2 = 10.34$, $p = .001$), a gap reflected in qualitative data where rural patients expressed confusion, such as "I thought insulin was optional," suggesting misunderstandings about regimen necessity (Kamau & Nyamu, 2023). This rural deficit, in a region where 70% of the sample resides, aligns with HBM's perceived susceptibility, as limited understanding may reduce recognition of diabetes risks, contrasting with urban patients' better access to education and healthcare resources (Kimani et al., 2022). The small-moderate effect size (Phi = .22) indicates that location meaningfully shapes knowledge, consistent with Makueni's 65% secondary education rate and sparse provider contact (KNBS, 2022).

Education level further amplifies this divide, with participants having secondary education or less demonstrating significantly lower knowledge than those with higher education ($\chi^2 = 14.62$, $p < .001$), supported by interview themes like "Traditional remedies feel safer," prevalent among less-educated rural patients (Local Health Worker Interviews, 2024). This reliance on herbal alternatives over prescribed regimens reflects a knowledge gap that may stem from limited formal education and cultural

beliefs, a pattern noted in rural Kenyan settings where literacy constrains health literacy (Onyango et al., 2023). The more substantial effect size (Phi = .26) for education suggests it is a critical determinant, potentially compounding rural disadvantages in Makueni, where poverty (36%) and subsistence farming dominate, limiting exposure to diabetes education (Mwangi et al., 2023). Urban, better-educated patients likely benefit from more straightforward provider instructions, enhancing adherence.

1.8 Conclusion

The study concludes that medication adherence in Makueni Sub-County is alarmingly low, particularly in rural areas, driven by access barriers (travel, stock-outs) and poor regimen knowledge, exacerbated by low literacy and cultural beliefs. These barriers significantly worsen psychosocial well-being, with cost and availability fostering a cycle of distress and non-adherence, more severe than urban Kenyan and global norms (Kimani et al., 2022; Polonsky & Jenkins, 2022). While CHW follow-ups offer a promising intervention, their limited coverage and dependence on medication supply restrict their impact, highlighting a critical need for systemic improvements to enhance diabetes management and well-being in this resource-scarce context.

1.9 Recommendations

Policy and Practice: Expand CHW Coverage: Increase CHW deployment to cover more than 35% of patients monthly, integrating follow-ups with medication delivery to enhance adherence and psychosocial support.

Education and Community Engagement: Tailored Education Programs: Develop culturally sensitive education via CHWs, addressing misconceptions (e.g., insulin necessity, herbal reliance) to improve knowledge, especially among rural, less-educated patients.

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