

Original Research Article

Uptake of medication use counseling among the patients receiving antibiotics from selected hospital pharmacies in Kiambu County, Kenya

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ABSTRACT

Background: Medication use counselling (MUC) is a critical component of patient care, particularly regarding antibiotic use. Despite its importance, studies indicate that over 50% of antibiotics are inappropriately consumed globally, largely due to inadequate counselling. The study aimed to determine the uptake of MUC among patients receiving antibiotics in selected hospital pharmacies in Kiambu County.

Methods: A cross-sectional study design was employed, utilizing structured questionnaires to gather data from 423 patients and key informant interviews among 12 pharmacy personnel across three hospitals. Statistical analysis was undertaken using the Statistical Package for Social Sciences version 24, with significance set at $p < 0.05$.

Results: The findings revealed that MUC uptake varied significantly across facilities, with Kikuyu Hospital reporting the highest rate at 64%. Patients demonstrated high awareness of medication names (93.4%) and administration routes (95.5%), but knowledge regarding dosage strength (45.6%) and protocols for missed doses (37.8%) was notably low.

Conclusions: The overall uptake rate for MUC was found to be 64%, indicating a need for improvement in counselling practices.

Keywords: Drug information, Inappropriate antibiotics use, Medication use counselling, Pharmacy personnel

INTRODUCTION

Medication use counselling (MUC) refers to the support and advice provided to patients/relatives verbally or in written form to promote safety and rational use of antibiotic medications.¹ Globally above 50% of antibiotics dispensed are inappropriately consumed at the same time more than half of patients take them incorrectly due to inadequate medication counselling while majority Kenyan health facilities have reported insufficient patient-provider interaction.^{2,3}

MUC provision has faced great challenges as result of limited discussion between pharmacy personnel and the patients thus they have fallen into "an information gap."⁴ Although prescriber plays a critical role in choice of medicines, safety and effective drug therapy depend on

patients being well-informed about their medication. Communication is needed to create awareness about prescribed drugs from the time of consultation with physicians and clinicians and actually, when patients visit the pharmacy to collect medicines.⁵

Omnibus Budget Reconciliation Act, 1990 guideline is a standard tool that contains counselling content adopted by pharmacy personnel in all medical practice settings to provide a compressive patient counselling.⁶ ASHP emphasize that pharmacists should counsel their patient; name and the appearance of medicine, medication indication, route of administration, i.e. for cure/ immune suppression, instructions/directions, expected side effects, and adverse drug reaction, action to be taken in case of missed dose and occurrence of A.D.R.s, state possible drug interactions and contraindications, instructions on

how a drug should be stored and handled.

Effective education and counselling, patients and their therapy supporters are encouraged to take the full-prescribed antibiotic regimen, monitor their use, and pharmacy personnel correct any misunderstandings.⁷ At this point patient may not recall much of the information, there is a need for proper packaging and labelling on the prescribed drugs. Provision of patient counselling is a key role of pharmacists/pharmaceutical technologists.⁸ Concludes that patient satisfaction and better outcomes are associated with the good communication between the pharmacists and the patients.

Antibiotics are medications used to manage or prevent bacterial infections. They act by inhibiting the growth and replication of bacteria or killing them outright.⁹ Effective use of antibiotics requires that patients receive the proper medicines for suitable conditions, corresponding to individual needs, at a cost that the client can afford, and with appropriate.¹⁰

The length of treatment depends on the kind of infection and severity, i.e., whether it is for just a few days, one to two weeks, a few months, or many months, thus patients are recommended to take the entire course of antibiotics.¹¹ Pharmacy personnel's mandate is to provide medication counselling for appropriate use to maximize clinical therapeutic effects while reducing drug-related problems and the development of antimicrobial resistance resulting from medication misuse and ensuring the cost-effectiveness of medication therapy.¹²

Counselling starts by pharmacists introducing themselves to the patients, then explain the purpose of the counselling session.¹³ Before encountering a patient, as a hospital pharmacist, you should review their records to familiarize yourself with their history.¹³ This aids in determining the patient's existing knowledge, conserves time, and pinpoints areas requiring specific attention.¹⁴ They also assess what the patient understands about their illness's seriousness and evaluate the patient's knowledge of their therapy and drug compliance.¹⁵

According to the patient counselling standards in the O.B.R.A. (1990), pharmacy personnel should inform the patients of their medicine name, purposes, and expected benefits.¹⁶ However, despite the O.B.R.A. '90 guideline, only 37.2% and 42% of patients were unable to name the prescribed drug(s).¹⁷⁻¹⁹ survey reveals that patients receive less information about their medical treatment and its expected benefits, such as cure, reduction in disease progression, or prevention of disease or its symptoms.

Whether the patient takes the medication orally, applies it topically, or administers it rectally, it is crucial to ensure they understand its correct administration.¹³ Provide the client with the medication schedule and instructions on when to take the drugs, such as on an empty stomach, with a meal, or a specific amount of time before or after a

meal.²⁰ Clear and comprehensive explanations to patients can prevent medication administration errors.¹⁶ However, frequently document medication errors such as incorrect drug delivery, improper timing, and inaccurate dosage.²¹

Emphasizing the necessity of following the prescribed medicine helps to build trust in the therapy's efficacy. Failure to follow the dose schedule will cause the bloodstream medicine to fall below the minimum inhibitory concentration required to suppress bacterial growth. Sub-therapeutic concentrations of the treatment expose the bacteria, potentially leading to drug-resistant strains.²² Found that 43.7% of pharmacists do not discuss therapy length with patients.²³ In low- and middle-income countries, antimicrobials are frequently misused through practices such as disregarding prescribed regimens, utilizing leftover drugs, and self-medicating.²⁴ Another study showed that 23.4 % self-medicated.²⁵

Pharmacological treatment should assess, discuss, and manage hypersensitivity to the drug's components.⁶ Pharmacy practitioners struggle to evaluate medication allergies and there no unintended consequence mitigation protocol.²⁶ It was discovered that no pharmacist explained potential interactions or contraindications to the patients and concluded that medication discrepancies can sometimes cause side effects like hospitalization.²⁷ The Pharmacy and Poisons Board of Kenya reported 127 (15%) antibiotic-related adverse drug events in 2019. Over 60% of patients lack knowledge on how to properly store and discard medications.²⁸ In addition, it recommends the appropriate disposal of contaminated or expired medications. Pharmacists can employ call-backs to evaluate patients' understanding of medications.²⁹ An instance of requesting the customer to reiterate the instructions for their prescription is shown. However, study found that 40% of pharmacists rarely ask for customer feedback.³⁰

Finally, patients have time to absorb information and ask questions while the pharmacist answers. However, some pharmacists speak quickly, thereby ignoring patient concerns.³¹ Patients require care plans that incorporate pharmaceutical aids such as adherence packaging due to their inability to recall verbal instructions from pharmacists.³² While rare, least developed countries have a 27.3% packaging rate, which includes paper packaging for tablets and capsules.³³ According to WHO, medication packaging/labelling should include the patient's name, drug name, strength, dosage instructions and medication amount and warnings and risks.³⁴ However, 40% of pharmacists struggled to understand and execute labelling guidelines.³⁵

Despite the Kenyan health facilities having MUC guidelines in place, Kiambu County still reports incorrect use of antibacterial and an increase number of adverse reactions cases (from 2% to 4.5%) reported by PPB in the year 2023.²⁵ In addition, of these, public health effects of A.D.R.s occurred were life-threatening, hospitalization,

deaths and disabling to the patient. These practices need attention because they are creating problems for health professional overseeing treatment and the potential to cause death. Monitoring especially the pharmacy practices was required in Kenya through determining the uptake of MUC level. Considering that Kiambu County health facilities serve larger population that has highly contributed to insubstantial quality of health service delivery in the area.³⁶ It is also among the Counties where both community and hospital-acquired infections are more pronounced and antibiotic medications are most commonly prescribed drug for the management of infections.^{37,32} Currently, pharmacy personnel are the majority custodians and dispensers of the drugs in the County. Their intervention in antibacterial counselling is supported by evidence-based practice.

This study acted as programmatic intervention that provide solutions and setbacks that faces provision of medication counselling with the aim of promoting the rational use of antibiotic medications and reduction of medication errors.

METHODS

A cross-sectional study technique was adopted to determine the uptake of medical use counselling among the patient receiving antibiotics medications from selected hospital pharmacies. A process that used standard questionnaires constructed as per United States Pharmacopoeia Medication Counselling Behaviour (U.S.P.-M.C.B.G) to determine the level of Medical Use Counselling in hospital pharmacies at that particular point in time.

The multistage sampling method employed in the cross-sectional study brought respondents on board with Kikuyu Sub-County was chosen with purpose because it is heavily populated and the availability of public, faith-based and private hospitals. Three hospitals with a relatively high number of patients visited, namely, Lussigetti, P.C.E.A. Kikuyu, and St. Teresa Nursing Hospital were then selected, and adult patients receiving antibiotic therapy and being at least 18 years old were then recruited, using systematic random sampling, the first eligible patient was then registered and the 13th patient (5571/423) registered subsequently until the sample size requirement was met. Only patients willing to participate and capable of giving consent were taken into consideration and those below the age of 18 years, patients who were too ill and those who did not want to participate were excluded. The study was undertaken during the period between September and December 2023.

Sample size determination

The sample size of participants was calculated using the Fischer et al, (1998) formula.

$$n = \frac{Z^2 p(1-p)}{d^2}$$

where; n=desired sample size (where the population is more than 10,000) Z=95% confidence level where $\alpha=0.05$ (standard value of 1.96), d=degree of accuracy whose value in this proposal is 0.05, P=conventionally was taken as 0.5 because the level of MUC was unknown by the time of this study.

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

N=384 participants

Minimum sample size required=384 in addition to 10% for spoilt questionnaires=423 participants.

The researcher applied proportionate probability sampling to ensure fairness and representativeness across the three facility categories. Lussigetti Hospital (public), with 1,789 patients, contributed 136 patients and 4 pharmacists. P.C.E.A. Kikuyu Hospital (faith-based), the busiest with 2,213 patients, contributed 168 patients and 8 pharmacists. St. Teresa Hospital (private), with 1,568 patients, contributed 119 patients and 3 pharmacists. In total, from an average of 5,571 patients, the study sampled 423 patients and 15 pharmacists, proportionally distributed according to facility size.

The patients' questionnaire was adopted from USP-MCBG protocol. The relevant items were chosen according to the guideline based on their capabilities to measure the degree of medication use counselling in the hospital pharmacies in Kiambu County.

A questionnaire pre-test was carried out at Nazareth-Ruiru Hospital with similar settings to those for the selected study. Adjustments were made based on the outcome of the pre-test, and data collected was no part of the study sample. The instruments met the needs of the research, and the consistency of the collected data was assessed through sharing with peers and supervisors.

Questions were phrased the same way each time to make sure everyone gets same information and tested same way. The research assistants training enabled them to be equipped them with skills and knowledge to collect data.

Pre-tested questionnaire was used as an exit interview with contesting participants. A face-to-face interview was considered if respondents had inadequate knowledge of MUC terms and its adoption. Participants offered an informed consent before carrying out the interview. On the enrolment day, patients' socio-demographic information and the level of MUC were interviewed.

A completeness check was done for the data and downloaded for Kobocollect server, imported to SPSS version 24, and coded. Cross-tabulations were used to generate descriptive. Moreover, chi-square calculations

tested the research hypothesis while the p-value <0.05 , was considered statically significant in all cases. The analysis was conducted using inferential and descriptive statistics at a 5% significance level.

RESULTS

The study sampled 423 patients and 422 participated in the study which was a response rate of 99.8%. All tests of significance were computed with $\alpha=0.05$. The data used in this study was drawn from the 422 patients who responded and 12 pharmacists in three health facilities in Kiambu County.

The gender distribution among the participants revealed a higher proportion of females, with 262 (62.1%), compared to 160 (37.9%) who are male (Table 1). This indicates a significant female representation in the study population. In reference to marital status, the majority of subjects are married, accounting for 277 (65.6%). Those who were single were 122 (28.9%), while those who were

separated or divorced constituted a smaller segment at 23 (5.4%) (Table 1).

The educational background of the participants showed that nearly half, 208 (49.3%), have completed secondary education. College or university graduates represented 139 (32.9%), while 61 (14.5%) have only primary education. A small portion, 14 (3.3%), reported having no formal education. Regarding occupation, a significant number of participants, 195 (46.2%), were found to be unemployed. Self-employed accounted for 135 (32%), while those in formal employment constituted 92 (21.8%) (Table 1).

Finally, the age distribution indicated that the largest group of participants falls within the 18-34 years category, comprising 203 (48.1%). The 35-54 years age group follows closely with 187 (44.3%), while those over 55 years represent a smaller proportion at 32 (7.6%) (Table 1).

Table 1: Patient demographic information (n=422).

Characteristics	Category	Frequency	Proportion (%)
Gender	Male	160	37.9
	Female	262	62.1
Marital status	Married	277	65.6
	Single	122	28.9
	Separated/divorced	23	5.4
Level of education	Primary education	61	14.5
	Secondary education	208	49.3
	College/University	139	32.9
	No formal education	14	3.3
Occupation	Unemployed	195	46.2
	Self-employed	135	32
	Employed	92	21.8
Age of the patients in years	18-34	203	48.1
	35-54	187	44.3
	>55	32	7.6

Level of MUC in the hospital pharmacies in Kiambu County

The findings showed that across all hospitals, an impressive 395 (94%) of participants indicated that they received clear explanations regarding their medications. However, when it came to discussing the strength and dosage form of medications, the results highlighted a significant area for improvement. Only 193 (48%) of participants overall felt that pharmacists adequately communicated this essential information. The breakdown revealed that only 65 (46%) of patients at Lusigetti Hospital received this information, compared to 107 (65%) at Kikuyu and a concerning 21 (18%) at St. Teresa. In contrast, the findings showed that pharmacists excelled in explaining the route of administration, dosage regimen, frequency, and duration of therapy. A remarkable 403

(95%) of respondents confirmed that they received thorough explanations in this area (Table 2). This high level of understanding is critical, as it ensures that patients are well-informed about how to take their medications correctly.

Despite the positive findings in other areas, there was a notable deficiency in the support provided to patients for incorporating their medications into their daily routines. Only 292 (69%) of participants felt that pharmacists assisted them in developing a practical plan for medication adherence. The findings also revealed that a significant number of patients, 262 (62%), did not receive guidance from pharmacists on what to do if they forgot to take their medication. When it came to explaining the importance of completing prescribed medication, 290 (69%) of respondents reported that pharmacists effectively communicated this crucial aspect.

Furthermore, on the discussion of possible side effects, adverse events, and interactions associated with medications. Overall, only 216 (51%) of participants indicated that pharmacists addressed these concerns (Table 2).

The findings also showed that, only 62 (15%) of participants reported that pharmacists asked them to repeat instructions to confirm their understanding. This lack of confirmation is troubling, as it raises questions about whether patients truly grasp the information provided to them.

Moreover, the survey indicated that 170 (40%) of patients felt that pharmacists inquired about their need for additional information. While this is a positive step, there remains an opportunity for pharmacists to be more proactive in engaging patients and ensuring they feel comfortable asking questions.

Overall, Kikuyu Hospital's MUC uptake rate was the highest of the three facilities, with a 106 (64%) rate; Lusigetti's MUC uptake rate was 66 (47%); and St. Teresa's MUC uptake rate was 66 (56%).

The findings also revealed that only 144 (34.1%) of participants discussed how long it would take to know if their medications were effective, suggesting a gap in patient education regarding treatment timelines. A comparison of the data revealed only five (5) out of ten (10) areas of the counselling survey respondent scored above 211 (50%). The highest score achieved was 395 (95%), while the lowest was 144 (34.1%). Eight out of the 10 questions were identified as most crucial to know when it comes to antimicrobial agents' awareness to avoid negative pharmacological effects (see Table 2). Notably, the area receiving the lowest concern was, how long it will take to know medication(s) are working with 144 (34.1%) (Table 2).

Table 2: Counselling contents as per Omnibus Budget Reconciliation Act (OBRA)1990.

	MUC uptake	Lusigetti hospital (n=140)	Kikuyu hospital (n=165)	St. Teresa hospital (n=117)	Overall total (n=422)
		N (%)	N (%)	N (%)	N (%)
Did the pharmacist explain the name and indications of your medicine to you?	Yes	129 (92)	153 (93)	112 (96)	395 (94)
	No	11 (8)	12 (7)	5 (4)	18 (6)
The pharmacist spoke about the strength and dosage form of your medication(s)?	Yes	65 (46)	107 (65)	21 (18)	193 (48)
	No	75 (54)	58 (35)	96 (82)	229 (52)
The pharmacist explained route of administration, dosage regimen, frequency, duration of therapy route of administration.	Yes	125 (89)	162 (98)	116 (99)	403 (95)
	No	15 (11)	3 (2)	1 (1)	19 (5)
The pharmacist helped you develop a plan for incorporating your medication into your daily routine?	Yes	61 (44)	135 (82)	96 (82)	292 (69)
	No	79 (56)	30 (18)	21 (18)	130 (31)
Did the pharmacist tell you exactly what to do if you forgot to take your medicine?	Yes	24 (17)	93 (56)	43 (38)	160 (38)
	No	116 (83)	72 (44)	74 (62)	262 (62)
The pharmacist explained why you should complete the medication as prescribed	Yes	69 (49)	139 (84)	82 (70)	290 (69)
	No	71 (51)	26 (16)	35 (30)	132 (31)
Pharmacist discussed possible side effects, adverse events and interactions and how to prevent or manage them	Yes	42 (30)	80 (48)	94 (80)	216 (51)
	No	98 (70)	85 (52)	23 (20)	206 (49)
The pharmacist asked you to repeat the instruction to confirm whether you have understood?	Yes	51 (36)	46 (28)	7 (6)	62 (15)
	No	89 (64)	119 (62)	110 (94)	360 (85)
The pharmacist asked if you needed additional information?	Yes	67 (48)	59 (36)	44 (38)	170 (40)
	No	73 (52)	106 (64)	73 (62)	252 (60)
Have you discussed with your pharmacist about how long it will take to know your medication(s) are working?	Yes	31 (22)	84 (51)	29 (25)	144 (34.1)
	No	109 (78)	81 (49)	88 (75)	278 (65.9)
Average MUC uptake rates per facility		66 (47)	106 (64)	66 (56)	236 (56)

Packaging and labelling information

The findings in Table 3 indicate that most of the medications administered included the name of the drug, the dosage, and the frequency of administration. All of

them had a very good coverage rate of 417 (99%). This means that almost all of the patients got the important information they needed to figure out what the medicine was and how frequently to take it. But other important parts of labelling were not always there. For example, just

297 (70%) of patients got instructions on how to take their drugs. This means that three out of ten patients may not know precisely how to take their medications. Further, only 169 (40%) of patients were told how long or how much of the medications they would need, which is a big gap that might lead to not using enough or too much.

Less than half of the labels, 205 (49%), had the expiration date on them. This might be dangerous for patients if they accidentally take outdated medicines. In 352 (83%) of instances, information on specific precautions was provided, but in only 219 (52%) of cases, instructions on how to store the drugs were given. This meant that many patients did not know how to store their medications effectively. The average labelling score across the three facilities was 297 (68%), which means that the degree of compliance with labelling rules was moderate. This means that even if the most basic information is often given, important supporting information is often left out. This might have an effect on how well patients use drugs (Table 3).

The "Average labelling score" was computed as the average number of "Yes" answers for each hospital's labelling information aspects. To find out how well each hospital followed proper drug labelling practices, the research computed the total number of times each

hospital correctly labelled drug information items (like drug name, strength, dosage, directions, duration, expiry date, precautions, and storage) and averaged them. The findings showed that Kikuyu Hospital achieved an impressive average score of 137 (83%), indicating a strong adherence to labelling standards. This facility particularly excelled in providing clear drug names and dosage instructions, which are critical for patient safety. However, even Kikuyu showed some weaknesses, especially in the area of drug strength, where compliance was at 104 (63%). This suggests that while the hospital is performing well overall, there is still room for improvement in ensuring that all medications clearly indicate their strength (Table 3).

In contrast, Lusigetti's average score of 85 (61%) indicates a more concerning situation. The hospital struggled significantly with the compliance regarding the strength of drugs, achieving only 67 (48%). This lack of clarity can lead to serious risks for patients, as understanding the potency of medications is essential for effective treatment. Additionally, the compliance for expiry dates was alarmingly low, with only 41 (29%) of drugs providing this crucial information. This oversight poses a considerable safety risk, as patients may unknowingly use expired medications (Table 3).

Table 3: Labelling information on drugs dispensed to the patients.

Labelling information	MUC uptake	Kikuyu hospital (n=165), N (%)	Lusigetti (n=140), N (%)	St. Teresa (n=117), N (%)	Total (n=422), N (%)
Drug name	Yes	164 (99)	136 (97)	117 (100)	417 (99)
	No	1 (1)	4 (3)	-	5 (1)
Strength	Yes	104 (63)	67 (48)	55 (47)	226 (54)
	No	61 (37)	73 (52)	62 (53)	196 (46)
Dose and frequency of administration	Yes	164 (99)	135 (96)	117 (100)	417 (99)
	No	1 (1)	5 (4)	-	5 (1)
Directions for use	Yes	140 (85)	96 (69)	61 (52)	297 (70)
	No	25 (15)	44 (31)	56 (48)	125 (30)
Duration/quantity of the drugs	Yes	128 (78)	71 (51)	56 (48)	169 (40)
	No	37 (22)	69 (49)	61 (52)	253 (60)
Expiry date	Yes	121 (73)	41 (29)	62 (47)	205 (49)
	No	44 (27)	99 (71)	55 (53)	217 (51)
Special precautions	Yes	161 (98)	97 (69)	94 (80)	352 (83)
	No	4 (2)	43 (31)	23 (20)	70 (17)
Storage conditions	Yes	122 (74)	41 (29)	56 (48)	219 (52)
	No	43 (26)	99 (71)	61 (52)	203 (48)
Average labelling score		137 (83)	85 (61)	76 (65)	287 (68)

St. Teresa's average score of 76 (65%) reflects a similar trend. While the hospital managed to label drug names effectively, achieving 100% compliance, it fell short in other critical areas. The strength of drugs was indicated in only 55 (47%) of cases, and the provision of directions for use was particularly concerning, with only 61 (52%) compliance. This lack of clear instructions can lead to misuse or confusion among patients, highlighting the

need for immediate improvements. Both Lusigetti and St. Teresa also exhibited low compliance regarding storage conditions, with only 41 (29%) and 56 (48%) respectively providing this information. Proper storage is vital in maintaining their effectiveness and safety, and the shortage of clear guidance in this area is worrisome (Table 3).

In summary, comprehensive packaging and labelling details are crucial for patient safety and effective medication use. The findings indicate that while some hospitals excel in labelling practices, others show significant room for improvement. By enhancing labelling standards, healthcare providers can better support patients in recalling critical information, thereby promoting safe and appropriate drug use.

Socio-demographic factors and receipt of MUC

The findings showed that 120 (75%) of male participants received MUC services, whereas the female participants, 245 (93%) received MUC services, with $\chi^2=7.407$, $df=3$, $p=0.006$. This indicates a significant association between gender and MUC. Similarly, 162 (84%) of the participants with 18-34 years received MUC services; 155

(81%) with 35-54 years and only 20 (65%) with 55+ years utilized MUC. The relationship between age and MUC uptake was also significant ($\chi^2=11.175$, $df=12$, $p=0.011$), with younger respondents more likely to obtain the service than their older counterparts (Table 4).

On occupation, the findings showed that, among unemployed individuals, 153(77%) received MUC services, while 44 (23%) did not. Self-employed individuals exhibited a high rate of 125 (95%), while for employed individuals a similar trend was witnessed, with 86 (94%) receiving the services. However, the overall link between occupation and MUC did not achieve statistical significance ($\chi^2=12.341$, $df=6$, $p=0.055$). Similarly, findings on the influence of marital status on MUC revealed that 230(83%) married participants received MUC services, whereas 47 (17%) did not.

Table 4: Socio-demographic factors and MUC uptake.

Socio-demographic	Receipt of MUC		Significance
	Yes, N (%)	No, N (%)	
Gender			
Male	120 (75)	40 (25)	$\chi^2=7.407$, df=3, p=0.006
Female	245 (93)	18 (7)	
Marital status			
Married	230 (83)	47 (17)	Fisher's Exact Test=0.895, p=0.832
Single	100 (82)	22 (18)	
Divorced	3 (75)	1 (25)	
Level of Education			
Primary education	31 (51)	30 (49)	$\chi^2=21.479$, df=9, p=0.001
Secondary education	180 (86)	29 (14)	
College/University	130 (94)	9 (6)	
No formal education	5 (36)	9 (64)	
Occupation			
Unemployed	153 (77)	44 (23)	$\chi^2=12.341$, df=6, p=0.055
Self-employed	125 (95)	7 (5)	
Employed	86 (94)	6 (6)	
Age of the patients in years			
18-34	162 (84)	40 (16)	$\chi^2=11.175$, df=12, p=0.011
35-54	155 (81)	35 (19)	
>55	20 (65)	11 (35)	

Similar findings were observed among the singles, where 100 (82%) received the services and 22 (18%) did not. There is a clear implication that marital status does not significantly affect MUC (Fisher's Exact Test=0.895, $p=0.832$) (Table 3). The findings also showed that 31 (51%) participants with a primary education received MUC services, 180 (86%) with a secondary education receiving MUC services, 130(94%) who had attained college or university education received MUC services, and only 5 (36%) who had no formal education received MUC services. The study showed a significant association between higher education levels and MUC ($\chi^2=21.479$, $df=9$, $p=0.001$) (Table 4).

DISCUSSION

Concerning gender, the findings showed that 75% of males received MUC, while a significantly higher 93% of females did so with a significance of $p=0.006$, indicating a clear association between gender and MUC utilization. Females are considerably more prone to access MUC services compared to their male counterparts. This suggests a significant gender disparity in the uptake of MUC services, highlighting the need for targeted interventions to engage male patients more effectively. Various social ideologies (feminization of household work and societal expectations) affect all genders,

potentially preventing them from receiving adequate medication counselling.³⁸

Regarding educational attainment, only 36% of individuals with no formal education received MUC, while utilization rose significantly to 94% among those with a college or university education. The significance value of $p=0.001$, indicate a highly significant association between education level and receipt MUC. A higher educational attainment is strongly linked to increased likelihood of receiving MUC services. Study done at Indonesia reported a slightly negative relationship between participants' education levels and how satisfied they were with the pharmacists' counselling skills.¹⁴

Finally, the age of patients shows a significant trend in utilization rates. Among individuals aged 18-34 years, 84% received MUC, whereas only 65% of those over 55 years did. The significance value of $p=0.011$ indicating a clear association between age and receiving of MUC. The results suggest that younger respondents are more likely to engage with MUC services than their older counterparts, potentially due to greater health literacy or comfort with healthcare interactions. The findings echo the conclusion that older adults are slower learners compared to younger individuals; approximately 16.7% of the elderly have functional barriers, 16.7% are lowly illiterate, and 11.1% have poor vision, speech, or hearing.¹⁴

It is evident that most patients were knowledgeable of the names and indications of the drugs. This high score indicates that most individuals felt well-informed about the purpose of their medications, reflecting effective communication from pharmacists in this aspect. However, the score drops significantly in the discussion of the strength and dosage information (45%). The finding was similar to Saudi survey that reported 60% of patients are unaware of drug storage and disposal.²⁸ However, the finding contradicts the results of the focus group discussion, as some participants reported instances of receiving incomplete doses and inadequate information. A patient reported that certain pharmacies lack medication or dispense only half of the prescribed quantity. We intentionally do this to encourage patients to return for additional dosages. Certain patients abstain from seeking additional doses since they experience a notable improvement following the initial treatment. A patient expressed, *"Some healthcare providers inquire about prior usage of a certain drug and, upon confirmation, provide it without any further information."*

Majority (95%) of the patients received a good explanation of the route of administration and the dosage regimen. This highlights how pharmacists ensured patients comply with their drug therapy. Additionally, pharmacists assisted a considerable proportion of patients (69%) in integrating their medications into their daily routines. The results validated argument that clients should receive exact medicine scheduling instructions,

including whether to take the pills on an empty stomach, with a meal, or at a specified interval before or after a meal.²⁰ However, the results were incongruent with the conclusions drawn from the focus group discussion. Participants highlighted the rarity of drug dispensers' commitment to developing effective therapy approaches. A patient expressed, *"I am unable to recall uttering those words to myself."* She instructed me to consume medication in the morning and evening.

The study also uncovered that many respondents (65.9%) left without clear information concerning the expected timeline for medication effectiveness. The result mirrors observations of previous study that indicated merely 10.4% of objects obtained pharmacological effect duration information from pharmacy workers. In contrast to a survey found that pharmacy staff do not provide times of day or tangible examples to clarify instructions.⁸ They do not fully share with patients the risks of not taking prescription medications. Additionally, the scores for instructions on how to handle missed doses were similarly low (38%), indicating that pharmacists failed to provide clear guidance on managing missed doses, a crucial aspect of maintaining treatment continuity. The results corroborated exit knowledge assessment that found only 28.7% of Ethiopian patients could remember what to do if they missed their prescription doses.³⁹

The findings also showed that, on average, 69% of the patients received information about the importance of following their medication schedule, but most did not receive information about potential side effects, adverse events, and drug interactions. The findings were concurrent with study, which revealed the absence of a structured procedure for addressing unintended repercussions.²⁶ Similarly, none of the participants provided explanations for potential interactions or contraindications.²⁷ The findings contradicted focus group discussions, particularly when a member explicitly stated, *"The pharmacist warned of headaches and nausea." The pharmacist advised me to stop using the prescription and visit the local hospital if symptoms or itchy rashes persisted.*

Small proportion (15%) of the patients were asked to repeat instructions to confirm their understanding. The findings supported a survey that reported 40% of pharmacy professionals rarely solicited clients for comments to assess their understanding. To add on that, some pharmacists speak too fast and may not listen to patients' concerns.³¹ They suggested giving patients time to meditate and ask questions while the pharmacist answers.

Finally, the findings indicated varying levels of MUC across different hospitals. For instance, Kikuyu Hospital had the highest MUC uptake rate at 64%, while Lusigetti and St. Teresa had rates of 47% and 56%, respectively. The findings resonate with the suggestion that pharmacists need to assess patient understanding and

tailor counselling accordingly.¹³ Furthermore, the study's results regarding the inadequate communication of therapy duration echo the findings of dispensing practice assessment that highlighted a common shortfall in counselling practices.²³ This suggests that enhancing patient knowledge directly correlates with their engagement in MUC services.

CONCLUSION

The study concluded that medical use counseling is low across the hospitals evaluated, with Kikuyu Hospital having the highest uptake at 64%, St. Teresa Hospital 56%, and Lusigetti Hospital 47%. While some aspects of counseling, such as explaining medicine names and indications, scored relatively high (around 93-96%), critical areas like dosage, strength, and side effects showed much lower compliance. This inconsistency indicates a need for improvement in overall MUC delivery.

County government of Kiambu should improve uptake of MUC by adopting a single, mandatory antibiotic counselling and documentation standard across all Kiambu public health facilities. This could be by implementing a mandatory 1-2-minute checklist at the dispensing window to provide information on dose, duration, adherence, no sharing, side effects, red flags, and storage. It is essential for County governments to prioritize the enhancement of patient education regarding medical use, recognizing its critical role in improving medication adherence and overall patient safety.

There are very minimal studies focusing on level of MUC practices in pharmacies. More studies should be focused on pharmacy services and outcomes.

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