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The Extent to Which Students and Faculty Utilize Print and Electronic Resources in Kenya Medical Training College Libraries

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Abstract

Purpose: The aim of this study was to establish the extent to which students and faculty utilize print and electronic resources in Kenya Medical Training College (KMTC) libraries.

Methodology: A descriptive cross-sectional quantitative study was conducted among students and faculty in nine selected Kenya Medical Training College (KMTC) campuses. A multistage sampling technique was used to select the study sites, with proportionate sampling employed for students and a census conducted for all available lecturers. Data were collected using a structured questionnaire and analyzed using IBM SPSS Statistics Version 27. Descriptive statistics summarized the extent of print and electronic resource utilization, while chi-square tests examined associations between utilization and respondents' characteristics at a significance level of $p < 0.05$.

Findings: The findings demonstrate high utilization of both resource formats, with electronic resources recording a higher utilization rate (94.1%) than print resources (82.7%). Chi-square analysis further revealed significant variations in print and electronic resource utilization across campuses, while respondent category was significantly associated with print resource utilization. The study concluded that both print and electronic resources are extensively utilized in KMTC libraries, although electronic resources have become the predominant source of scholarly information among students and faculty.

Unique Contribution to Theory, Practice and Policy: The study recommends that the College should also standardize library services and resource provision across campuses to minimize disparities in utilization. Furthermore, strategies aimed at promoting regular library use, including user awareness programmes and information literacy training, should be enhanced to encourage optimal utilization of both print and electronic resources.

Keywords: *Library Utilization, Print Resources, Kenya Medical Training College*

JEL Codes: *D83, O33, I23*

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INTRODUCTION

Academic libraries are central to teaching, learning, research, and knowledge dissemination in higher education institutions. Traditionally recognized as repositories of print materials, modern academic libraries have evolved into hybrid information centres that provide access to both print and electronic resources to meet the diverse information needs of students and faculty. The integration of electronic resources alongside traditional print collections has transformed information access by improving convenience, remote accessibility, and the availability of current scholarly materials. Consequently, academic libraries are expected to provide equitable access to high-quality information resources that support learning, teaching, and research (Owusu-Ansah, 2021).

Much of the existing literature on library resource utilization, however, is drawn from universities with research-oriented, degree-level programmes, where users are assumed to have flexible study schedules, sustained access to library facilities, and a primary need for scholarly journals and monographs. This assumption does not hold for mid-level health training institutions that offer diploma and certificate programmes. Learners in these programmes follow competency-based curricula that combine large cohorts, tightly scheduled classroom sessions, and high-volume clinical rotations in hospitals and community health settings. Time spent in skills laboratories and clinical placements limits the hours available for library use, while the need for current clinical guidelines, drug information, procedure manuals, and point-of-care references makes timely access to reliable resources a matter of patient safety and clinical competence, not only of academic performance. Faculty in such institutions likewise balance heavy teaching loads, clinical supervision, and assessment duties, which shapes how and when they use library resources. Findings from conventional academic library studies therefore cannot be assumed to apply to this training context.

Despite significant investments in library infrastructure and digital information resources, the extent to which these resources are utilized varies across institutions and user groups. Evidence suggests that effective utilization of library resources enhances academic performance, research productivity, and evidence-based learning, while underutilization limits the return on institutional investments in library services (Ama & Undie, 2021). Previous studies have shown that utilization of library resources is influenced by user characteristics, resource accessibility, technological advancements, and institutional support, with increasing adoption of electronic resources complementing rather than replacing print collections (Kojo, Sakibu, & Urthur, 2018). Consequently, understanding how extensively students and faculty utilize available library resources is essential for informed planning and resource allocation, particularly in training settings where time is constrained and clinical demands are high.

Kenya Medical Training College (KMTC) is the largest provider of mid-level health professionals in Kenya, training large numbers of students in diploma and certificate programmes across its constituent campuses. KMTC has invested in both print and electronic library resources to support competency-based teaching, learning, and research. New students are introduced to available library services during orientation, and each campus maintains library facilities designed to provide access to scholarly information resources. However, evidence on the extent to which these resources are utilized by students and faculty across KMTC campuses, within the demands of high-volume clinical training, remains limited.

Therefore, this study assessed the extent of utilization of print and electronic resources among students and faculty in selected KMTC libraries.

Problem Statement

Academic libraries are expected to serve as the primary source of scholarly information that supports teaching, learning, and research. Consequently, students and faculty are expected to make optimal use of both print and electronic library resources to enhance academic performance, evidence-based practice, and lifelong learning. At Kenya Medical Training College (KMTC), libraries operate on a self-service model that provides users with access to a wide range of print and electronic resources. However, institutional observations indicate that these resources may not be fully utilized. Library attendance records from Makindu Campus showed that only 15–30 users visited the library daily despite a student and faculty population of approximately 1,100, while some students completed their training without borrowing a single library book (KMTC, 2021). These indicators, however, capture only physical use of the library: gate counts record visits to the building, and circulation records capture borrowing of print materials. They say nothing about use of electronic resources, which can be accessed remotely and leave no trace in either record. Low physical attendance and absent book borrowing therefore coexist with unknown, and possibly low, off-campus access to electronic journals and databases, such as HINARI/Research4Life and institutional subscriptions. Without data that separate physical from digital use, it is not clear whether users have shifted to electronic resources or are not using library resources at all.

Previous studies have examined the use of print and electronic resources in academic libraries and reported that utilization is influenced by factors such as accessibility, user characteristics, and technological infrastructure (Halloumeh & Jirjees, 2016; Kojo, Sakibu, & Urthur, 2018; Ama & Undie, 2021). However, evidence on the extent to which students and faculty utilize print and electronic resources within KMTC libraries remains limited despite the institution's continued investment in both resource formats. This gap matters because KMTC trains future mid-level health professionals through competency-based programmes, in which learners are expected to base clinical decisions on current, reliable evidence. If students and faculty underuse the available print and electronic resources, graduates may enter practice with weaker evidence-based skills, and teaching may rely on outdated material, with consequences for the quality of patient care. This study therefore sought to determine the extent of utilization of print and electronic resources among students and faculty in selected KMTC libraries, thereby providing evidence to inform library planning, resource allocation, and service improvement that safeguards competency-based training and evidence-based clinical practice.

Conceptual Framework

Relationship between independent variable (Level of utilization of print and electronic media) and dependent variable (Utilization of print/ electronic media by staff and students).

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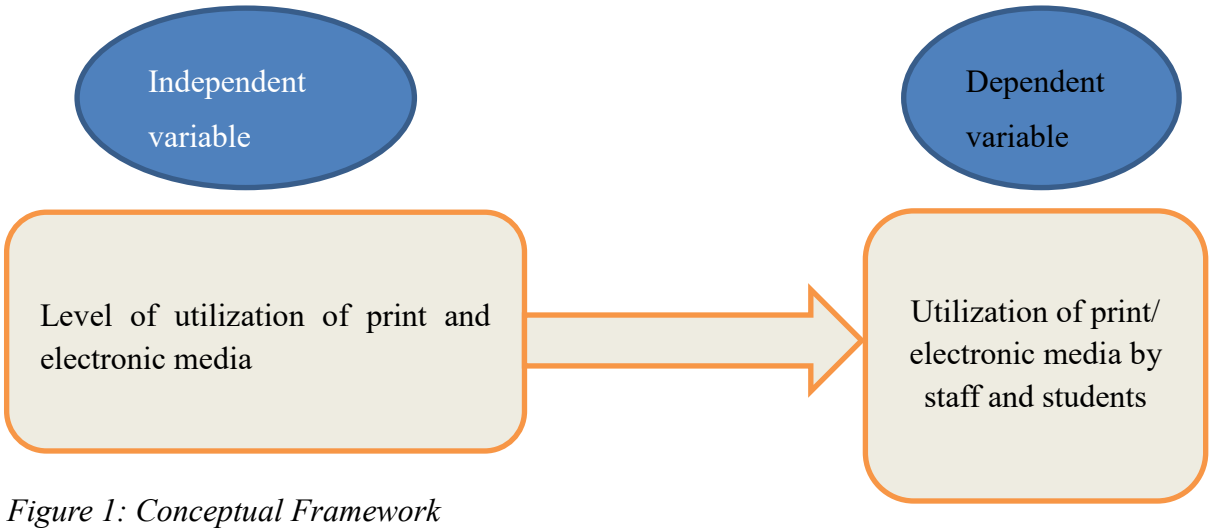


Figure 1: Conceptual Framework

Empirical Review

The utilization of print and electronic resources remains a key indicator of the effectiveness of academic library services. Studies conducted in different higher education institutions indicate that both resource formats continue to play complementary roles in supporting teaching, learning, and research. Halloumeh and Jirjees (2016) reported that utilization of print and electronic resources is influenced by users' information needs and demographic characteristics, with academic staff exhibiting greater preference for print resources than students. Similarly, Singh (2018) found high levels of computer use among academic staff (94.7%) and postgraduate students (90%), reflecting increasing adoption of electronic resources. In a biomedical library setting, Morse and Clintworth (2000) observed substantially higher use of electronic resources than print collections, while Connaway et al. (2011) and Odongo (2011) identified accessibility, library location, and availability of electronic resources as important determinants of utilization.

Evidence from previous studies further suggests that print and electronic resources are complementary rather than mutually exclusive. Bashorun et al. (2011) reported that most library users preferred maintaining both resource formats, while Clark et al. (2018) found that although print resources remained widely utilized, more than half of respondents increasingly used electronic resources. Likewise, Pather (2004) observed a gradual shift toward electronic resources, although many users anticipated the continued coexistence of print and electronic collections.

Recent studies show that electronic resources have become central to how health and medical trainees access information, although use remains uneven. Among medical students at the University of Ilorin, Nigeria, available electronic information resources were reported to be used frequently, with awareness and ICT skills examined as determinants of use (Eromosele et al., 2021). At the University of Ghana College of Health Sciences Library, most users were aware of the e-resources provided and used sources such as Google, ScienceDirect, and PubMed, with computer literacy positively related to awareness (Ankamah et al., 2022). At the University of Health and Allied Sciences in Ghana, about 80% of surveyed undergraduates were aware of the library's electronic resources, 46% used them daily, and 94% used HINARI, JSTOR, MEDLINE, or PubMed, although slow internet connectivity and information overload

were reported challenges (Hotsonyame & Okyere, 2023). A systematic review of access to scholarly literature among medical and nursing professionals and students in low- and middle-income countries identified capacity development, improved internet access, and greater awareness of free resources as the main solutions to access barriers (Zhang et al., 2023). Mobile devices increasingly mediate this access: a systematic review of nursing and midwifery schools in sub-Saharan Africa found that most students used smartphones and connected to the internet through their mobile phones (Pilabré et al., 2024).

Taken together, these studies show that electronic resources, increasingly accessed through mobile devices, are widely used by health trainees, and that print and electronic collections are generally viewed as complementary. However, much of this evidence comes from university-based medical and health sciences programmes, concentrates on electronic resources, awareness, or determinants of use, and seldom quantifies print and electronic utilization side by side among both students and faculty. Little is known about this in mid-level health training institutions that offer diploma and certificate programmes outside the traditional university setting. This study addresses that gap in two ways. Contextually, it focuses on Kenya Medical Training College, a mid-level health training institution. Methodologically, it quantifies the extent of both print and electronic resource utilization among students and faculty within the same libraries, to provide baseline evidence for library planning and resource allocation.

METHODOLOGY

The study employed a descriptive cross-sectional design using a quantitative approach to assess the extent of utilization of print and electronic resources among students and faculty in Kenya Medical Training College (KMTC) libraries. The study was conducted in nine selected KMTC campuses drawn from the College's 71 constituent campuses distributed across Kenya. The study population comprised students and lecturers utilizing library services in the selected campuses, while those unwilling or unable to participate were excluded. A multistage sampling procedure was used to select the study participants. The 71 KMTC campuses were first clustered into eight geographical regions, from which three regions (Upper Eastern, Central, and Nairobi) were selected through simple random sampling. Within the selected regions, nine campuses (Nairobi, Machakos, Oloitoktok, Nyeri, Murang'a, Gatundu, Meru, Embu, and Kitui) were purposively selected based on the availability of established libraries, ICT laboratories, resident librarians, and ICT officers. The student sample size was determined using Fisher et al.'s (1998) formula, yielding an initial sample of 384 respondents at a 95% confidence level, a 50% assumed prevalence, and a 5% margin of error. The sample was adjusted for the multistage sampling design using a design effect and further increased by 10% to account for non-response, resulting in a final sample of 637 students. The sample was proportionately allocated across the selected campuses according to student population and further stratified by programme of study and level of training. A census of all available lecturers in the selected campuses was conducted.

Quantitative data were collected using a structured electronic questionnaire administered through SurveyMonkey to students and lecturers. The questionnaire captured respondents' demographic characteristics and utilization of print and electronic library resources. Completed questionnaires were checked for completeness, coded, and analyzed using IBM SPSS Statistics Version 27. Descriptive statistics, including frequencies and percentages, were used to summarize respondents' characteristics and the extent of library resource utilization. Chi-

square tests were performed to examine associations between utilization of print and electronic resources and selected respondent characteristics, with statistical significance determined at $p < 0.05$. Ethical approval was obtained from the KMTC College Research and Ethics Review Committee (CRERC), an independent institutional ethics review committee, and the National Commission for Science, Technology and Innovation (NACOSTI). Digital informed consent was obtained from all participants prior to questionnaire administration, and confidentiality was maintained by anonymizing participant information and restricting the use of data to the purposes of the study.

RESULTS

Respondent Characteristics

A total of 835 respondents participated in the study, comprising 783 (93.8%) students and 52 (6.2%) faculty members drawn from nine Kenya Medical Training College (KMTC) campuses. Three respondents did not indicate their respondent category. Among the students, nearly half (46.4%) were in their second year of study, while 36.4% were first-year students and 17.2% were third-year students. Female respondents slightly outnumbered males (52.3% versus 47.7%), and the majority (90.6%) were aged below 25 years.

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Table 1: Respondents' Biodata

		n	%
Campus	Meru	208	24.8%
	Nairobi	200	23.9%
	Nyeri	92	11.0%
	Embu	85	10.1%
	Loitoktok	57	6.8%
	Kitui	55	6.6%
	Gatundu	55	6.6%
	Murang'a	53	6.3%
	Machakos	33	3.9%
	Total	**835**	**100.0%**
Category	Student	783	93.8%
	Faculty	52	6.2%
	Total	**835**	**100.0%**
Year of study (Students)	1st	286	36.4%
	2nd	365	46.4%
	3rd	135	17.2%
	Total	**786**	**100.0%**
Age	20-25yrs	640	76.4%
	<20yrs	119	14.2%
	26-30yrs	41	4.9%
	>30yrs	38	4.5%
	Total	**835**	**100.0%**
Gender	Female	429	52.3%
	Male	392	47.7%
	Total	**821**	**100.0%**
Course	DCM	225	28.6%
	NURS	159	20.2%
	HRIT	87	11.1%
	ME	75	9.5%
	OPT	57	7.3%
	MLS	53	6.7%
	PHARM	28	3.6%
	HP/CH	21	2.7%
	MIS	20	2.5%
	PHYSIO	15	1.9%
	DDT	15	1.9%
	EMT	7	0.9%
	PH	7	0.9%
	OT	6	0.8%
	OTM	5	0.6%
	COO	3	0.4%
	MSW	2	0.3%
	ORTH. T	1	0.1%
	Total	**786**	**100.0%**

Almost half of the respondents were enrolled in Nursing or Clinical Medicine programmes (49%). Faculty participants as shown in figure 3.1, were predominantly drawn from Clinical Medicine (24.5%), Nursing (24.5%), and Medical Laboratory Sciences (22.4%), with over two-thirds (70.6%) having more than five years of teaching experience (see Figure 3.2). These characteristics indicate that the study population largely represented young learners enrolled in the major health training programmes offered at KMTC.

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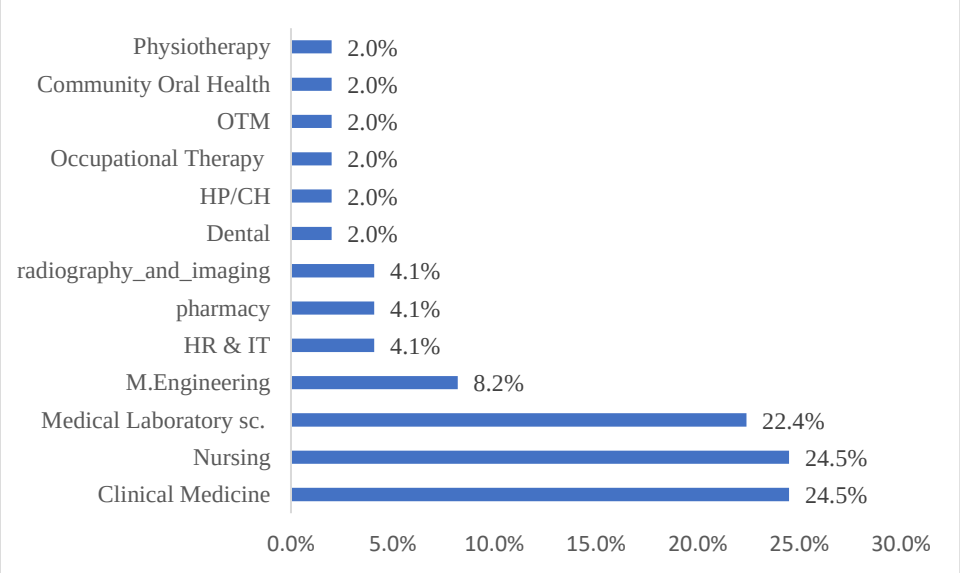


Figure 1: Distribution of Faculty by Department (N=49)

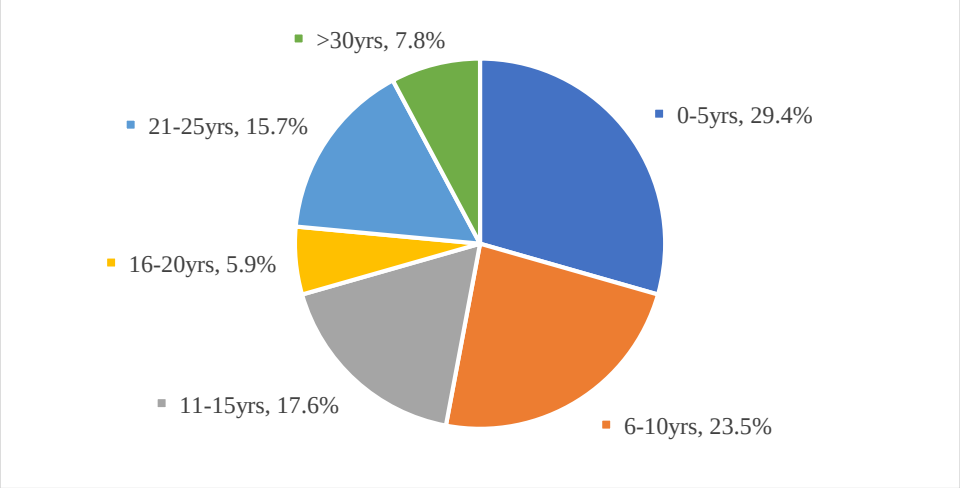


Figure 2: Distribution of Faculty Teaching Experience (N=51)

Extent of Utilization of Print and Electronic Resources

The findings as shown in Table 3.2 below, showed high utilization of both print and electronic library resources. Overall, 688 (82.7%) respondents reported utilizing print resources, whereas 780 (94.1%) reported utilizing electronic resources. Electronic resources therefore recorded a higher level of utilization than print resources by approximately eleven percentage points, suggesting widespread adoption of digital information resources among students and faculty while maintaining substantial use of traditional print materials.

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Table 2: Usage of Print and Electronic Resources

		Count	Column N %
Do you use Print resources?	no	144	17.3%
	yes	688	82.7%
	Total	**832**	**100%**
Do you use electronic resources?	no	49	5.9%
	yes	780	94.1%
	Total	829	100.0%

Library Resource Utilization Patterns among KMTC Students

Students reported varying patterns of library use after joining KMTC. Notably, 21.8% (174) reported no change, 44.7% (356) used the library more, and 33.5% (267) utilized it less. Regarding weekly library resource usage, slightly over half (57.6% [557] of the respondents had regular or frequent usage, i.e., 14.5% [115] visited daily and 43.1% [342] weekly), while 42.4% (337) showed limited usage (comprising 37.0% [294] rarely and 5.4% [43] never). These findings suggest that although library utilization is generally high, a considerable proportion of students remain infrequent users. This is shown in figure 3.3 below.

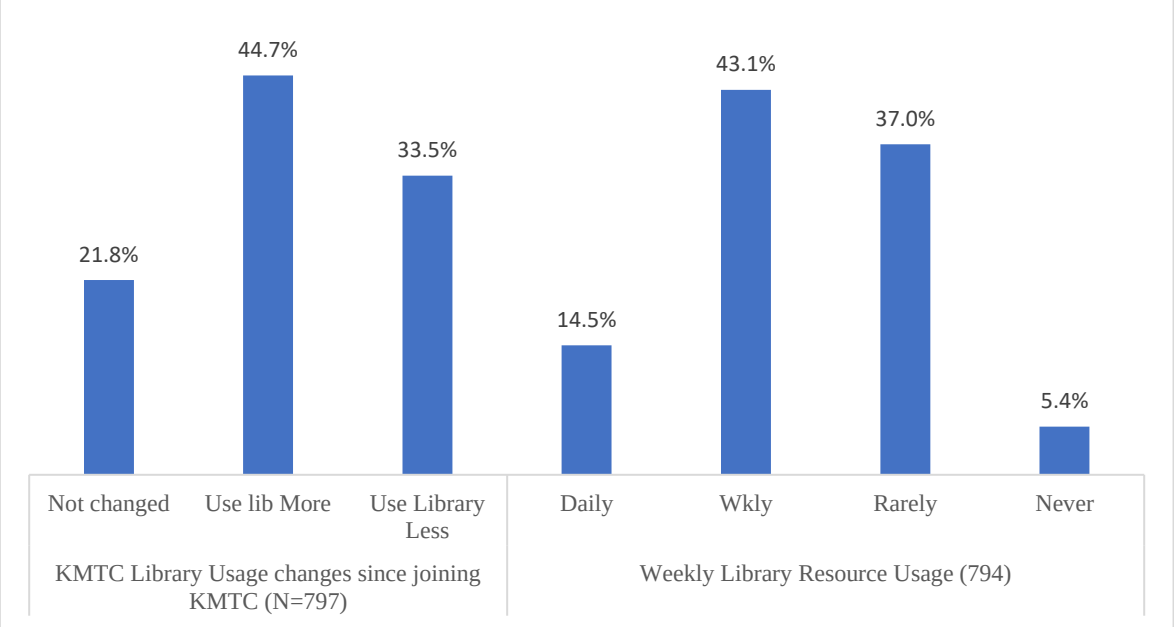


Figure 3: Students' Library Usage Patterns

Association between Respondent Characteristics and Utilization of Print and Electronic Resources

Chi-square analysis revealed significant associations between selected respondent characteristics and library resource utilization. Faculty members were significantly more likely than students to utilize print resources ($\chi^2 = 6.848$, $p = 0.009$), whereas utilization of electronic resources did not differ significantly between the two groups (($\chi^2 = 1.598$, $df = 1$, $p = 0.206$). Campus was also significantly associated with utilization of both print resources ($\chi^2 = 15.595$, $p = 0.049$) and electronic resources ($\chi^2 = 26.296$, $p = 0.001$), indicating variations in utilization across the participating campuses. Conversely, age, gender, year of study, and programme of study were not significantly associated with utilization of either print or electronic resources (all $p > 0.05$). These findings suggest that respondent category and institutional context

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(campus) were the principal factors associated with variation in library resource utilization among the study population. These results are shown in Table 3.3 below.

Table 3: Association between the Respondents' Biodata and library resource utilization

Respondent characteristics		Uses Print resources		Significant at P≤0.05	Uses e-Resources		Significant at P≤0.05
		no	yes		no	yes	
		Count	Count		Count	Count	
Category	Faculty	2		χ2 =6.848,	1	51	χ2 =1.598
	Student	142	636	df=1	48	726	df=1
	Total	**144**	**685**	**p=.009**	49	777	p=.206
Age	<=25 yrs	133	621	χ2 =.618	44	706	χ2 =.027
	>25yrs	11	67	df=1	5	74	df=1
	Total	**144**	**688**	p=.432	49	780	p=.868
Gender	Female	70	357	χ2 =1.003	24	400	χ2 =.100
	Male	74	314	df=1	24	364	df=1
	Total	**144**	**671**	p=.317	48	764	p=.751
Year of study	1st	53	232	χ2 =.339	15	270	χ2 =5.236
	2nd	67	295	df=2	19	340	df=2
	3rd	22	112	p=.844	14	119	df=.073
	Total	**142**	**639**		48	729	
Campus	Gatundu	17	38	χ2 =15.595	1	54	χ2 =26.296
	Murang'a	7	44	df=8	4	49	df=8
	Nyeri	20	72	p=.049	9	83	**p=.001**
	Kitui	7	48		5	50	
	Meru	36	171		9	197	
	Embu	19	64		13	70	
	Machakos	3	30		2	31	
	Nairobi	26	173		4	192	
	Loitoktok	9	48		2	54	
	Total	**144**	**688**		49	780	
Course	Nurs/DCM	67	313	χ2 =.051	19	362	χ2 =1.082
	Others	77	375	df=1	30	418	df=1
	Total	**144**	**688**	p=.821	49	780	p=.298

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study assessed the extent to which students and faculty utilize print and electronic resources in selected Kenya Medical Training College (KMTC) libraries. The findings demonstrate high utilization of both resource formats, with electronic resources recording a higher utilization rate (94.1%) than print resources (82.7%). Despite the increasing availability and use of electronic resources, print resources remain an important source of information for teaching and learning, indicating that the two formats continue to complement each other within KMTC libraries. Chi-square analysis further revealed significant variations in print and electronic resource utilization across campuses, while respondent category was significantly associated with print resource utilization. In contrast, age, gender, programme of study, and year of study were not significantly associated with library resource utilization.

Conclusion

The study concluded that both print and electronic resources are extensively utilized in KMTC libraries, although electronic resources have become the predominant source of scholarly information among students and faculty. The continued high utilization of print resources demonstrates that traditional library collections remain relevant despite the increasing adoption of digital information resources. The significant differences in utilization across campuses

suggest disparities in access, availability, or institutional practices that may influence library use. Overall, the findings indicate that KMTC libraries are progressively transitioning toward digital information services while maintaining the complementary role of print collections in supporting teaching and learning.

Recommendations

The study recommends that KMTC should continue strengthening access to electronic information resources while maintaining adequate print collections to meet the diverse information needs of students and faculty. The College should also standardize library services and resource provision across campuses to minimize disparities in utilization. Furthermore, strategies aimed at promoting regular library use, including user awareness programmes and information literacy training, should be enhanced to encourage optimal utilization of both print and electronic resources. Continuous monitoring of library resource utilization should be institutionalized to guide evidence-based collection development and resource allocation.

Suggestions for Further Studies

Future studies should investigate the factors influencing utilization of print and electronic resources among students and faculty in medical training institutions. Comparative studies involving public and private medical training colleges would also provide broader insights into library resource utilization and inform best practices for academic library service delivery.

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