

Information literacy skills and competencies of nursing students at Kamuzu University of Health Sciences in Malawi

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This paper reports the findings of a study on information literacy (IL) skills and competencies of nursing students at the Kamuzu University of Health Sciences in Malawi. This study adopted a cross-sectional descriptive design. The population for this study was nursing students of Kamuzu University of Health Sciences. Quantitative and qualitative data were collected through an online questionnaire that contained closed- and open-ended questions. Quantitative data were analysed using descriptive statistics in the form of charts, graphs, and relative frequencies. Qualitative data, on the other hand, were analysed using thematic analysis. The findings revealed that nursing students received several IL programme offerings that included on-campus IL sessions organised by the library, curriculum-embedded IL programmes, and library instructional sessions. The findings further indicate that most students used Google as their primary source of information, while library subscription databases were minimally used. Besides wanting to learn the citation and referencing styles and how to avoid plagiarism, students wanted to learn how to find and evaluate information. The respondents recommended that IL skills be embedded in the nursing curriculum to make them more effective. This paper provides lessons to health-related institutions that may be planning on revamping their IL programme offerings to make them more relevant to students. The current study advocates for a more systematic approach in which IL should be part of the curriculum developed and offered by librarians in collaboration with faculty members

Keywords: Information literacy, skills, competencies, training, nursing students, Malawi

1 Introduction

Information Literacy (IL) has long been defined as an information seeker's ability to recognize when information is needed, coupled with the skill to locate, evaluate, and use the required information effectively (American Library Association 1989). This conceptualisation of IL was largely shaped by the technology and resources of the time. However, this approach to IL has been criticised by Jacobs (2008:256) as functionalist in nature, as it limits IL to a minimal set of skills and competencies that enables one to perform a particular task, but hardly considers one's context. Jacobs (2008:256) postulates that information literacy not only incorporates the recurrent concepts of identifying, locating, evaluating, and using information but also encompasses lifelong learning, empowering people, promoting social inclusion, redressing disadvantages, and advancing the well-being of all in a global context. Nevertheless, Spiranec, Zorica, and Kos (2016:249) posit that IL should mirror the information environment within which they evolve, research, or implement. The current information environment is characterised by the exponential growth of portable computing devices, pervasive broadband and mobile Internet connectivity, and a huge uptake of Web 2.0 tools (International Telecommunication Union, ICU), (2019). These developments have not only resulted in an avalanche of self-generated content, but have also substantially increased the scholarly content available in the educational ecosystem.

Consequently, the definition of IL skills and competencies has changed. The approach favoured by contemporary scholars not only focuses on a universal set of skills and competencies, but also allows for variations based on needs and contexts (Weiner 2011: 7). Therefore, IL recognises that people working in different fields could have equally different information needs. Nursing students require a diverse set of IL skills and competencies that can be utilised in practice, to foster formal education, and support lifelong learning orientation (Azami & Delkhosh 2018: 185; Mi & Riley-Doucet 2016: 121). Brettle and Raynor (2013:103) further emphasise this point by stating that developing IL skills is an important element

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of learning, professional practice, and continued employment for nursing students. This shows that IL is critical for nursing students' all-around experience. Nursing students undertake many practical tasks as a part of their training. Miller and Neyer (2016:2) observe a focus on evidence-based practice in nursing. Therefore, to properly perform their duties, nursing students require quality information.

One of the tenets of modern IL practice is to reflect the information environment in which IL is being practised (Spiranec, Zorica & Kos 2016: 247). Farokhzadian, Khajouei and Ahmadian (2015:570) and Wahoush and Banfield (2014: 570) indicated that nursing students rely on human, printed, and electronic sources of information to carry out their duties. To access the required information, nursing students need a plethora of IL skill sets, that include searching, selecting, evaluating, retrieving, and storing information. Other equally important IL skills include using information collaboratively and lifelong learning skills (Wadson & Phillips 2018:141). The selection of information and its sources, including evaluation, has assumed even greater significance beyond normal channels, and information is disseminated through non-traditional methods that include social media platforms. This has resulted in an even greater emphasis on the usefulness of information, as it now becomes even more necessary to verify whether the information received is based on credible sources before it is used. Likewise, to access the information required in the workplace and for lifelong learning after graduation, nursing students require IL skills.

Although IL skills are critical for their well-being, many nursing students lack the skills and competencies essential for finding and evaluating health-related information (Sonya, 2014:113). Wadson and Phillips (2018:143) argue that nursing students lack Internet search skills. Farokhzadian, Khajouei and Ahmadian. (2015:572) elaborated that many nursing students used basic search features that returned lower-quality outputs. As much as 80% of the respondents in the Farokhzadian, Khajouei, and Ahmadian studies indicated that they were not familiar with advanced searching strategies using Boolean operators. The study further heightened nursing students' heavy reliance on human resources to compensate for deficiencies in their information seeking and retrieval skills. These findings imply that the overall quality of the information source has an impact on the quality of the academic papers written by nursing students or the decision-making and actions taken by nursing students in the workplace. Azami and Delkhosh (2018:187) specify shortcomings in the information self-efficacy of nursing students. For example, the information literacy variable manifested only significant differences among the studied educational subordinate groups. The self-efficacy variable, however, showed significant differences between the female and male gender groups and among the educational subordinate groups. These findings suggest that serious challenges related to the IL skills of nursing students need to be addressed.

The IL skills observed in practising nursing students can be remedied through training. Brettle and Raynor (2013:104) found that offering IL skills training in the form of face-to-face instruction and tutorials had a positive impact on the information search skills of nursing students. Özbıçakçı et al. (2015:73) similarly observed that IL interventions could assist struggling students in perfecting their IL skills. Therefore, they recommended the problem-based learning approach as the best intervention for solving IL skill gaps in nursing students. To achieve the desired goals, suggestions point to the fact that the nursing curriculum should be revised to include IL skills topics focusing on databases and evaluating information, according to Özbıçakçı, Gezer, and Bilik (2015:73), who further state that librarians should be responsible for delivering the content through faculty-library collaboration. Azami and Delkhosh (2018:190) also proposed the need to engage nursing students in IL instruction by raising familiarity with the Internet and databases, enhancing information positioning skills, and increasing information self-efficacy. In contrast, Azami and Delkhosh (2018:192) did not explicitly state how IL training should be delivered to nursing students.

2 Background information

The Kamuzu University of Health Sciences (KUHeS) was established in 2021 after the delinking of the University of Malawi, established in 1964, and the merging of the Kamuzu College of Nursing with the College of Medicine. Until recently, it was the only higher education training institution in Malawi that produced registered nurses and midwives at the degree level in Malawi (Lemarchand & Schneegans 2014:4).

KUHeS is the largest single university of health sciences in Southern Africa that trains nurses for employment in government, private, and mission hospitals in Malawi (Ngalande 2010:5). KUHeS offers a four-year generic Bachelor of Science degree in Nursing and Midwifery and a Bachelor of Science in Nursing with majors in child, adult, mental, and community health (Kamuzu University of Health Sciences 2021). Furthermore, KUHeS offers several postgraduate programs, namely two-year Master of Science degree programs in Midwifery, Reproductive Health, Child Health, Adult Health Nursing, and Nursing and Midwifery Education, and three-year Doctor of Philosophy programs in Inter-professional Healthcare Leadership, Nursing, and Midwifery (Kamuzu University of Health Sciences 2021).

3 Problem statement

IL has been described in many professions as a lifelong learning practice (Andretta 2006:2). Sadly, however, nursing students lack the skills and competencies essential for finding and evaluating health information (Sonya 2014:114). This could be because IL skills have been transferred on a trial-and-error basis and sometimes without direct support from parent institutions (Karnad 2013:14). Some students tend to overestimate their IL skills, leading to a mismatch between self-efficacy and actual performance (Mahmood 2016: 199). Moreover, some nursing students believe that IL can be informally passed from faculty members to them without properly designed instructions (Badke 2005:2). It has also been noted that when librarians assume the role of IL educators, some faculty members perceive development as an encroachment on their academic domain and do not want to collaborate with librarians (Andretta 2006:3).

Literature on IL programs carried out in some higher learning institutions in Malawi is available (Chipeta et al. 2018: 2; Chaura 2015: 3). However, little is known about nursing students in this regard. This implies that little is known about the skills and competencies of nursing students. Therefore, this study was conducted to address this knowledge gap. This study is valuable as it exposes the knowledge and skills gaps among nursing students. This will help in designing an appropriate IL program for KUHeS that will ensure that nursing students do not struggle to find relevant information, but will also acquire relevant IL skills that can strengthen their lifelong learning orientation (Mi & Riley-Doucet 2016:122).

4 Objectives of the study

This study aimed to achieve three main objectives:

- To ascertain the IL skills and competencies of students.
- To convincingly propose the offering of an IL programme at KUHeS for nursing students.
- To reveal challenges affecting the offering of the IL programme.

5 Literature review

A literature review is not just a matter of citing studies conducted in a particular field but involves a critical assessment of such sources, thoroughly analysing them, and constructing an account that integrates and explains such relevant sources (Kaniki 2006). The literature reviewed in this paper constitutes an evaluation of studies from four main databases: ScienceDirect, Sage, Taylor and Francis, and Google Scholar. The literature is based on the following thematic areas: IL skills and competencies of nursing students and the offering of IL programs by higher learning institutions.

5.1 Information literacy skills and competencies of nursing students

The nursing profession currently advocates for the adoption of evidence-based practice, whereby actions taken in the workplace are based on the available evidence (Dawes 2019: 545; Mi & Riley-Doucet 2016: 133). This raises the need for nursing students to have access to high-quality, reliable information. Similarly, nursing students require credible information to facilitate their knowledge creation and learning. However, an analysis of the literature on the IL skills of nursing students shows that many of them face challenges in accessing information. Mokhtar et al. (2012, p.13) used an exploratory case study design to explore the IL skills of nursing students in Singapore. The findings revealed that most nursing students used print and human information sources rather than electronic information sources. Similar findings were obtained in a descriptive, cross-sectional study conducted by Farokhzadian, Khajouei and Ahmadian (2015:571) involving a sample of 182 nursing students drawn from four teaching hospitals in Iran.

Print information sources consulted were older than electronic sources, whereas human sources were less reliable than printed sources. The heavy reliance on print sources signifies that nursing students are exposed to outdated information. Other findings from the study by Mokhtar et al. (2012:19) revealed that nursing students were not proactive in looking up research information, but preferred that the information be shared through word of mouth. This indicates a perceived inability to evaluate research papers or effectively search for electronic information related to evidence-based practice in nursing. Likewise, the findings of a study by Farokhzadian, Khajouei, and Ahmadian (2015:574) revealed that most nursing students faced challenges in deploying advanced search techniques that included the use of Boolean operators. This could postulate the existence of a larger IL skills problem among nursing students, highlighting the need for appropriate remedial action.

In a related study, Lee et al. (2019:202) surveyed 1301 nursing students from a large Danish Hospital to identify their information retrieval skills, behaviour, and needs. Findings from this study differed from those obtained in an earlier study by Mokhtar et al. (2012:20), since these respondents relied mostly on electronic sources of information, unlike their counterparts, who relied mostly on print and human sources. Even though this was the case, nursing students in the study under review used the internet and Google as their main sources of information. This finding signifies that the quality of

information accessed by nursing students in the Danish study conducted by Lee et al. (2019:205) and the Singaporean study conducted by Mokhtar et al. (2012:23) were both low owing to inadequate information search skills.

5.2 Offering of IL programmes by higher learning institutions

The offering of IL programs tends to have a positive impact on the information search capabilities of those involved. Mi and Riley-Doucet (2016) conducted a large-scale study that adopted a descriptive cross-sectional research design to assess the relationship between lifelong learning orientation and information skills and self-efficacy among health professional students. The study included 850 nursing students from Oakland University in the USA and had an overall response rate of 36%. The findings showed a significant correlation between lifelong learning orientation and information self-efficacy. Mi and Riley-Doucet (2016) concluded that this study could prove useful to librarians looking at ways to advance the value and utility of IL delivery in educational curricula. A corresponding study conducted by Lee et al. (2019) in Denmark involving 1301 nursing students discovered that the students had many IL shortfalls that negatively affected their information searches. The study called for greater collaboration between librarians and nurse managers in the delivery of IL skills programs to nursing students to improve the provision of evidence-based practice. However, despite this recommendation, the two scholars did not specify the nature of the collaboration.

Esfandani et al. (2017) conducted a quasi-experimental study that explored the possibility of promoting critical care nursing students' IL skills through an evidence-based practice workshop at Baqiyatallah and AJA Universities of Medical Sciences, Tehran, Iran. The study drew a sample of 90 critical care nursing students non-randomly allocated to control and experimental groups, each comprising 45 subjects. The findings revealed that evidence-based practice training significantly promoted IL in critical care nursing students and facilitated their use of evidence in clinical practice. Therefore, Esfandani et al. (2017:5) recommend holding such workshops to improve the IL and care quality of critical care nursing students.

Ukachi (2015:486) conducted another study to ascertain the relationship between undergraduate nursing students' IL skills and their use of electronic resources (ERs) in university libraries in Nigeria. This study surveyed 1806 undergraduate nursing students and purposively sampled 12 librarians who were interviewed. The study concluded that IL skills have a positive and significant relationship with students' use of electronic resources (e-journals and e-books). Consequently, this study recommends the provision of adequate library orientation and the offering of library instruction to nursing students. Library orientation usually lasts for a short period (mainly a single day at the beginning of the semester), while instruction is carried out for a longer period (lasting a few weeks in some cases and the entire semester in others, while for some programs, it is integrated into the curriculum). The blending of the two proposed approaches could have the desired effect if well delivered and patronized by the nursing students.

Bønløkke, Kobow, and Kristensen (2015:3) used multiple methods to study the impact of cooperation between the library and faculty in the delivery of IL programs at the VIA University College, Denmark. Participants in the project were three librarians, six lecturers, one library manager, two directors of programs, and two project managers. The findings revealed that cooperation between librarians and faculty is important as it deepens each party's understanding of IL, the curriculum, pedagogical professionalism, and mutual roles. The study further reveals that IL is a shared responsibility between librarians and faculty, and hence advocates for co-teaching to take advantage of the diverse skill sets of librarians and faculty.

Salisbury et al. (2012:3) used a descriptive research methodological approach to study a collaborative model for developing and embedding IL resources within disciplines at La Trobe University, Australia. The program involves the integration of inquiry research quizzes (IRQ) and library skills modules into the curriculum. The library skills modules build on IRQ topics to foster the consolidation and development of foundation skills and support IRQ online feedback. The findings show that the program was successfully delivered as a collaborative effort by faculty members and librarians. Although the real impact of the program on students' performance was not ascertained, the researchers call for the adoption of this model in IL skills delivery to students, as it was deemed to have huge potential to achieve success.

In summary, the literature reviewed in this section exposed the IL skill gaps of nursing students. It has been noted that IL skill deficiencies in nursing students affect the overall quality of information accessed, which could also affect actions taken based on the available information. The literature further supports IL programs offered to nursing students as a means of remedying the challenges observed. Various IL interventions have also been proposed. These range from library orientation and library instruction and evidence-based practice IL workshops to the inclusion of IL in the formal teaching curriculum, which should be delivered collaboratively by librarians and faculty members. The issue of collaboration between librarians and faculty seems to feature prominently in much of the literature reviewed, although it is not clear how this can be achieved.

6 Research methodology

This study adopted a cross-sectional descriptive survey design. Cross-sectional studies are observational and known as descriptive research (Levin 2006: 24). Such studies are not causal or relational but are used to obtain information that is present in a population without manipulating the variables. The information collected can be used to compare different population groups at a single point in time, which allows researchers to compare many different variables simultaneously (Omar 2015: 153). The cross-sectional research design was ideal for this study because it allowed the researchers to obtain information on the issues the study sought to investigate, which ranged from skills and competencies sought to the offering of the IL program at KUHeS. The study population comprised 1216 nursing students.

The study used two main sampling techniques to draw a sample, namely, total enumeration sampling, also known as census and sampling tables. Israel's (2013) sampling table was used to sample students. The table contains scientifically worked-out figures that specify a sample that can be extracted from a specified population with precision levels of $\pm 3\%$, $\pm 5\%$, $\pm 7\%$, and $\pm 10\%$, with a confidence level of 95%, and $P=5$. Using a precision level of $\pm 5\%$, the researchers selected a sample of 364 students. This resulted in a total sample size of 452.

Data were collected through a questionnaire comprising closed- and open-ended questions administered to a sample of 364 nursing students. The questionnaires were pilot-tested on a sample of 10 nursing students from the Department of Nursing and Midwifery of Mzuzu University. Observations made during pilot testing and written feedback received from respondents were used to amend the questionnaires. Finalized questionnaires were sent to the respondents through emails collected from the Office of the Registrar. Two reminders were sent to respondents to boost their response rates. The data were collected in June and July 2019.

The completed questionnaires were analyzed using MS Excel. MS Excel was used because, besides being readily available and reliable, the data did not require sophisticated analysis, as only tables and charts were required. Research ethics were achieved by assuring respondents that the collected data would be used solely for this research. Furthermore, respondents were informed that participation was voluntary and that they were free to opt out of the study at any time. The researchers also solicited permission from the management of Kamuzu University of Health Sciences before administering the questionnaires to the students.

7 Results

7.1 Response rate

The questionnaires were sent to 364 nursing students. However, only 69 nursing students responded, representing a response rate of 19%. This constitutes a limitation of the present study. Table 1 presents the results.

Table 1: Study response rate

Category of respondents	The total number of questionnaires sent	The total number of questionnaires returned	Percentage (%)
Students	364	69	19%

7.2 Student's levels of study

Figure 1 shows the students' level of study. Over half, 51 (74%) of the nursing students who participated in the study were undergraduates, 15 (22%) were master's students, and the fewest three (4%) were PhD students.

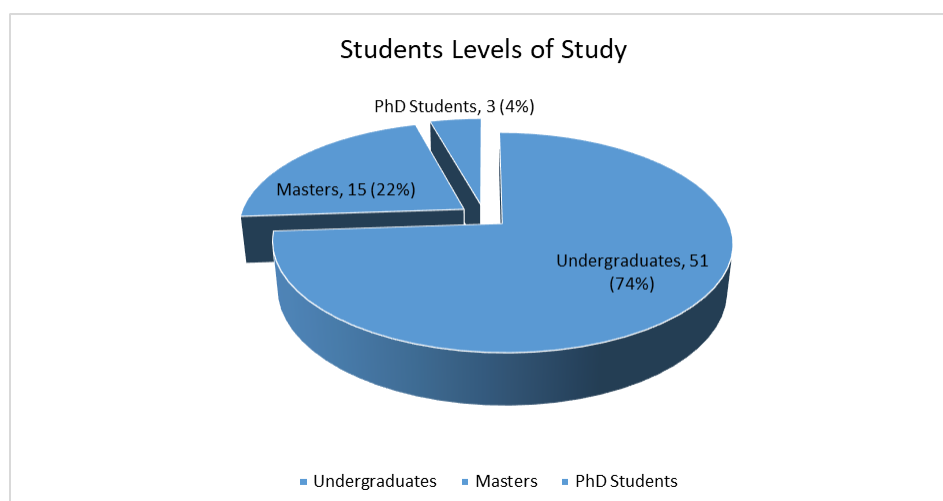


Figure 1: Students' level of study

7.3 Schools where students belong to

The students were asked to indicate the schools to which they belonged. The findings presented fewer students 24 (34.8%) from the School of Midwifery, Neonatal and Reproductive Studies, and the majority (40 [58%]) from the School of Nursing).

7.4 Mode of IL delivery

Students were asked to comment on the IL sessions they had received from the library in the past. A total of 34 (49.3%) students attended on-campus IL sessions organized by the library, also called library orientation sessions; 27 (39.1%) attended a curriculum-embedded IL program, while eight (11.6%) attended library instructional sessions. These findings show that library orientation sessions and lecture-embedded sessions are heavily patronized by nursing students.

7.5 Preferred mode of delivering IL

The students were requested to indicate how they wanted the IL to be offered. Table 2 shows that most students, 54 (78.3%), wanted IL to be embedded in the curriculum. Some students wanted the IL to be offered through guides on library web pages 38 (55.1%). Open bookable workshops hosted on campus 33 (47.8%), library drop-in sessions (one-on-one session), 29 (42%), and open bookable webinars hosted online 22 (31.9%) were the least preferred modes of delivering IL sessions.

Table 2: Preferred mode of delivering IL sessions by students

Variable	Frequency	Percentage (%)
Information literacy as part of the curriculum	54	78.3%
Guides provided through library webpages	38	55.1%
Open bookable workshops hosted on campus	33	47.8%
Library drop-in sessions (one on one sessions)	29	42.0%
Open bookable webinars hosted online	22	31.9%

7.6 Skills and competencies learned through IL sessions

Nursing students were requested to rate the skills and competencies they accessed in the IL sessions delivered by library staff. Multiple responses were received to answer this question. The findings presented in Figure 2 shows that the three top-ranked skills students learned from the IL sessions were knowing about plagiarism 61 (88.4%), advanced search techniques 56 (81.2%), and in-text citations 56 (81.2%). Using the online public access Catalogue and other databases, 16 (23.2%), authentic sources of information 29 (42%), and an effective search strategy 34 (49.3%) were ranked low.

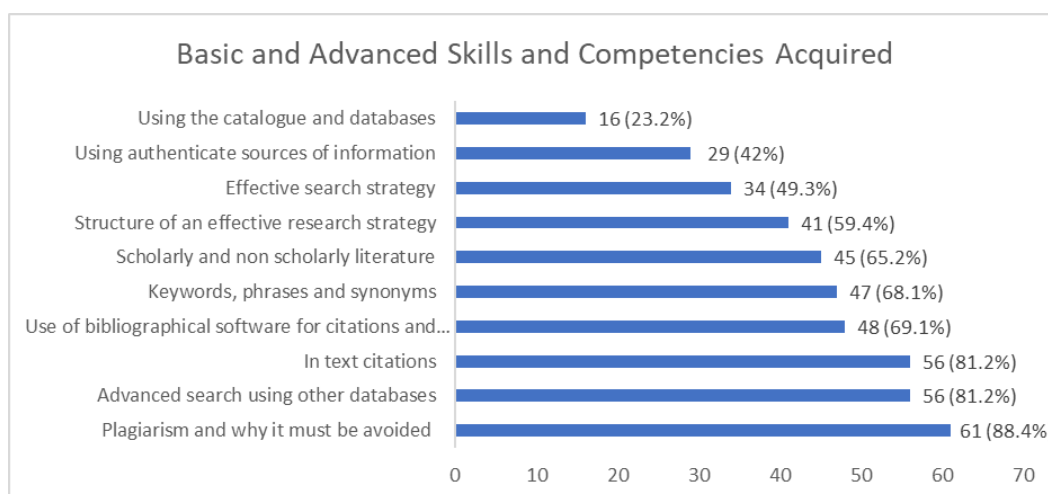


Figure 2: Skills and competencies students learned through IL sessions

7.6 Databases that are frequently consulted by students as sources of information

Nursing student respondents were asked to indicate the databases that they frequently consulted as sources of information. The findings presented in Figure 3 show that the majority of the students 67 (97.1%) used Google or Google Scholar as their primary source of information: 46 (66.7%) consulted the Health InterNetwork Research Initiative (HINARI), 37 (53.6%) used PubMed, 23 (33.3%) used Medline, and only 10 (14.5%) consulted EbscoHost. These findings signify that nursing students used free and open electronic resources more than library subscription databases did.

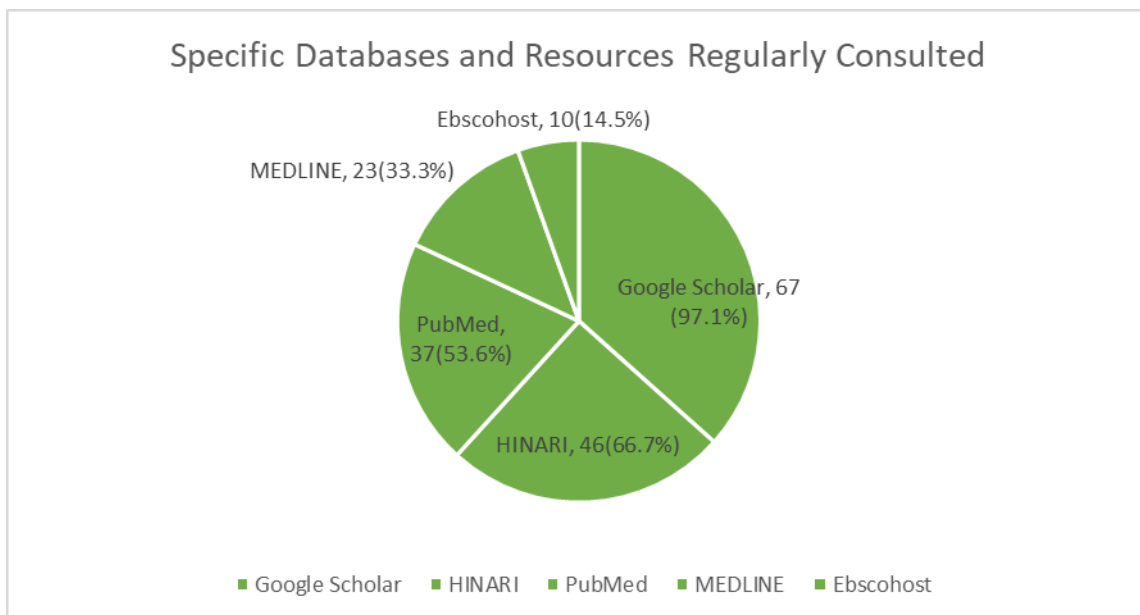


Figure 3: Databases frequently consulted by students as a source of information

7.7 IL skills and competencies rated highly by nursing students

Nursing students were requested to rate the IL skills they wished to know at the start of their programs. Figure 4 shows that citation and referencing styles 62 (89.9%), academic integrity and how to avoid plagiarism 60 (87%), and finding and evaluating information 56 (81.2%) as the top-most IL skills students wished they knew at the start of their programmes. Other skills the students valued a lot were critical reading skills 51 (73.9%) and critical thinking skills 51 (73.9%). On the contrary, very few students indicated that they wished they knew how to use the online public access catalogue 24 (34.8%) and acquired data management skills 37 (53.6%) at the start of their programs. This shows that these skills were the least appreciated by students.

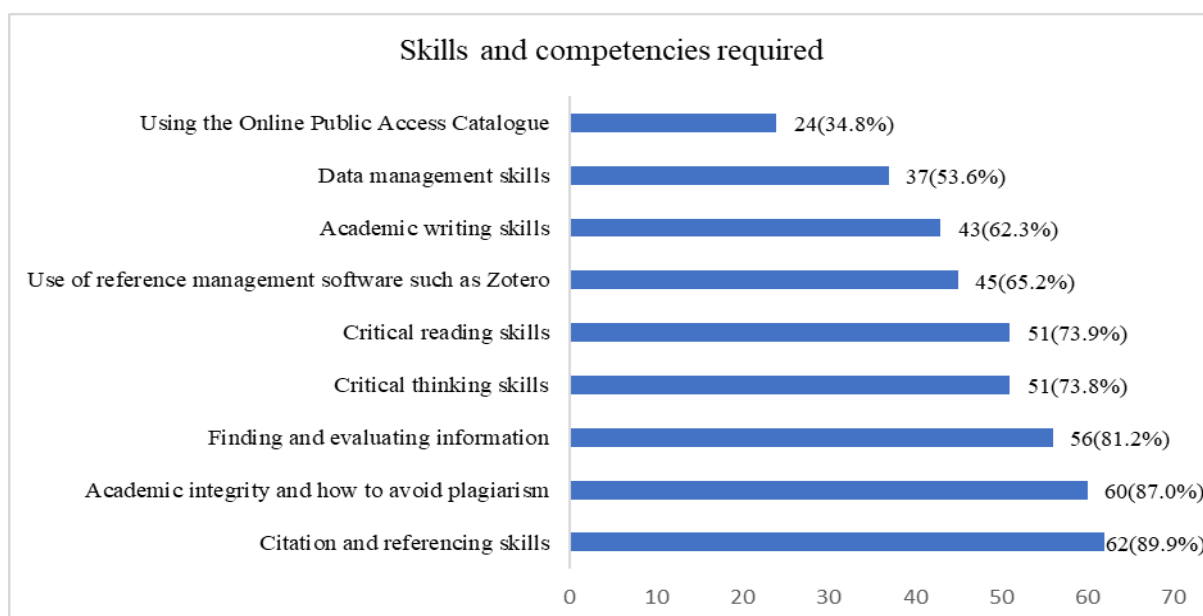


Figure 4: IL skills students wished they knew at the start of their programmes

Nursing students wanted to attain IL skills training on how to avoid plagiarism. This signifies that the training might have been formulated without a prior needs analysis.

7.8 New IL skills and competencies students wanted to learn

Students were requested to rate the skills and competencies they wanted to learn from IL skills training offered by their institutions. Figure 5 shows that 54 (78.3%) students specified the three skills and competencies as critical and useful. These are referencing styles, proposal writing skills, and basic-to-advanced statistical skills. The other two skills students rated as important pertained to the use of SPSS or NVivo (46, 66.7%) and reference management software to support their referencing and citation (38, 55.1%).

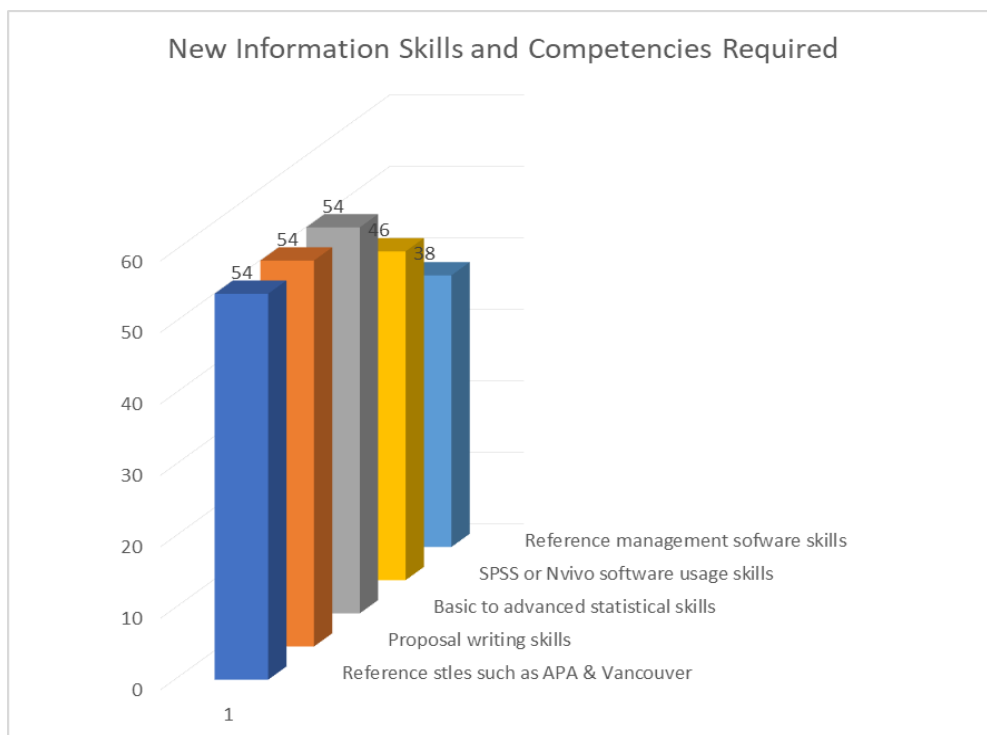


Figure 5: New IL skills and competencies students wanted to learn

7.9 Challenges nursing students face in accessing IL sessions offered

Students were asked to indicate the challenges they faced in accessing IL sessions offered at KUHeS. The results of this study are presented in Table 3.

Table3: IL skills students found challenging to master

Variable	Frequency	Percentage (%)
Finding information	44	63.8%
Formulating information search strategies	34	49.3%
Critical reading skills	32	46.4%
Referencing and citation skills	32	46.4%
Academic writing skills	31	44.9%
Evaluating information	25	36.2%
Avoiding plagiarism	24	34.8%
Using reference management software	20	29.0%

The majority of nursing students 44 (63.8%) found finding information incredibly challenging to master. Other skills students found challenging to master, albeit to a lesser extent, were formulating information search strategies 34 (49.3%), critical reading skills 32 (46.4%), referencing and citation skills 32 (46.4%), and academic writing skills 31 (44.9%).

Conversely, students indicated that they found evaluating information 25 (36.2%), avoiding plagiarism 24 (34.8%), and using reference management software 20 (29%) less challenging.

8 Discussion

8.1 IL programme offering

Nursing students covered in this study received several IL program offerings. These included on-campus IL sessions organized by the library, lectures or curriculum-embedded IL programs, and library instructional sessions. Although the program offering was broad, an analysis of the findings shows that the on-campus IL sessions organized by the library comprised 49.3% of the students. However, very few students (11.6%) attended library instructional sessions. This could be attributed to the challenges students face in accessing the service, which included not knowing whom to approach whenever they had an IL query, IL sessions not being conducted frequently, and the unavailability of library staff for consultation with students as they appeared to be always busy.

The use of the blended approach in IL program offering, evident in the current study where various IL delivery methods have been used, is also evident elsewhere. Ukachi (2015:486) conducted a study focusing on undergraduate students' IL skills and their use of electronic resources in university libraries in Nigeria. The study recommends the provision of adequate library orientation, which is usually offered to new students, and also supports the provision of library instruction to students. A related study conducted by Bønløkke, Kobow, and Kristensen (2015:13) at VIA University College, Denmark calls for the inclusion of IL skills content in the curriculum, as was discovered in the current study. Bønløkke et al. (2015:12) argue that IL is a shared responsibility between librarians and faculty; hence, they advocated co-teaching to take advantage of the diverse skill sets of librarians and faculty. Although there is no evidence of co-teaching of the IL programme between librarians and faculty members in the current study, this is an opportunity for librarians to exploit, as they seek ways to improve the delivery of IL programmes in the future.

8.2 Skills and competencies learned through the IL sessions

Findings showed that 88.4% of nursing students indicated an interest in knowing what plagiarism is and why it must be avoided, 81% indicated skills in advanced search techniques from other databases, and 81.2% wanted how to employ in-text citations as some of the main IL skills to be attained from IL sessions offered. Using the catalogue and other databases (23.2%), using authentic sources of information (42%), and deploying an effective search strategy (49.3%) were other skills students learned from the IL skills training, although they were ranked lower than the other skills.

Plagiarism is considered an academic crime with far-reaching repercussions for students in many institutions. A study conducted by Selemani et al. (2018:3) focused on why postgraduate students commit plagiarism at Mzuzu University in Malawi and found that students who were guilty of plagiarism were penalized. This may explain why students wanted to learn how to avoid plagiarism to ensure that they were spared the penalties that came with it. It should also be noted that students undertake various academic tasks including writing academic papers, dissertations, and theses. To successfully perform these tasks, students require high-quality information sources.

This explains why students were keen to learn advanced search techniques from other databases and how to perform in-text citations, including referencing. Moreover, knowledge of what constitutes authentic sources of information is a critical IL skill as the world is replete with false information. This further explains why the students were keen to master these skills. Furthermore, the current findings indicate that the students in this study relied heavily on Google and Google Scholar as their main sources of information, as opposed to library subscription databases, which are of higher quality. The efforts of the students to learn advanced search techniques from other databases could assist in correcting this problem.

8.3 Databases that are frequently consulted by students as sources of information

The students who participated in the current study were found to use a wide range of electronic information sources. These ranged from library subscription databases aligned to nursing and medical fields such as HINARI, Medline, and PubMed, to general search engines such as Google and general scholarly databases that included Google Scholar. Much as this was the case, it was noted that the overwhelming majority of the students (97.1%) used Google or Google Scholar as their primary sources of information, while library subscription databases were minimally used. Google is a general search engine; hence, the quality of the accessed content cannot be ascertained. Conversely, Google Scholar offers higher quality scholarly content as opposed to Google, but offers limited access to full-text articles. This means that students using either Google or Google Scholar have limited access to high-quality scholarly content.

The findings of this study are in some respects congruent with those of other studies but also differ from others. For example, Lee et al. (2019:202) conducted a survey to assess the information retrieval skills, behaviour, and needs of 1301

nursing students working in a Danish hospital. Findings showed that besides using the intranet, nursing students also used Google as their main source of information.

This finding is similar to that of the present study. Mokhtar et al. (2012:15) used an exploratory case study design to explore the IL skills of nursing students working in a large government hospital in Singapore. The findings of this study revealed that the majority of nursing students used print and human information sources rather than electronic information sources. This is in sharp contrast to what was found in the current study, in which electronic information resources were the dominant sources of information accessed by nursing students. The findings of Mokhtar et al. (2012:21) also bear some resemblance to those made in the current study in that sources of information relied upon in both studies were discovered to be lacking in terms of credibility. For instance, print information sources tend to be more outdated than electronic sources, whereas human sources are less dependable than printed or documented sources. Similarly, Google and Google Scholar have been described as either lacking content quality or having limited access to high-quality content.

The implication is that students in the study conducted by Mokhtar et al. (2012, p.22) and those in the current study were not assured of high-quality content.

8.5 New IL skills and competencies students wanted to learn

An analysis of the students' responses showed that most of the new skills they wanted to learn were research-related. For instance, 78.3% of students wanted to learn proposal writing skills, referencing styles, and basic to advanced statistical skills. All these skills are oriented towards research. Likewise, 66.7% of the students wanted to learn how to use SPSS (a quantitative data management software program) or NVivo (a qualitative data management software program), whereas 55.1% of the students wanted to learn how to use reference management software, such as Zotero, Endnote, or Mendeley.

Student's willingness to learn how to use the two data analysis software programs meant that they wanted to become skilled in qualitative and quantitative research methods, the use of referencing styles, coupled with the use of referencing management software, how to write a proposal, and how to use statistical packages in research. Thus, the new skills students desired to learn were inclined towards conducting research. A cross-reference to students' academic levels showed that 22% were master's students, and 4% were PhD students. Cumulatively, this shows that 26% of the students were postgraduates who required higher-level research skills as their programs were research oriented. However, since 78.3% of all the students showed a preference for research-related skills, this means that many undergraduates also need to master such skills.

Although the undergraduate students' level of study was not disclosed, the extraordinarily high number of students who desired to master research skills makes the researchers suspect that probably the majority of the undergraduates were seniors who were also involved in some kind of research at the undergraduate level.

8.6 Challenges nursing students face in accessing IL sessions offered

Students presented some challenges that they considered obstacles in accessing IL sessions offered by the KUHeS Library. Among the several issues identified, students indicated that IL sessions were not conducted frequently at the institution. However, the cause of this problem has not yet been identified. However, some students specified that they did not know whom to approach whenever they had an IL query, as library personnel appeared busy with meetings. However, others bluntly stated that there is a shortage of library staff to offer IL support to students. It is apparent that IL sessions are not well organized at the institution, and based on the information provided above, this stems from a staff shortage. Therefore, steps should be taken to address this issue.

Students were also asked to indicate the skills they found challenging to master. The findings show that students mainly struggled with mastering the skills to search for information. Most students (63.8%) specified finding information and 49.3% indicated formulating information search strategies, which is a precursor to information searches, as the main skill they struggled to master.

A study conducted by Farokhzadian, Khajouei and Ahmadian (2015, p.574) revealed that many nursing students used basic search strategies instead of advanced search skills. Additionally, more than 80% of the respondents in this study indicated that they were not familiar with the functions or purposes of Boolean operators. This is a clear manifestation of nursing students' lack of good searching skills. Another study conducted by Özbıçakçı et al. (2015:73) also elucidated shortfalls in the information search capabilities of students. Consequently, Özbıçakçı, Gezer, and Bilik (2015:76) recommend that the nursing curriculum should be revised to include IL skills topics focusing on indexes and databases, and evaluating information, among others, to address this problem.

Considering that nursing students in the present study face similar challenges, it is recommended that the nursing curriculum be revised accordingly to ensure that the IL skills content in the curriculum should contain modules on searching databases and evaluating information.

8.7 Preferred mode of delivering IL

Several modes of delivering IL to students have been suggested in this study, with the integration of IL skills into the curriculum being the preferred mode. For instance, 78.3% of nursing students wanted IL to be included in the curriculum. Several other scholars have adopted this approach. For example, Salisbury et al. (2012) conducted a descriptive study that involved the integration of inquiry research quizzes and library skills modules into the curriculum. The findings show that academic staff and librarians collaborated successfully in delivering the program. This development prompted scholars to call for the adoption of a similar approach to IL skills delivery. Özbıçakçı, Gezer, and Bilik (2015:77) have also recommended that the nursing curriculum be revised to include IL skills topics focusing on databases and evaluating information, among others.

Apart from embedding IL in the curriculum, the following methods were recorded as feasible options for delivering IL sessions: These include offering IL through guides found on library webpages, open bookable workshops hosted on campus, and library drop-in sessions (one-on-one sessions). The offering of IL through guides and library webpages has great potential, as students can access the content 24/7 from wherever they are. Moreover, if multimedia clips are created and deployed for this purpose, they can be played many times by students, leading to greater understanding. Similarly, open bookable workshops hosted on campus and library drop-in sessions could be attended by students at their convenience. However, the library will have to address human resource issues that have been found to affect the offering of IL sessions on campus if these interventions are to succeed.

9 Conclusion and recommendations

The findings of the study reveal that nursing students receive some IL program offerings. These include on-campus IL sessions organized by the library, lectures or curriculum-embedded IL programs, and library instructional sessions. Much as the program offering was broad and generic, the on-campus IL sessions organized by the library were favoured by almost half of the students. Attendance at the IL sessions has enabled students to gain skills related to knowing what plagiarism is and why it must be avoided, advanced search techniques from other databases, and the use of in-text citations.

The findings further indicate that most students use Google or Google Scholar as their primary sources of information, whereas library subscription databases are minimally used. It was noted that students could have limited access to quality scholarly content as Google is a general search engine; hence, the quality of the content accessed while using it cannot be ascertained, while Google Scholar has limited access to full-text quality content.

A feasible way to address the problem of staff shortages is to adopt a collaborative approach to IL teaching. Cooperation between librarians and faculty is important, as it deepens each party's understanding of IL, the curriculum, pedagogical professionalism, and mutual roles. As a shared responsibility between librarians and faculty, IL supports co-teaching to take advantage of the diverse skill sets of librarians and faculty.

The IL skills and competencies that were rated highly by nursing students included citation and referencing styles, academic integrity, how to avoid plagiarism, and finding and evaluating information. These skills primarily pertain to the use of electronic information sources, which are dominant in the current era. However, most students used Google or Google Scholar as their primary sources of information.

The overall conclusion of this study is that efforts have been made to deliver a viable IL program at Kamuzu University of Health Sciences. Nevertheless, the study uncovered several challenges that students face in accessing IL sessions from the library. It was also noted that students found some skills difficult to master. These include finding information, formulating information-search strategies, evaluating information, and avoiding plagiarism.

Based on these findings, the following recommendations are made: First, library staff should work with faculty members to develop content and employ modalities to deliver content. Content information search skills should be emphasized to ensure that students attain the required level of skills after attending the sessions.

The study noted that the on-campus IL sessions organized by the library were well-patronized by students. However, staff shortages affect the offering of the program. Therefore, it is recommended that additional librarians be assigned to adequately serve student communities that require IL instructional sessions.

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