Library Philosophy and Practice (e-journal)   Libraries at University of Nebraska-Lincoln

Fall 10-3-2023

An Investigation of Information Needs and Information Seeking Behaviour of Nursing and Clinical Students in an Academic Healthcare Institution.

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An investigation of information needs and information seeking behaviour of nursing and clinical students in an academic healthcare institution.

Abstract

Although the concept of information-seeking behaviour has evolved significantly among professionals, it is unclear how much the nursing profession has been affected by these changes. Examining information seeking behavior for the nursing profession is significant as nurses need to use the most current information to meet clinical and educational needs Besides, information seeking is one of the steps of embracing evidence-based practice which has been identified as one of the core competencies needed for the health care professionals in the 21st century.

Medical and healthcare literature is growing exponentially, and healthcare professionals, including nurses, need to possess basic literature searching skills to retrieve information for clinical decision making. Nursing and clinical professionals spend considerable time and effort providing healthcare and medical treatment to patients. Thus, they need to use latest medical knowledge to support their healthcare practice as well as provide necessary information to patients and their families. Many nursing students find it convenient to obtain information from sources that are easily accessible and reliable. Due to the sensitivity of the nursing profession, many nursing students prefer to seek for information from health care providers such as physicians and colleagues in the profession.

This study sought to establish the information sources used by nursing and clinical students at Aga Khan University and, determine how the students access the required information. Further, the study analyzed whether the existing information sources in the library meet the student's needs. The study also sought to examine the challenges that nursing and clinical students experience in accessing and acquiring information. This study was anchored on Wilson's Information Behavior Model (1999). Both qualitative and quantitative methods of data collection were used. The importance of using the quantitative approach was that it provided the researchers with a subjective approach to a wider phenomenon. On the other hand, the qualitative approach was used for an in-depth analysis that gave enhanced the researchers to explore how and why information seeking happened in a particular way.

The study found that nursing and clinical students visit the library mostly to search for online electronic-resources, journals and textbooks. However, unavailability of some materials imply that the information needs of the students are not fully met. The library should endeavor to provide all the information materials that the students need and collaborate with the students to understand their information needs. This study revealed that nursing and clinical students have varied searching skills. The study determined that majority of the nursing students used the keyword search strategy, subject search strategy, title search strategy and author search.

Keywords: Information seeking behavior; Information needs; search strategies; Nursing; Information Literacy

Background

The role of information has been acknowledged as an important aspect in the research activities of the graduates (Franklin, 2005). Understand ng of the information needs and the information seeking behaviors of graduates is fundamental to the achievement of the graduates' research activities (Thani & Hashim, 2011). With the proliferation of information sources, information seeking behaviors of library users have evolved in the past 20 years. Rutland and Smith (2010) describe information seeking behavior as the way in which people "search for and utilize information." Information seeking behaviour encompasses the passive and active information seeking and use (Al-Suqri, 2011).

According to Nakaziba et al. (2023) nursing students should be equipped with IL competencies to become lifelong learners who can "learn how to learn" to utilize the best evidence reported in the current medical literature and patients' experience. They add t at Nursing students must know and utilize analytical and evaluative skills to access relevant information.

Htay, et al. (2022) investigated the digital health literacy level, information-seeking behaviour, and satisfaction of information on COVID-19 among East and South-East Asia university students. The partic pants were drawn from university students in China, Malaysia, and the Philippines. Findings revealed that search engines and social media were highly utilized by the students, whereas doctors' websites were not highly utilized. Based on t e findings of their study, providing online information on COVID-19 at official university websites and conducting health talks or web-based information dissemination about the strategies for mental health challenges during pandemic could be beneficial to the students. Therefore, institutions should device mechanism to strengthen digital health literacy among university students. This will consequently enhance students critical thinking which could direct them to the quality information sources on pandemics such as COVID 19.

The concept of information seeking behavior is rooted in several theories such as the Brenda Dervin's sense making theory (1983), the Zipf's principle of least effort published in 2004, and the Elfreda Chatman's life in the round theory (1999). In a modern digital world, information seeking processes and behaviors have become an area of interest for libraries around the world. This is because earlier theories were focused exclusively on the information seeking and receiving and overlooked the central modality of the process. As information seeking behavior becomes more popular especially with the advent of artificial intelligence, systems are likely to learn how users like, need, and search for information (Chauhan & Mahapatra, 2013)

Although, the concept of information seeking behavior has evolved significantly among professionals, it is unclear the extent to which the nursing profession has been affected by these changes. Examining information seeking behavior for the nursing profession is significant as nurses need to use the most current information in order to meet clinical and educational needs (O'leary & Mhaolrunaigh, 2012). Besides, information seeking is one of the steps of embracing evidence-based practice which has been identified as one of the core competencies needed for the health care professionals in the 21st century (Jogerst et al., 2015).

Medical and healthcare literature is growing exponentially, and healthcare professionals, including nurses, need to possess basic literature searching skills to retrieve information for clinical decision making (Majid *et al.,* 2011). Nursing and clinical professionals spend considerable time and effort providing healthcare and medical treatment to patients. Thus, they need to use latest medical knowledge to support their healthcare practice as well as provide necessary information to patients

and their families (Clarke & Aiken, 2003). Many nursing students find it convenient to obtain information from sources that are easily accessible and reliable. Due to the sensitivity of the nursing profession, many nursing students prefer to seek for information from health care providers such as physicians and colleagues in the profession (Dee & Stanley, 2005).

Information seeking is a remarkable challenge, and it is one of a considerable theme within the information science domain (Thani & Hashim, 2011). With the increasing number of publications, it has become difficult for the information users, and in particular the graduates to keep up with the fast-expanding knowledge. Due to the increase in the availability of information, user expectations have substantially risen (Ijirigbo, 2009). Understand ng the information needs of library clientele is necessary for planning and providing high quality library services. When librarians and other information specialists understand users' information seeking behavior, they can adjust their services and resources to these patterns, and consequently offer better services (Safahieh, 2007).

Recognizing the importance of information for patient care, nurse educators began to emphasize the importance of nurses' information skills, especially seeking and use of clinical information to effectively discharge their responsibilities (Dee & Stanley, 2005). Although the Internet provides a good source of information from databases and journals, findings from previous research demonstrate that these sources are immensely underutilized. Electronic databases such as MEDLINE and CINAHL have become popular with healthcare students. However, s arching for health information requires particular set of skills as a major component of evidence-based practice is asking a focused, well-built question through the PICO framework (Gatiti, 2010).

Vakkari (2008) states that information seeking is as a process of searching, obtaining and using information for a particular purpose. Information seeking is therefore an important part of learning process to nursing and clinical students. Several factors including lack of access to the internet, large volume of nursing literature, and insufficient time for research have all contributed to a low uptake in information searching and retrieval among nursing students and practitioners (Younger, 2010).

This study sought to establish the information sources used by nursing and clinical students at Aga Khan University and, determine how the students access the required information. Further, the study analyzed whether the existing information sources in the library meet the student's needs. The study also sought to examine the challenges that nursing and clinical students experience in accessing and acquiring information. This study was anchored on Wilson's Information Behavior Model (1999).

Literature review

Information science researchers have developed a keen interest on how people search for information from a variety of sources. Information seeking behaviors vary from one person to another and within groups of people with different characteristics (Huurdeman and Kamps, 2014).

Various studies have examined the role of libraries as sources of health information for students and healthcare professionals (Curtis et al. 2007, Grajek et al. 2007). Grajek et al. (2007) evaluated the use of information resources during the first year at the Yale-New Haven Medical Center. Measures included monthly usage data for resources delivered; online surveys of library

users; an annual survey of random, stratified sample of Medical Center faculty, postdoctoral trainees, students, nurses, residents, and managerial and professional staff; and user comments. Findings indicated that 83% of the Medical Center community used networked information resources. On the other hand, 88% of the participants used computers in more than one location. The increase on the usage of traditional library resources such as MEDLINE was attributed to increased access from outside the library. Both survey and usage data showed that students and health professionals were using multiple resources during the information retrieval session.

Hamid, S.et al (2016). Investigated the role of social media in information-seeking behaviour of international students. an exhaustive systematic literature review (SLR) was carried out in order to investigate social media as a source for the observation of the behaviours of international students. For this purpose, 71 articles were selected from various well-known sources after an intensive SLR process of searching, filtering, and enforcing the inclusion and exclusion criteria. Findings identified the information needs of the international students and categorized them by the roles played by social media in fulfilling the information needs. As an outcome of this study, the information-seeking behaviour of international students was highlighted with respect to social media as a source of information. In addition, this research identifies the information needs of international students and categorizes them by the roles played by social media in fulfilling their information needs. The study outcome highlighted the need to shift the information seeking behaviour from libraries to social media regarding the new environment for international students.

Dee and Stanley (2005) studied information-seeking behaviour of nursing students and clinical nurses. Findings revealed that nursing students would likely rely on colleagues and books for medical information. The other resources they frequently used included personal digital assistants, electronic journals, eBooks, and drug representatives. Significantly more nursing students than clinical nurses used online databases, including CINAHL and PubMed, to locate health information, and nursing students were more likely than clinical nurses to report performing a database search at least one to five times a week.

Majid et al. (2011) investigated nurses' use of different medical information sources and their literature searching skills. One thousand four hundred eighty-six nurses from two public hospitals in Singapore participated in the study. The study found that nurses used human and printed sources more frequently than online sources. Their findings corroborated those of Pors (2006) who reported that physical libraries and digital resources complemented each other.

The place of Google in the students' information is prominent and positively correlated to the use of traditional library resources. Marshall et al. (2011) explored the preferred sources of information used by intensive care nurses and their perceptions of the accessibility and usefulness of this information for making clinical decisions. The study established that professional colleagues as information sources were considered most useful and accessible in the clinical setting. Text and electronic information sources were seen as less accessible, mainly because of the time required to access the information. Lacović (2014) examined students' information behaviour and the role of academic libraries. Findings have shown that most respondents needed the information for academic purposes such as papers, assignments, or examinations. Most students considered the internet a very important source for finding academic materials. Most of the students received advice in finding relevant information sources from their lecturers, peers, and librarians.

As pointed out by Bates (2010), research on information behavior has been referred to interchangeably in three different terms: user studies; information seeking, or information needs and uses; and information behavior. However, information seeking behavior seems the most dominant and widely used term (Case, 2012). This may be explained because it is a wider concept and a broader term encompassing research on people's interaction with information (Bates, 2010). Information seeking can be defined as a process in which humans purposefully engage to change their state of knowledge (Marchionini, 1997). Information seeking behavior is also defined as the activities a person may engage in when identifying their information needs, searching for information, retrieving information in any way, and transferring and using that information (Wilson, 2009).

Information-seeking strategies.

A classification of various information-seeking strategies was first developed based on four behavioural dimensions, which consist of; the goal of the interaction (learn, select), method of interaction (scan, search), mode of retrieval (recognize, specify), and types of resources interacted with (information, meta-information). Each type of information-seeking strategy corresponded to a specific prototype of dialogue structure (Belkin et al., 1995).

Thain and Wales (2011) investigated the approaches that nursing students will likely embrace as the most effective in searching for information. They carried out the study on senior nursing students to investigate the impact of different programs on the ability of these students to seek and access information. The strategies varied across the spectrum. Findings revealed similarities and differences between groups of students enrolled in different nursing programs. Students in integrated programs showed a greater tendency to a systematic approach when seeking information, using textbooks, journals, electronic materials, and databases to seek and access information. The same study revealed that general nurse students preferred a modelling approach to seeking and accessing information.

A nationwide survey by the Royal College of Nursing (2011) sought to instigate the information needs of nurses, health care assistants, and resident doctors in health institutions. The survey distinguished between the required information for improving clinical practice and the information for supporting lifelong learning and formal training. Findings revealed that nurses, regardless of whether they are engaged in formal learning or not, used local sources to search for information to enable them to give appropriate care to their patients. As such, they were more likely to depend on their coworkers, such as nurses, doctors, and pharmacists, to seek and find information for their needs.

Spenceley et al. (2012) conducted a study of information sources likely to be consulted by nurses to inform their practice. They developed a scoring scheme to facilitate comparison across studies. The most preferred sources of information were "registered nurses", "nursing journals", and "reference material". Their find ng corroborated with that of Thompson et al. (2010), who found that "immediate colleagues were perceived as more accessible as a source of information for clinical problem solving than any form of evidence-based technology.

Rostami (2022) surveyed the information-seeking behaviour of Iranian medical faculty members to identify the reasons and obstacles to their usage via the internet, scientific databases and online social networks. The research population included faculty members of four faculties of Hamadan

University of Medical Sciences in Iran, including health, nursing–midwifery, paramedicine and rehabilitation. A structured questionnaire was used to collect data. SPSS software was used to analyze data at descriptive and analytical levels. Findings identified low internet speed, network traffic, and lack of time were the main barriers and difficulties. Gender was significantly related to familiarity with databases, problems and barriers to accessing information, social network use, and purpose and motivation. Search for educational and research resources and use of social networks to increase their general information were participants' main goals to use the internet and databases. The study outcome necessitated the usage of faculty members of various digital resources growing ever more.

Vakkari (2008) investigated why nurses seek information and found that nurses sought information mainly for decision-making about individual patients' care. The other purposes were institution-specific information, knowledge about medications, and procedure information. Ozsoy and Ardahan (2008) found that nurses most frequently required drug therapy and diagnosis information. The source they used most frequently were colleagues, drug reference manuals and protocol manuals. This study shows that the prevailing task at hand is an essential deciding factor when selecting a particular piece of information and the eventual processes of seeking and accessing the required information.

Al-Dousari (2009) conducted a study to explore the information needs and information seeking behaviour of doctors in Kuwait government hospitals. The aim was to investigate the internal and external information sources used by doctors in Kuwait government hospitals and to analyze whether the existing clinical information sources met their needs. The study's findings show that the most frequently mentioned need for information was to be updated to maintain good practice. It was found that interpersonal communication and a doctor's collection, consisting primarily of electronic resources, were the sources most frequently reported as used by the doctors. However, the degree of use of clinical information sources showed that doctors' information-seeking varied depending on the clinical scenario. Doctors' knowledge and patient data were the most frequently used sources of information. Noticeably there was low use of knowledge-support resources such as the Internet and library resources in the outpatient and emergency rooms. However, use of the knowledge-support resources was highest in the wards.

Several studies show varied challenges that may hinder health students from accessing information effectively. For instance, studies by Tannery et al. (2007) and Cogdill (2003) revealed that the common barriers to nurses' information seeking are lack of access to the most relevant resources; search results that are too large to be useful; search results that retrieve information that is incomplete, inaccurate, inconsistent and non-evidence based; and information that is too difficult to read or understand. Kumar and Suresh (2000), in their study on strategies for providing effective reference services for foreign adult learners, pointed out that the barriers to effective utilization of library resources and services by international students were partly due to the unclear role of the reference librarian since international students sometimes felt that they might disturb the librarians with their questions. There were communication problems due to the inability of library staff to understand the students and to clearly express their information needs because of their lack of fluency in English. This serves as a barrier to students in their quest to access information in the library.
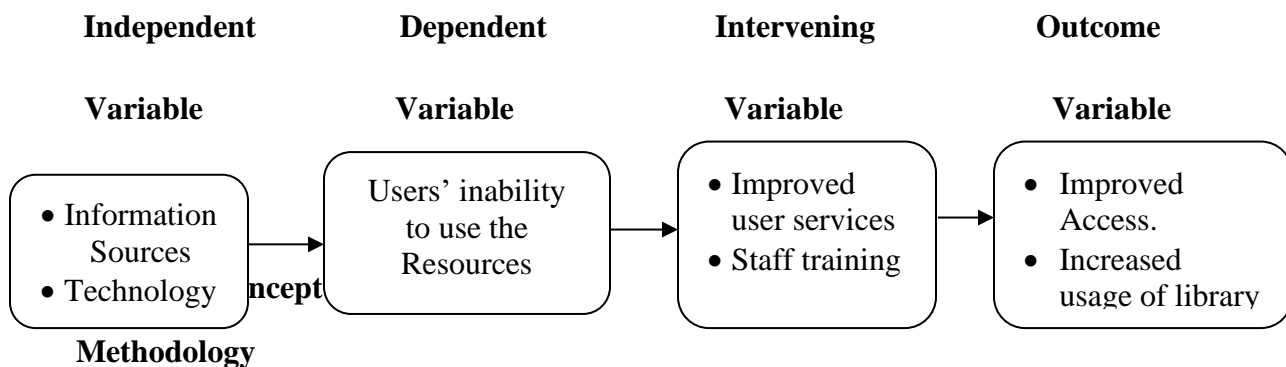
Jones, Schilling and Pesut (2011) studied barriers and benefits associated with nurses' information seeking. The study found that lack of knowledge about specific resources, use of online search engines, and previous negative experiences with specific resources were important factors that hampered effective information searching and retrieval in clinical practice. In addition, the specific characteristics of information resources also posed barriers to effective use.

Laki (2016) conducted a study to determine factors influencing health information-seeking behavior and utilization of ICT resources among healthcare providers. They conducted a cross-sectional study among 202 health care providers in the Tanga region, Tanzania. The result showed that health care providers in urban areas were more likely to search for health information and use it than those in rural areas. The study recommended that healthcare providers in urban and rural health facilities should continuously be trained to search and use health information.

Similarly, Haider (2021) assessed the usage of library resources for medical college students. To explore and understand the student's level of satisfaction, learning and seeking behavior by efficient information retrieval systems. The study was based on a quantitative research method and data was collected from undergraduate students at medical colleges in Islamabad, Pakistan. The study's finding shows that medical students can enhance their IT skills to seek information in this technology era. Based on the findings the study was very helpful to reduce the barriers between the students and the library staff. The findings of the study are also beneficial for the administration to improve and develop the strategies for enhancing the ILSs of medical students to achieve medical educational information in the age of technology. The medical institutional administration can develop the education development policy, traditional health education policy, funds allocating policy, health information literacy and collaborate with library staff to enhance the services and meet medical students' information needs. In conclusion, the social implication observed by Haider is that library administrative management must be designed to be useful and provide a durable policy to develop technology for digital literacy.

A conceptual framework was developed based on the literature review of the existing studies on nursing and clinical students' information needs and information seeking behavior. The conceptual framework's purpose was to present the research's main variables and their relationship. The independent variable was information seeking behavior, while the dependent variable was information needs of students.

The conceptual framework illustrates the interaction between independent and dependent variables, as shown in Figure 1.

| Independent | Dependent | Intervening | Outcome |
| Variable | Variable | Variable | Variable |

| • Information Sources
• Technology | Users' inability to use the Resources | • Improved user services
• Staff training | • Improved Access.
• Increased usage of library |

Methodology

The target population of this study consisted of 100 subjects, including 88 clinical and nursing students and 12 library staff. The study used Krejcieq and Morgan's (1970) formula to determine the sample size. The formula is used for a finite target population. Based on Krejcieq and Morgan's table for determining sample size, a population of 100 gave a sample size of 80 respondents. The distribution of the sample size is shown in Table 1.

Table 1: Sample Size

Population Subjects	Population Size	Sample Size
Library Staff	12	10
Clinical and nursing students	88	70
Total	**100**	**80**

This study used both qualitative and quantitative methods of data collection. The quantitative approach was important because it provided the researchers with a subjective approach to a wider phenomenon. On the other hand, the qualitative approach was used for an in-depth analysis that gave enhanced the researchers to explore how and why information seeking happened in a particular way. These approaches also helped the researchers to apply different methodologies such as questionnaires and interviews to collect data (Creswell & Clark, 2011).

The questionnaires were designed to address the research questions and objectives and were administered to the clinical and nursing students at the Aga Khan University. The questionnaire had a combination of both open and closed questions. It was divided into three sections; section one collected demographics information, section two presented questions on information seeking behavior while section three covered questions on information needs.

The second instrument that was used to collect data was the face-to-face interview guide. The researchers interviewed respondents to get in-depth information on the information needs and information seeking behavior. The interview guide helped probe and interrogate in-depth information from the library staff. The interview guide was deemed fit for the study since it facilitated in-depth research which yields adequate data, details, and new insights. The interview guide also permitted face-to-face contact with the respondents and provided an opportunity to explore the topic of information seeking behavior in-depth.

The study analyzed the data using qualitative and quantitative procedures. The collected data was thoroughly examined and checked for completeness and comprehensibility. Data was cleaned and entered in the Statistical Package for Social Sciences (SPSS Version 20) for analysis. The quantitative data was analyzed through descriptive statistics. The descriptive statistics such as means standard deviation and frequency distribution were used to analyze the data. The quantitative data was presented using pie charts bar charts percentages and frequency tables.

The qualitative data generated from the interview guides and open-ended questions was categorized in themes in accordance with the research objectives. The data was then analyzed through content analysis and reported in narrative form along with quantitative presentation.

Findings

Demographic characteristics

For the quantitative phase, most of the respondents were male (51.6%), with the remaining being female (48.4%). This shows that there was good composition of both genders in the study. From the findings, it can be deduced that the number of male and female clinical and nursing students using the AKU library were almost equal, though the number of male students was slightly high. The findings are presented in figure 2.
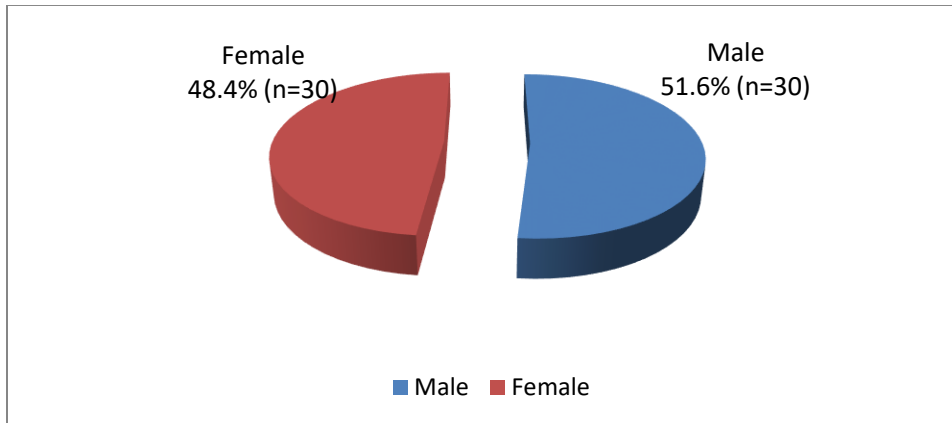

Figure 2: Gender of respondents

Respondents' demographic characteristics showed that the majority were aged 31–40 years (n=30; 48.4%), followed by 41–50 years (n=18; 29%).
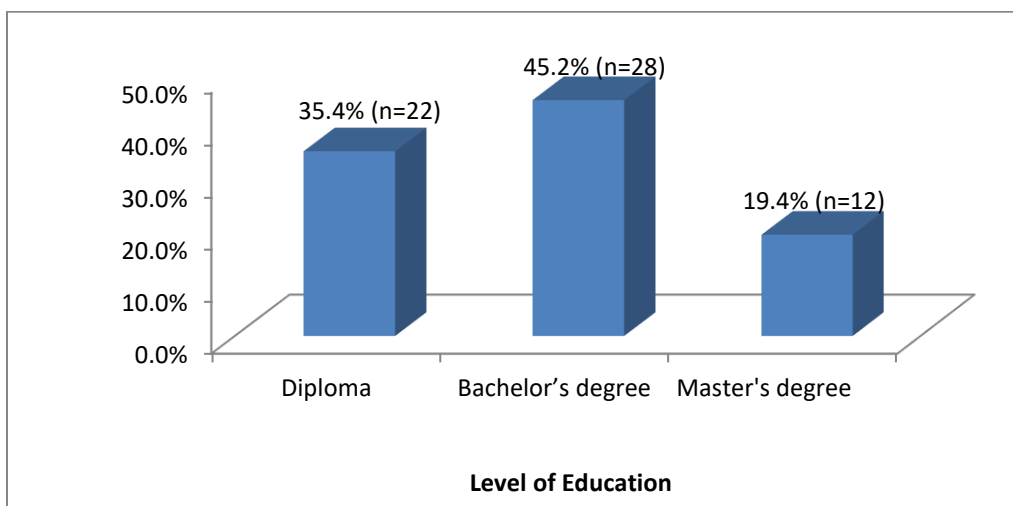

Figure 3: Level of Education

The demographic characteristics revealed that most respondents had attained a Bachelor's degree (n=28; 45.2%). This was followed by the respondents with a Diploma (n=22; 35.4%). However, only a handful of the respondents had attained a master's degree (n=12; 19.4%).

Information sources used by nursing and clinical students.

This study examined the information sources used by nursing and clinical students. The respondents were asked to indicate how frequently they used the library and the types of resources they searched. The study findings in Figure 4 show that 41.9% of the nursing and clinical students used the library at least once a fortnight while 29% indicated that they used the library at least once a week. Only 6.5% of the respondents indicated that they used the library daily while 22.6% revealed that they used the library at least once a month. The results are indicated in figure 4.
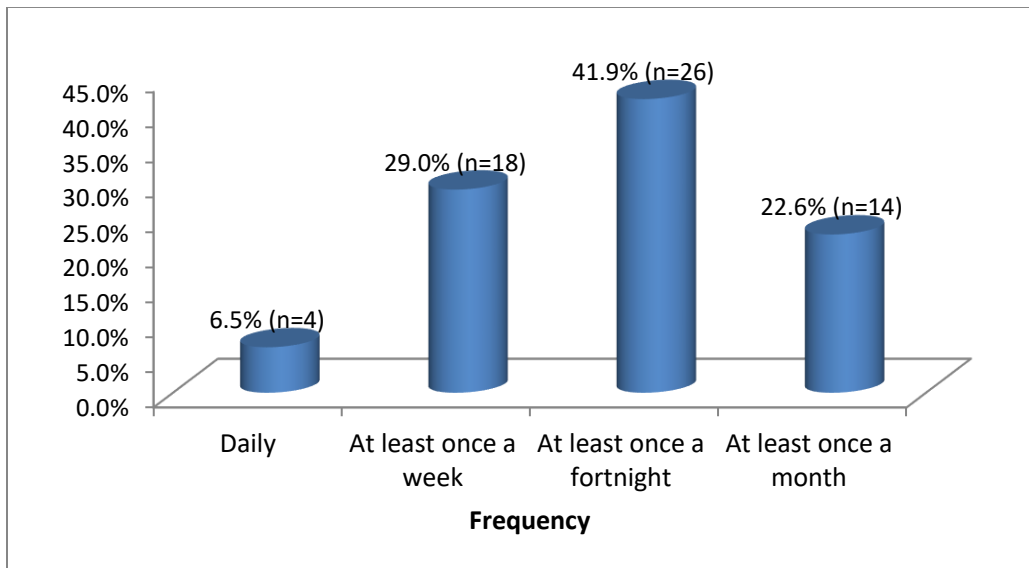

Figure 4: Frequency of use of the library

From most of the respondents went to seek information from library frequently at least once in a week or in two weeks. This impro es the reliability of the information given by the respondents since majority of them used the frequently.

The respondents were also asked to indicate the types of information resources they sought or searched in the library. The most prevalent purpose of visiting the library was to search for online resources (82.3%) followed by looking for journals (77.4%). The students also went to the library to look for textbook's journals. (67.7%). A few of the students went to the library to look for newspapers/ magazines (35.5%).

Table 2: Types of resources the students seek in the library.

Types of information resources	Frequency	Percent
Textbooks	42	67.7
Journal	48	77.4

Newspapers/ magazines	22	35.5
Online Resources	51	82.3

From the findings, online electronic-resources, journals and books were the most used information resources by the nursing and clinical students. These findings agree with Dee and Stanley's (2005) who also established that nursing students and clinical nurses were most likely to rely on books, electronic journals and online databases. Marshall *et al.* (2011) also established that other than use of colleagues and peers to get medical information, text and electronic information sources were also used.

Types of information resources used

The library staff were asked to indicate the type of information resources that clinical and nursing students mostly looked for in the library. They indicated that the students mainly searched articles from online databases, such as CINAHL and PubMed. However, o her students consulted medical magazines and books. These findings are similar to those of Marshall et al. (2011); Dee and Stanley (2005) who also revealed that nursing students and clinical nurses were most likely to rely on books, electronic journals and online databases.

Access to information by students for clinical decision-making

This study also sought to establish how nursing and clinical students accessed information for clinical decision-making. A five-point Likert scale was used to interpret the responses whereby the scores of "Not at all" and "small extent" were represented by mean score, equivalent to Likert scale (1≤small exent≥2.5). The scores of 'moderate' were equivalent to 2.6 to 3.5 on the Likert scale (2.6≤moderate≥3.5). The scores of "great extents" and "very great extent" were equivalent to (3.6≤Great Extent≥5) on the Likert scale which shows a strong agreement with the statement.

Findings revealed that majority of the students used lecturers as their starting point for seeking information (mean score = 4.24). Others use official publications as their starting point for seeking information (mean score = 4.20). The respondents also indicated that they used the library as their starting point for seeking information (mean score 4.08) as well as using personal for seeking information (mean score = 3.90). Profession l colleagues and Internet were also used to a moderate extent (mean score 3.09 and 3.13 respectively). The results are presented in Table 3.

Table 3: Seeking for information in the library

Information seeking behavior	Mean	Std. Deviation
I use lecturers as my starting point for seeking information	4.24	0.690
I use professional colleagues as my starting point for seeking information	3.09	0.738
I use official publications as my starting point for seeking information	4.20	0.625

I use the internet as my starting point for seeking information	3.13	0.727
I use personal collections as my starting point for seeking information	3.90	0.696
I use the library as my starting point for seeking information	4.08	0.684

From the findings, the respondents indicated that they used lecturers as their starting point for seeking information and the library and official publications. A study by Pors (2006) found that students greatly used physical libraries. Students rely heavily on libraries for hard copy materials such as books, journals, papers, and online resources. It is evident that the use of physical libraries and digital resources complement each other.

The students were further asked to indicate other ways they used to seek or search for information in the library. Some of the respondents stated that they sought information through communicated with peers while others indicated that they had subscribed to electronic databases, where they accessed e-books and journals, which are categorized in various subjects/specialization, hence making it easier to access the information they want. The above findings are in agreement with those of Grajek *et al.* (2007); Dee and Stanley (2005) who found that medical students had multiple sources of information which included traditional library resources and electronic sources such as online databases, for example CINAHL and PubMed, for medical information.

Search strategies to access information in the library.

The respondents were asked to indicate the extent to which they used search strategies to access information. A five-point Likert scale was used to interpret the responses whereby 1 represented strongly disagree while 5 represented strongly agree. The results are presented in Table 4.

Table 4: Search strategies used to access information

Search Strategies	Mean	Std. Deviation
Keyword search	4.53	0.992
Title search	4.32	0.647
Author search	4.29	1.168
Subject search	4.51	0.662
Browsing in libraries or archives	3.84	0.898
Searching the Worldwide Web	3.89	0.626

As shown on Table 4, majority of the respondents used Keyword search strategy (mean score = 4.53), followed by subject search strategy (mean score =4.51), title search strategy (mean score =4.32) and author search strategy (mean score =4.29). These findings agreed with that Eke et al. (2014) who examined search strategies employed by library and information science students and found out that the search strategies employed by the students included: key word searching, title search, browse by title, browse by subject and sourcing information from the university library database.

This study also examined the information seeking strategies that the library staff used to help the students get the information from the library. The respondents revealed that they majorly used 'Title search' or 'Subject search' since the information materials in the library were arranged based on Subject area or Title of the materials. Some of the respondents also indicated they used Keyword search to help the students access the information materials in the library. The findings are in line with those of Eke *et al.* (2014) who revealed that students used search strategies such as: key word searching, title search, browse by title, browse by subject and sourcing information from the university library database.

Information sources and needs of students.
This study also examined whether the existing information sources in the library met the needs of nursing and clinical students. The respondents were asked to indicate the purpose of seeking information in the library. The most prevalent purpose was preparing class notes (82.3%), followed by writing research papers (77.4%) Other students were seeking information to help them in their course work (72.6%). On other hand, 67.7% of the respondents indicated that they sought information in the library to improve their knowledge in their area of practice while 51.6% indicated that they sought information to help answer patients' questions. Only 19.4% of the respondents indicated that they sought information for general awareness and personal development.

Table 5: Purpose of information seeking.

Information needs	Frequency	Percent
General awareness and Personal development	12	19.4
Improving my knowledge in my area of practice	42	67.7
To help answer patients' questions	32	51.6
Keeping up-to-date information in my area of practice	34	54.8
Continuing education – Class work	45	72.6
Writing reports/research paper	48	77.4
Preparing class notes/Class work	51	82.3

From the findings, the nursing and clinical students sought information for the purpose of preparing class notes, write reports, improve their knowledge in practice and help them answer patients' questions. The above findings agree with those of Royal College of Nursing (2011) who indicated that nursing and clinical students sought information for their formal learning, to improve their performance in their practice, including information to help them carry out laboratory tests, keep patient records, and enable them to give appropriate care to their patients. Ozsoy and Ardahan (2008) also found that nurses frequently sought information for the purpose of improving their knowledge on drugs therapy and diagnosis.

Satisfaction with the information sources in the library

The respondents were asked to indicate the extent to which they were satisfied with the information sources sought in the library. A five-poi t Likert scale was used to interpret the results where 1 represents Not at all satisfied, while 5 represents extremely satisfied. The study results in table 4 show that majority of the respondents revealed that they were very satisfied with the information sources in the library (mean score = 4.20). The respondents also revealed that the information materials in the library adequately met their information needs (mean score = 4.39). Moreover, the respondents indicated that they were very satisfied that the information materials were generally available and accessible (mean score = 3.88). According to Al-Dousari (2009), the degree of use of information sources is varied depending on the medical/clinical scenario and as a result the satisfaction levels are also varied.

Table 6.: Satisfaction with the information sources in the library

Satisfaction with Information Sources	Mean	Std. Deviation
I am satisfied with the information sources in the AKU library	4.20	0.808
The information materials are generally available and accessible.	3.88	0.192
The information materials at AKU library are adequate to meet my information needs.	4.39	0.506

Adequacy of information materials

The library staff revealed that the information sought by the clinical and nursing students in the library was adequate to meet their information needs. The library staff indicated that the library had current, up-to-date, and relevant information for clinical and nursing students to improve their performance in the clinical practice. The respondents indicated that the students needed information for laboratory tests, keeping of patient records and information relating to drugs therapy and diagnosis.

The above findings are in line with those of Vakkari (2008) who found that clinical and nursing students sought information for decision making about individual patients' care and get knowledge about medications and conditions. The same sentiments were shared by Ozsoy and Ardahan (2008) who found that nurses sought information they frequently required relating to drugs therapy and diagnosis.

Challenges experienced by nursing and clinical Students
The clinical and nursing students were asked to indicate the major challenges that they experienced when obtaining information in the library. The respondents indicated that there were few computers and electronic readers. They also had challenges accessing electronic databases due to the library's slow internet. The respondents also revealed that there was increased traffic of students using the library which at times overwhelmed the staff, and therefore could not accord enough time to all the students queries. As a result, most students relied on their own skills to search for information/materials in the library.

On the part of library staff, the respondents revealed that some electronic resources were complex for both readers and librarians. Some e-resources could not be accessed outside the library. The

respondents also indicated that they had challenges keeping up with a rapidly changing medical field, and the library did not have all the information materials that the students needed at that time.

The above findings agree with those of Al-Dousari (2009), who showed that some contextual factors hindered access to obtaining information they needed. The contextual factors were categorized as: organizational, socio-cultural, and information sources. These findings are also supported by Jones *et al.* (2011) who found out that lack of knowledge about specific resource or use of online search engines and previous negative experiences with specific resources hampered effective information searching and retrieval in clinical practice.

Conclusion

The study concludes that nursing and clinical students visit the library mostly to search for online electronic-resources, journals and textbooks. However, the unavailability of some materials implies that the information needs of the students are not fully met. The library should endeavor to provide all the information materials that the students need and collaborate with the students to understand their information needs.

This study revealed that nursing and clinical students have varied searching skills. The study determined that most nursing students used the keyword search strategy, subject search strategy, title search strategy and author search. Remarkably the students rarely used the librarians as their starting point for seeking information. Thus, the library should put mechanism to provide appropriate infrastructure and adequate computers for the students use. The library should also provide different online platforms for access by nursing students to reduce the barriers attributed to distance and lack of time to visit the library physically.

Nursing students were eager to get information on patient care and help answer patients' questions, improve their knowledge in their area of practice and get up-to-date information. The students also sought information in the library to help them in their class work. However, there should be greater collaboration between students and librarians to ensure the students have all the necessary information materials. The librarians should guide the students on how to use online databases which are the best sources of information since they can get up-to-date information for their course work and enhance clinical effectiveness.

Nursing and clinical students experienced challenges while accessing information materials in the library. The students experienced challenges accessing electronic databases due to the library's slow internet. There were also challenges in keeping up with up-to-date information sources, and sometimes, the library did not have all the information materials that the students needed for use.

In summary, this study sought to determine the information needs and information seeking behavior of nursing and clinical students at the Aga Khan University Library. This was a case study of one medical library, Aga Khan University Library. The study recommends that a similar study be conducted in other medical libraries in the country to compare results. A comparative study of private and public health sciences libraries can also be undertaken.

With the increased use of technology, future studies could examine how technology has influenced the information seeking behavior of nursing and clinical students.

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