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The Evaluation of Information Literacy among Medical Students at the College of Health Sciences, University of Ghana

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ABSTRACT

The purpose of this study was to assess the information literacy of medical students at the University of Ghana. The convenience sampling technique was used to choose 206 respondents for the study, which yielded a response rate of 93.7 per cent. The study found that the majority of respondents needed information to acquire new knowledge in a subject area and to write assignments or project work. Moreover, most respondents rely on books, electronic books, and journals as their primary sources of knowledge. Furthermore, most respondents stated that they obtain their information via the internet. Additionally, most responders use the databases PubMed, ScienceDirect, and Google Scholar. Again, the majority of respondents are aware of the concept of plagiarism and will acknowledge the author of a book if they use a piece of it in their work or study. Last but not least, respondents' major concerns about information access were low internet speed, high cost of books and other information materials, and information overload. Thus, it is strongly recommended among others that the CHS administration especially the CHS Library should manage and develop their collections in that required and relevant information sources will be available for students to use in their assignments and project works.

Keywords: information literacy; medical students; plagiarism; universities; University of Ghana

INTRODUCTION

The advent of computers with subsequent technology in this digital age has brought about an abundance of information products and sources. This proliferation of information has challenged consumers of information especially students to make informed decisions in studies and field of work. Abundant information is also known as information overload creates difficulties in the creation, processing and storage of data which affects evidence-based decision making (Aikat, 2013; Amegashie and Ankamah, 2020; Strother et al., 2012).

This challenge has necessitated the need for users of the information to acquire the requisite capabilities of information literacy (IL) to evaluate and differentiate needed information from the other. IL is thus a set of skills that enable individuals to recognize what information is needed and to be able to identify, interpret and effectively apply the information (American Library Association, 2000). Students who are ardent users of information need the information to support their assignments and projects (Dadzie, 2007). Therefore, the acquisition of IL is a sine qua non for them to become independent lifelong learners.

Contextually, the Medical School under the College of Health Sciences of the University of Ghana trains medical students and admitted the first batch of 51 students in October 1962. Currently, the total number of medical students has risen from 802 in the 2006-2007 academic year to 1032 in the 2020/2021 academic year (UGMS, 2021; University of Ghana, 2014). Medical students require information on basic sciences, social sciences, actionable summaries, systematic reviews and so on (University of Ghana, 2014).

Medical students are confronted with information overload especially on the internet where information is unfiltered and unorganized. For this reason, students are taught as part of their medical programme diverse forms of information literacy at various levels of education especially at level 300 where students are taught MEDS 302: Medical Computer Literacy.

However, there is only a study known to have conducted on second and third-year medical students' information literacy more than ten years ago (Aggrey, 2009).

Moreover, the 2014 – 2024 strategic plan of the University of Ghana as part of its new vision and mission aims to produce the next generation of thought leaders who will drive national development. This, therefore, calls for the acquisition of refined skills in creating, assessing, and applying evidence-based information in solving societal problems by its students and alumna (University of Ghana, 2018). Thus, this study aims to evaluate the information literacy of medical students at the University of Ghana. The study sought to address these objectives:

a. To identify how medical students know, access, evaluate and use information.
b. To find out students' knowledge of the legal and ethical implications of information use.
c. To ascertain the problems students, face when accessing information.

Theoretical Framework

The study integrated the Association of College and Research Libraries (ACRL)'s model of Information Literacy Competency Standards which focuses on five major areas of information literacy which include Know, Access, Evaluate, Use and Ethical/Legal which are further dissected into performance indicators (American Library Association, 2000). The study focused on these variables to assess the information literacy of medical students at the University of Ghana.

LITERATURE REVIEW

This section discussed previous studies and relevant literature on information literacy. The literature is divided into four main broad parts. The first part deliberated about knowledge and

access to information by university students. The second part discoursed about evaluation and usage of information by university students. The third part talked about ethical and legal implications of information use and the last part talks about barriers to information use. Finally, a summary of the literature was provided.

Students' Knowledge and Access of Information

The turn of the 21st century has been considered a knowledge era, characterized by free access to a multitude of information by all. In the educational sector, access to information (emphasis on relevant and scholarly information) is seen as crucial to not only supporting curriculum and extra-curriculum activities but putting students who utilize such resources ahead of their counterparts who do not (Ekpang and Ekeng, 2021). In any academic institution, the library plays a pivotal role in making available information resources in their updated form to support teaching, learning and research (Akpovire et al., 2019). Libraries again provide both print and electronic sources of information. Studies have shown that students are well cognizant of the sources that they can gain relevant information. They include traditional information sources such as humans, book resources, printed articles, newspapers/magazines, gazettes, reports, bibliographies and digital sources such as e-journals, audiobooks, e-books and online database (Akpovire et al., 2019; Fázik and Steinerová, 2020; Santos and Serpa, 2017; Scott, 2017). The literature indicates that compared to traditional information sources, students are more cognizant of digital information sources. Explaining the reason behind this, Santos & Serpa, (2017) averred that students are turning to digital sources of information due to the increasing relevancy of such resources (for their quality) relative to traditional sources that are increasingly fewer. Similarly, Wiebe, (2016) contended that students of today are born into an age of ubiquitous and seemingly infinite information through digital sources, or as he put it, in the "Google it" era.

This trend is predominant among all categories of students of which medical students are no exception, as some studies have highlighted the extensive usage and acceptance of e-learning information systems among medical students in some parts of the world (Gavali, 2017; Gutmann et al., 2015; Scott et al., 2018). Akpovire et al. (2019), however, found that in Nigeria, several medical students still rely on print media as their source of information despite the availability of online sources that were well-organized and reliable. The scholars attributed this to the students' obliviousness of the availability and relevance of digital resources of information, as well as their inability to access them. Nonetheless, in Botswana, (Witt et al., 2016) found that medical students find the use of digital sources of information as very useful in their medical education.

While there are no known studies on medical students' knowledge and access to information in tertiary institutions in Ghana, some studies have explored the subject on other categories of students. (Kumah, 2015), for instance, did a comparative study of the use of the library and the internet as information sources by graduate students (specifically those in the University of Ghana). The study adopted the convenient sampling technique and sampled the views of 122 students from the College of Social Science and Humanities. Findings from the study revealed that although the students use both the library and the internet, their usage of the internet was more than the library. Similarly, Kwadzo (2015) found that 96% of graduate students in the Departments of Geography and Development Resource, and Information Studies (in the University of Ghana) are aware of databases available for them.

The above narratives show the extent of students' knowledge and access to information. While it appears that most of the students have sufficient knowledge and access to information, their knowledge seems to be more skewed towards digital information sources than traditional sources. While digital sources of information may appear efficient, it becomes an issue when students rely on them in answering very complex and nuanced questions (Santos and Serpa,

2017). Students must explore other sources of information since information literacy is a fusion of literacy in all sources of information (including library literacy, computer literacy, critical thinking, and technological literacy), which when acquired, can make students more information literate.

How Students Evaluate and Use Information

The proliferation of information, especially online information, places enormous responsibility on students to conscientiously evaluate the authenticity and reliability of information (McGrew et al., 2018). For students, accurate evaluation of the information is critical to mitigating the use of false claims or misleading information. In a study by Habibi et al. (2019) on how pharmacy students evaluate the credibility of scientific information in Iran, it was found that the students evaluate the authenticity of information through nine primary criteria: 'accessibility, coverage, learnability, relevancy, accuracy authority, currency, replicability source validity, and subject and concept proximity. Similarly, R. E. Scott (2017) identified 'author authority (including degrees/ study), evaluation of authors' methods, and the reliability of the online publishing cite' as the mechanisms used by students to gauge information. In Nigeria, Okocha and Owolabi (2020) found that university students evaluate the accuracy of information by searching for the information on their universities' search engines, which they considered accurate, authoritative, and accessible. In Ghana, however, Ankrah and Atuase (2018) found that university students (specifically at the University of Cape Coast) preferred accessing information from Google Scholar (which they perceive as authentic) and other web-based databases than the databases in the university library. Contrary to the above studies, McGrew et al. (2018) found in their study (which comprised both pre-tertiary and college students in the United State of America) that students struggled to thoroughly evaluate information before use.

Concerning usage, students use information (whether through traditional or online sources) for many things. Akpovire et al. (2019), for instance, found that medical students use the information for both academic and personal improvement purposes. Some of the academic uses include preparation for test/examination, obtaining information on patients' diagnosis/intervention, augment lecture notes, writing projects, doing assignments, and getting reference sources from authorities in their fields of study. Similarly, Dorvlo and Dadzie (2016) found that in Ghana, students use the information to do their assignments, term papers, presentations, and write their thesis. As noted earlier, a common trend that appears in the literature is the reliance of students on digital information sources than traditional ones. K. Scott et al. (2018), for instance, found that students saw online platforms as very beneficial, with about 30% of the students claiming that they never read course textbooks. The advantages of non-print materials over printed materials, which give the latter an edge over the former, include easy accessibility, makes information available on time, and non-print materials can be easily updated than printed materials (Santos and Serpa, 2017).

Ethical and legal implications of information use

The ethical and legal implications of using information are very important components in the information literacy discourse (Sparks et al., 2016). According to Adhikari (2018), the adherence to the legal and ethical use of information, also referred to as academic integrity, refers to the use of someone's resources, where the user adheres to all intellectual property right procedures while maintaining fundamental values like respect, honesty, and fairness (by acknowledging all the authors used in the study). Some of the key ethical and legal issues found in using the information in tertiary institutions, as found by scholars across the world, are plagiarism and copyright law (Adhikari, 2018; Anunobi and Ukwoma, 2016; Dorvlo and Dadzie, 2016; Mugwisi, 2016).

Plagiarism, generally, refers to the use of other people's work without accurately referencing them (in both the in-text citation and referencing list). Fázik and Steinerová (2020) contend that plagiarism is an important issue that students must be made aware of since it is not related only to the use of both electronic and print materials but its facilitation by digital technology. To mitigate instances of plagiarism, several universities across the world (through their library systems) have created digital plagiarism-check systems (known as *Turnitin*) to access the originality of the writings of their students and academicians. It is important that school authorities (through their libraries) explicitly explain to their students the school's policy on plagiarism and also teach them how to avoid unintentional or unconscious plagiarism. This is very important as few studies have shown that some institutions are yet to fully prioritize the checking of plagiarism (Anunobi and Ukwoma, 2016) or even teach their students how to avoid plagiarism and cite properly (Dorvlo and Dadzie, 2016).

Closely related to plagiarism is the issue of copyright which bestows certain exclusive rights on creators. These rights differ from state to state, and they stipulate the circumstances that constitute copyright infringement. It is important to note that the University of Ghana, to a very large extent, adheres to ethical and legal standards in the use of information. The institution has software (Turnitin) that checks the originality of students' assignments, term papers, and thesis. Per the university's plagiarism policy, students are not to exceed the 20 per cent similarity index (excluding quotations and references).

Barriers to information Use

Among students all over the world, the use of information is encumbered with several challenges. In Slovakia, Fázik and Steinerová (2020) affirmed that issues of online security, online addiction, and media multitasking are the major barriers to the use of information (specifically digital information) among university students. In the USA, Hinostroza et al.,

(2016) found that despite the proliferation of ICT in societies, some students and teachers still lack the digital skills to effectively use these tools. In Nigeria, Akpovire et al. (2019) showed that some of the barriers hindering university students' (specifically medical students') in the use of information are uncertainty about the reliability of information found, weak access to librarian support, uncertainty about the resource to use, mobile interference, and inaccessibility of full texts. Anunobi and Ukwoma (2016) also revealed that some universities were yet to integrate information literacy programmes into their university curricula. In Ghana, Kumah (2015) identified information overload, inadequate opening and closing hours of libraries, unfamiliarity with search processes in libraries, and unfriendly or lack of assistance from library staff. Kufuor et al. (2016) also identified frequently disrupted internet access services, difficulty in locating relevant information, and user-unfriendly internet as some of the barriers to students' use of information in Ghana.

Conclusion

This section has briefly explored students' knowledge and access of information, their evaluation of and use of information, ethicality, and legality of their use of information, as well as the barriers hindering their use of information. The analysis covers case scenarios from the global, regional, and local contexts. From the review, students appear to be more cognizant of digital information sources than traditional sources. They use digital information for both academic and personal purposes. To evaluate the authenticity of the information, students use several mechanisms, such as replicability source validity and concept proximity. The review also highlighted ethical and legal issues in information use by students. It ended with some of the challenges hindering information use among students.

METHODOLOGY

The study's methodology was based on a positivist paradigm, and a quantitative approach was used. Furthermore, the survey was chosen as the research design because of its suitability for gathering vast amounts of data from a population without manipulating the variables under study (Ngulube, 2015; Pickard, 2013).

This study's population consisted of 1032 medical students. The convenience sample approach was used to choose respondents for the study. The sample size was 206 respondents or 20% of the target population. This sample is representative of medical students and accurate enough to make judgments based on the results with confidence (Alreck and Settle, 2004).

The researchers created and administered the questionnaire online using Google Forms. Google Forms is a quick and simple method to generate questions and gather responses from responders (Bennett, 2016). The objectives of the study informed the development of the questionnaire. The Google Forms was used to produce a shortened URL for the questionnaire, which was then given to the respondents through WhatsApp and email for completion.

The questionnaire data was sorted, classified, and analyzed using frequency and percentage tables and graphs. The data from the respondents were analyzed using Google Forms.

FINDINGS AND DISCUSSIONS

Out of a total of 206 respondents that were solicited to participate in the study, 193 consented and participated. This equates to a 93.7 per cent response rate.

Demographics

The study collected demographic information from the respondents to ascertain the calibre of the individual the researchers collected data from. The demographics included gender, age, and level of respondents.

Table 1: Gender of Respondents

Gender	Frequency	Percent
Male	69	35.8
Female	124	64.2
Total	**193**	**100.0**

Gender is very important in every study because it shows a representation of males and females that engaged in the study. In this regard, respondents were asked to indicate their gender. Out of the 193 respondents, 124 (64.2%) were females whiles 69 (35.8%) were males. This finding suggests that a large percentage of females engaged in the study than males.

Table 2: Age Group Distribution of Respondents

Age Group	Frequency	Percent
Below 20 years	39	20.2
Between 20-30 years	148	76.7
Between 30-40 years	6	3.1
Total	**193**	**100.0**

Age helps to have a better understanding of the average age of the targeted audience in the study. As a result, the researchers investigated the age group of respondents. The finding revealed that 148 (76.7%) respondents were found between the age range of 20-30 years, 39 (20.2%) were below 20 years whilst 6 (3.1%) respondents were between 30-40 years. The finding indicates that the majority of the respondents who engaged in the study were between the ages of 20-30 years.

Table 3: Level of Respondents

Level	Frequency	Percent
Level 100	20	10.4
Level 200	37	19.2
Level 300	47	24.4
Level 400	23	11.9
Level 500	35	18.1
Level 600	31	16.1
Total	**193**	**100.0**

The level of respondents shows the number of years in the institutions and exposure the individual has had in the institution. Therefore, Table 3 shows that 47 (24.4%) respondents were in Level 300, 37 (19.2%) were in Level 200 and 35 (18.1%) were in Level 500. In addition, 31 (16.1%) respondents were in Level 600, 23 (11.9%) respondents were in Level 400 whilst 20 (10.4%) respondents were in Level 100. The finding indicates that most of the respondents that participated in the study were in Level 300.

How Medical Students Know, Access, Evaluate and Use Information

Information Need

The concept of information needs is principal to the library and information science, as a focal point of the field, it is concerned about the retrieval of relevant information to meet the user's community (Borlund and Pharo, 2019). Therefore, respondents were asked whether they need information. Figure 1 depicts their responses.

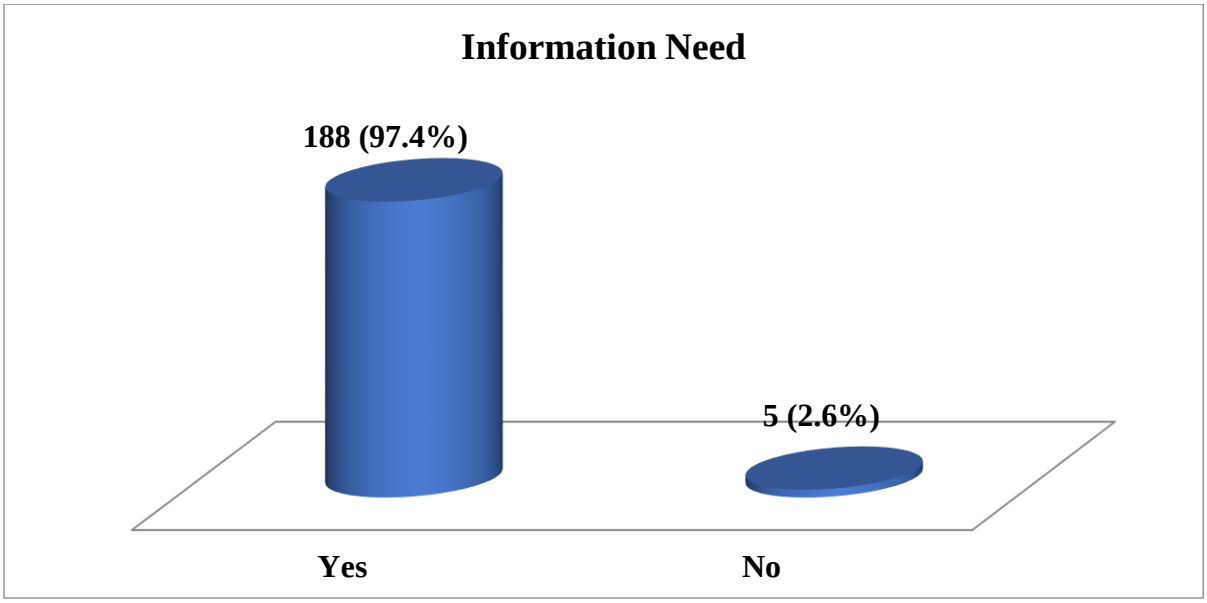

Figure 1: Information Need

Out of the total of 193 respondents, 188 (97.4%) respondents said "yes" whilst 5 (2.6%) respondents said "no". It can be established from the finding that most of the respondents need information. It was however not surprising that a lot of users need information. This is because this era has been described as the Information Age where data, information and knowledge are integral to the existence of humans (Rowley and Hartley, 2008). The finding is in tandem with that of Ekpang and Ekeng (2021) who investigated 'library services and availability of information resources in University Libraries, South-South Nigeria'. They indicated that access to information is crucial for putting students who utilize such resources ahead of their counterparts who do not. This implies that students are well cognizant of the sources that they can gain relevant information (Akpovire et al., 2019; Fázik and Steinerová, 2020; Santos and Serpa, 2017; Scott, 2017). It can be established that knowledge helps to identify the sources of information needed.

Knowledge of Information Needs

Information needs arise when the individual is having an unresolved problem or when he or she sees that his state of knowledge is insufficient to cope with the task at hand. Therefore, the

knowledge of information needs helps the individual to make a better decision concerning the right resources to use. Table 4 shows the responses of the respondents.

Table 4: Knowledge of Information Needs

Variables	**Frequency**	**Per cent**
a. To write my assignments or project works.	178	92.2%
b. Entertainment.	108	56.0%
c. To acquire new knowledge in a subject area.	181	93.8%
d. To keep abreast with current information in a subject area.	161	83.4%
e. To find information on a specific disease, treatment, and drugs/medication.	170	88.1%
f. To make point-of-care decisions.	95	49.2%
g. Other	33	17.1%

The researchers asked a followed-up question to ascertain the knowledge of information needs. This question was asked to have a fair knowledge of the respondents concerning their information need. The finding revealed that 181 (93.8%) respondents need information 'to acquire new knowledge in a subject area', 178 (92.2%) respondents need information 'to write their assignments or project works' and 170 (88.1%) respondents needs is 'to find information on a specific disease, treatment, and drugs/medication'. To add up, other information needs include: 'to keep abreast with current information in a subject area' 161 (83.4%), 'entertainment' 108 (56.0%), 'to make point-of-care decisions' 95 (49.2%) and other 33 (17.1%). It is obvious from the findings that most of the respondents need the information to

acquire new knowledge in a subject area, to write their assignments or project works and to find information on a specific disease, treatment, and drugs/medication. The finding suggests that students need a variety of information purposely for academic work as that is their primary role of being in medical school. This also implies that students need information for other purposes apart from academics as they move on in life.

The findings corroborate with those of Akpovire et al. (2019) and, Dorvlo and Dadzie (2016). Dorvlo and Dadzie (2016) reported on 'information literacy among postgraduate students of the University of Ghana' and found that students use the information to do their assignments, term papers, presentations, and write their thesis. Whereas Akpovire et al. (2019) investigated the 'role of information literacy skills on the use of information resources by Medical Students in Lagos State' and indicated that medical students use the information for both academic and personal improvement purposes. The academic information includes preparation for test/examination, augment lecture notes, writing projects, doing assignments, and getting reference sources from authorities in their fields of study. This implies that access to information is seen as crucial for supporting curriculum and extra-curriculum activities (Ekpang and Ekeng, 2021). It can be established that students need information for their academic and other purposes thereby supporting the cardinal role of teaching, learning, and researching.

Type of Information Source

Huvila (2013) described an information source as any carrier of information or anything a user perceives as capable of informing. There are various sources of information for students' academic work, these ranges from primary, secondary and tertiary which can be in printed or electronic form. Table 5 shows respondents responses.

Table 5: Type of Information Source Needed

Variables	Frequency	Per cent
a. Books	170	88.1%
b. Dissertations/Theses	97	50.3%
c. Electronic books and electronic journals	163	84.5%
d. Newspapers	53	27.5%
e. Handbooks	81	42.0%
f. Abstracts/Reviews	79	40.9%
g. Dictionaries/Encyclopaedias	113	58.5%
h. Conferences/seminar proceedings	47	24.4%
i. Maps/charts	51	26.4%
j. Other	25	13.0%

The result revealed the main type of information source needed by respondents were 'books' 170 (88.1%), followed by 'electronic books and electronic journals' 163 (84.5%). Some of the respondents indicated that they need the following type of information sources; 113 (58.5%) indicated dictionaries or encyclopaedias, 97 (50.3%) indicated dissertations or theses, 81 (42.0%) indicated handbooks and 79 (40.9%) indicated abstracts or reviews. Newspapers, maps/charts, conferences/seminar proceedings, and others recorded 53 (27.5%), 51 (26.4%), 47 (24.4%) and 25 (13.0%) respectively. It can be established from the findings that most respondents need books, and electronic books and electronic journals as their main type of information source. This is not surprising because books and electronic resources form most of the sources of materials in the CHS library. This is because the university spent a huge amount of money in acquiring and training users in the use of the resources.

The finding is consistent with that of Akpovire et al. (2019); Fázik and Steinerová (2020); Santos and Serpa (2017); R. E. Scott (2017). They indicated that students used both traditional information sources such as books and digital sources such as e-journals and online databases, but students used digital resources than traditional sources because they are more cognizant of digital information sources. This indicates that electronic resources are getting more acceptance than physical books. It seems that researchers such as Akpovire et al. (2019) and Witt et al. (2016) disagreed with each other. This is because Akpovire et al. (2019) indicated that medical students still rely on print media, whiles Witt et al. (2016) indicated that medical students find the use of digital sources of information as very useful in their medical education. Even though the two scholars disagreed with each other, they together agreed with the findings that medical students used both books and electronic resources as the source of information needed. Arguing differently, Santos and Serpa (2017) indicated that digital source of information may appear efficient, but it becomes an issue when students rely on them in answering very complex and nuanced questions. This indicated that electronic resources must complement the print resources for meeting users' needs. Therefore, CHS must-have collections making up of both printed and electronic resources if they want user's information needs to be met.

Access to Information

Information is recognised as one of the important resources that contribute to the development of individuals. Access to the right information can help students to acquire the skills, knowledge and confidence needed to complete their academic task (Islam and Ahmed, 2012). Table 6 shows respondents' responses.

Table 6: Access to Information

Variables	**Frequency**	**Percent**
a. Library	63	32.6%

b. Internet sources	190	98.4%
c. Books	154	79.8%
d. Academic and medical databases	105	54.4%
e. TV/Radio	69	35.8%
f. Newspapers/magazines	40	20.7%
g. Social media	127	65.8%
h. Colleagues/classmates	139	72%
i. Teachers/instructors	139	72%
j. Other	15	7.8%

As shown in Table 6, an encouraging number of respondents used internet sources 190 (98.4%) to access information. Also, some of the respondents indicated the following access to information sources; 154 (79.8%) of them indicated books, 139 (72.0%) each indicated colleagues/classmates and teachers/instructors, 127 (65.8%) indicated social media whiles 105 (54.4%) indicated academic and medical databases. TV/Radio, Library, Newspapers/magazines and other recorded 69 (35.8%), 63 (32.6%), 40 (20.7%) and 15 (7.8%) respectively. It can be seen from the findings that most of the respondents said they use internet sources to access information. This can be attributed to the fact that internet sources are accessible and faster in retrieving information. It is a bit worrying that in an academic environment, medical students used internet sources such as Google than using the library and its resources such as books, and academic and medical databases.

The finding agrees with that of Kumah (2015) who reported on a comparative study of the use of the Library and the Internet as Sources of Information by Graduate Students in the University of Ghana' indicated that the usage of the internet by students was more than the library. The finding support that of Wiebe (2016) who investigated 'the information literacy imperative in

higher education' and asserted that students of today are born into an age of ubiquitous and seemingly infinite information through digital sources, or as he put it, in the "Google it" era. Conclusively, the use of internet sources is becoming more important in searching for academic information.

Table 7: Reasons for Selecting Information Source

Variables	Frequency	Per cent
a. For faster information	170	88.1%
b. For current information	146	75.6%
c. For a large amount of information	83	43%
d. For different views on the same subject	121	62.7%
e. For authentic information	143	74.1%
f. For factual information	117	60.6%
g. Other	10	5.2%

As seen in Table 7, the main reason for selecting a particular source was 'for faster information' 170 (88.1%). Also, 146 (75.6%) respondents indicated 'for current information, whiles 143 (74.1%) indicated 'for authentic information' as reasons for selecting a particular source of information. Other important reasons indicated by respondents were: 'for different views on the same subject' 121 (62.7%), 'for factual information' 117 (60.6%), 'for a large amount of information and 'other' 10 (5.2%). It can be established from the findings that there are various reasons for selecting a particular source of information over others, but the key among the reasons was for faster information, current information, and authentic information. It can be attributed to the fact that internet sources are faster, current, and authentic sources of information for academic work.

The finding is consistent with that of Santos and Serpa (2017), who reported on 'the importance of promoting digital literacy in higher education. They indicated that students are turning to digital sources of information due to the increasing relevancy of such resources. This implies that there has been extensive usage and acceptance of e-learning information systems among medical students in some parts of the world (Gavali, 2017; Gutmann et al., 2015; Scott et al., 2018). The reasons for using a particular source of information over others is because they are easily accessible, makes information available on time, and non-print materials can be easily updated than printed materials (Santos and Serpa, 2017). The finding disagrees with that of Akpovire et al. (2019) who examined the 'role of information literacy skills on the use of information resources by Medical Students in Lagos State. They indicated that medical students still rely on print media as their source of information despite the availability of online sources that were well-organized and reliable. The differences in their findings were attributed to the unawareness of the availability, relevance, and accessibility of the digital sources. It is clear from the findings that medical students choose internet sources for various reasons including fastness, currency, and authenticity of the information.

Table 8: Criteria for accessing Information Source.

Variables	**Frequency**	**Per cent**
a. Inclusion of date of publication	91	47.2%
b. The date of publication is provided.	92	47.7%
c. The author is known in the field.	112	58%
d. Statement of the responsibility of the site/organisation for the site is indicated.	80	41.5%
e. Accessibility of site	140	72.5%

f. The site is rapidly accessible.	87	45.1%
g. Other	14	7.3%

Table 8 revealed that 140 (72.5%) respondents indicated 'accessibility of site', whilst 112 (58%) indicated 'the author is known in the field' as the major criteria for accessing information source. Also, 92 (47.7%) of the respondents indicated 'the date of publication is provided', 91 (47.2%) indicated 'inclusion of date of publication', 87 (45.1%) indicated 'the site is rapidly accessible', 80 (41.5%) indicated 'Statement of the responsibility of the site/organisation for the site is indicated' and 14 (7.3%) indicated 'other' as the criteria for accessing information sources. It is obvious from the findings that there was a diversity of criteria for accessing information sources but the chief among them was the accessibility of the site and the author is known in the field. It is apparent from the findings that accessibility leads to the utilization of information resources.

The finding corroborates the study by Okocha and Owolabi (2020) when they found that university students evaluate the accuracy of information by searching for the information on their universities' search engines, which they considered accurate, authoritative, and accessible. Further, the finding is consistent with the work of R. E. Scott (2017) on 'undergraduate student responses to the framework for information literacy for higher education where it was found that 'author authority (including degrees/ study), evaluation of authors' methods, and the reliability of the online publishing cite' as the mechanisms used by students to gauge information.

Assessing the Accuracy of Information

Evaluation of information sources is becoming the focus in library and information science (LIS) because users have easy access to overwhelming amounts of documents (Hjørland, 2012). The focus of assessing the accuracy of information is to ensure the credibility of materials. Therefore, evaluating the type of information sources help the CHS library to make an informed decision relating to the materials to acquire for its users. Table 9 depicts respondents' response:

Table 9: Assessing the Accuracy of Information

Variables	**Frequency**	**Per cent**
a. The source is part of an edited or peer-reviewed publication.	90	46.6%
b. Information can be verified through references to other credible sources.	162	83.9%
c. I already know about the subject/ have checked from other sources.	79	40.9%
d. The responsibility for the accuracy of the information presented is indicated.	68	35.2%
e. The source of the data presented in graphs or charts indicated.	35	18.1%
f. It is in the lecture notes.	70	36.3%
g. Other	12	6.2%

As seen in Table 9, the respondents stated as follows: 162 (83.9%) indicated that 'Information can be verified through references to other credible sources', 90 (46.6%) stated 'the source is

part of an edited or peer-reviewed publication' and 79 (40.9%) indicated 'I already know about the subject or have checked from other sources for assessing the accuracy of information. Also, 70 (36.3%) of the respondents indicated 'it is in the lecture notes and 68 (35.2%) stated that 'the responsibility for the accuracy of the information presented is indicated'. Other ways of assessing the accuracy of information were: 'The source of the data presented in graphs or charts indicated' 35 (18.1%) and 'other' 12 (6.2%). It can therefore be inferred that information can be verified through references to other credible sources is a key factor for assessing the accuracy of information. This is congruent with a study that was conducted by Habibi et al. (2019) on 'how Pharmacy Students evaluate the credibility of scientific information in Iran. It was revealed that the students evaluate the authenticity of information through nine primary criteria: accessibility, coverage, learnability, relevancy, accuracy authority, currency, replicability source validity, and subject and concept proximity. This finding suggests that most medical students evaluate the credibility of information before they use it.

A similar finding was found in the study of Ankrah and Atuase (2018) who reported on 'the use of electronic resources postgraduate students of the University of Cape Coast, where it was found that university students preferred accessing information from Google Scholar because they perceive it as authentic. This finding is inconsistent with the finding of McGrew et al. (2018) where they indicated that students struggled to thoroughly evaluate information before they use it. In their study, they implied that students have the responsibility to conscientiously evaluate the authenticity and reliability of information (McGrew et al., 2018) before they use it.

Usage of Databases

Electronic databases are "specialized records of related published information documents which are not available on Google or other common search engines, especially in a full text"

(Uzuegbu et al., 2012). Electronic databases have become most popular among library staff and users because of their speed, flexibility, wide range, and currency (Akinola et al., 2018). Therefore, respondents were asked to indicate the type of databases they use. Table 10 indicates their responses.

Table 10: Databases Used by Respondents

Variables	**Frequency**	**Per cent**
a. PubMed	114	59.1%
b. Hinari	24	12.4%
c. AJOL	7	3.6%
d. ScienceDirect	105	54.4%
e. Jaypee digitals	19	9.8%
f. ClinicalKey	53	27.5%
g. UpToDate	57	29.5%
h. Google Scholar	102	52.8%
i. CINAHL	3	1.6%
j. Scopus	9	4.7%
k. Other	40	20.7%

As presented in Table 10, an encouraging number of 114 (59.1%) respondents often used 'PubMed', 105 (54.4%) of them used 'ScienceDirect' whiles 102 (52.8%) of the respondents used 'Google Scholar' databases for searching information. In addition, 57 (29.5%) and 53 (27.5%) used 'UpToDate' and 'ClinicalKey' databases respectively for information searching. Also, 40 (20.7%) used 'other' databases apart from the possible databases that were provided such as Ebscohost, Taylor and Francis, among others. To add-up, 24 (12.4%) used 'Hinari', 9

(4.7%); ‘Scopus’, 7 (3.6%); ‘AJOL’ and 3 (1.6%) used ‘CINAHL’. It can be inferred from the findings that respondents used different databases but the key among them was PubMed, ScienceDirect and Google Scholar. This can be attributed to the fact that these databases are very popular, provides full-text, discipline-related and easy access to academic information. These databases also have a well-designed interface that is easy to use for searching information. It is quite surprising that medical students least used CINAHL because it is also a medical database of full-text articles. Even though CINAHL is one of the medical databases, students are not mostly introduced to it during library instruction training. Another shocking revelation is ClinicalKey (currently introduced database) is moderately used than Japeedigital (introduced for a long period). This can be because enhancing access to the ClinicalKey database is easier than Jaypee digitals.

The finding is inconsistent with the work of Kwadzo (2015) when he investigated the ‘awareness and usage of electronic databases by Geography and Resource Development Information Studies Graduate Students in the University of Ghana’. It was found that the most used database was JSTOR (46.9%), followed by Ebscohost and Emerald with 28.1% each and Science Direct with 25%. The differences can be attributed to the fact that medical students choose discipline-related and multidisciplinary databases whiles in Kwadzo (2015) study students choose multidisciplinary databases. It can be established from the findings that students used discipline-related, multidisciplinary, and full-text databases to aid in their academic work.

Students’ Knowledge of the Legal and Ethical Implications of Information Use

The researchers asked the respondents to indicate their knowledge of plagiarism, how they acknowledge an author’s book, photocopying and copyright law. Their responses are captured in Table 11 and 12 as well as Figure 2 and 3.

Table 11: Knowledge about Plagiarism

Variables	Frequency	Percent
Yes	191	99.0
No	2	1.0
Total	**193**	**100.0**

As shown in Table 11, a high number of respondents, totalling 191 (99.0%) indicated that they know plagiarism whiles 2 (1.0%) indicated 'no'. The results indicate that most of the respondents know about the concept of plagiarism. This finding is not different from what Fázik and Steinerová (2020) examined 'technologies, knowledge and truth: the three dimensions of information literacy of university students in Slovakia'. They indicated that plagiarism is an important issue that students must be made aware of since it is not related only to the use of both electronic and print materials, but it is facilitated by digital technology.

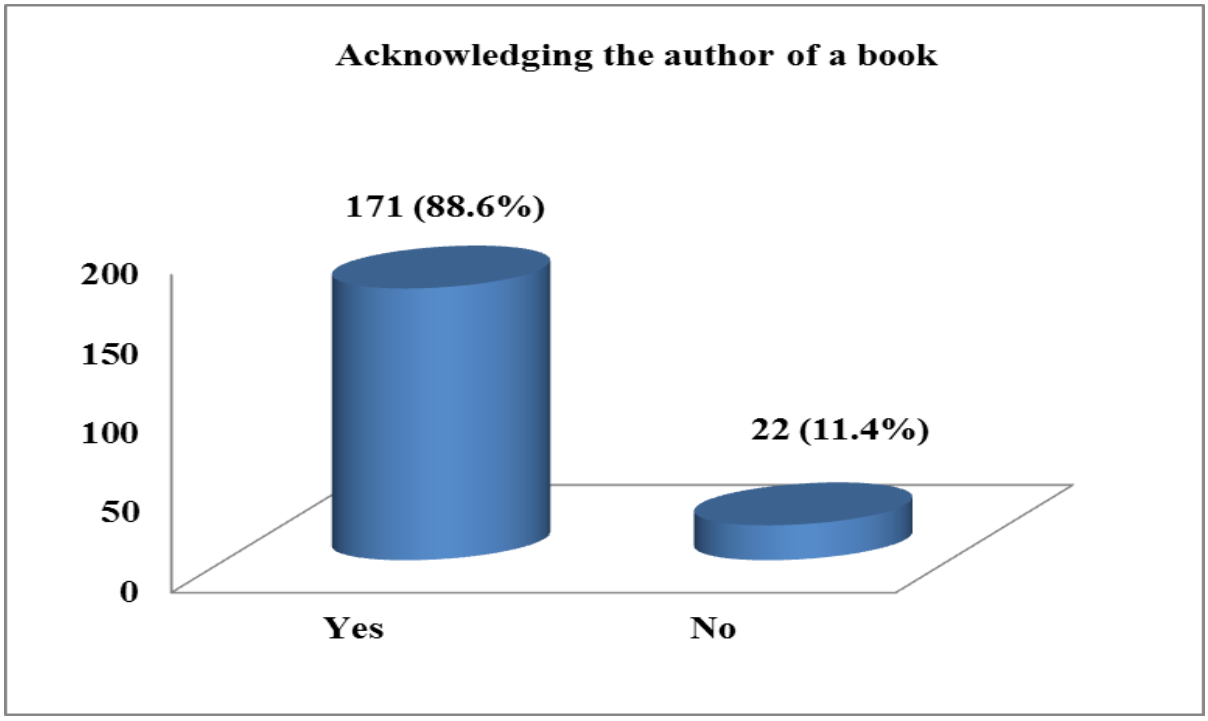

Figure 2: Acknowledging the Author of a Book

As presented in Figure 2, an inspiring number of respondents, totalling 171 (88.6) stated that they acknowledge the author of a book if they use part of his or her works for their work or research whilst 22 (11.4%) respondents indicated otherwise. It can be inferred from the findings that most of the respondents acknowledge the author of a book if they use part of his or her works for their work or research. The finding agrees with that of Dorvlo and Dadzie (2016) who examined 'Information literacy among postgraduate students of the University of Ghana' and indicated that students' know about plagiarism because some of the institutions teach their students how to avoid plagiarism and cite properly. Therefore, it is important that school authorities (through their libraries) explicitly explain to their students the school's policy on plagiarism and teach them how to avoid unintentional or unconscious plagiarism, so that students can fully prioritize the checking of plagiarism (Anunobi and Ukwoma, 2016).

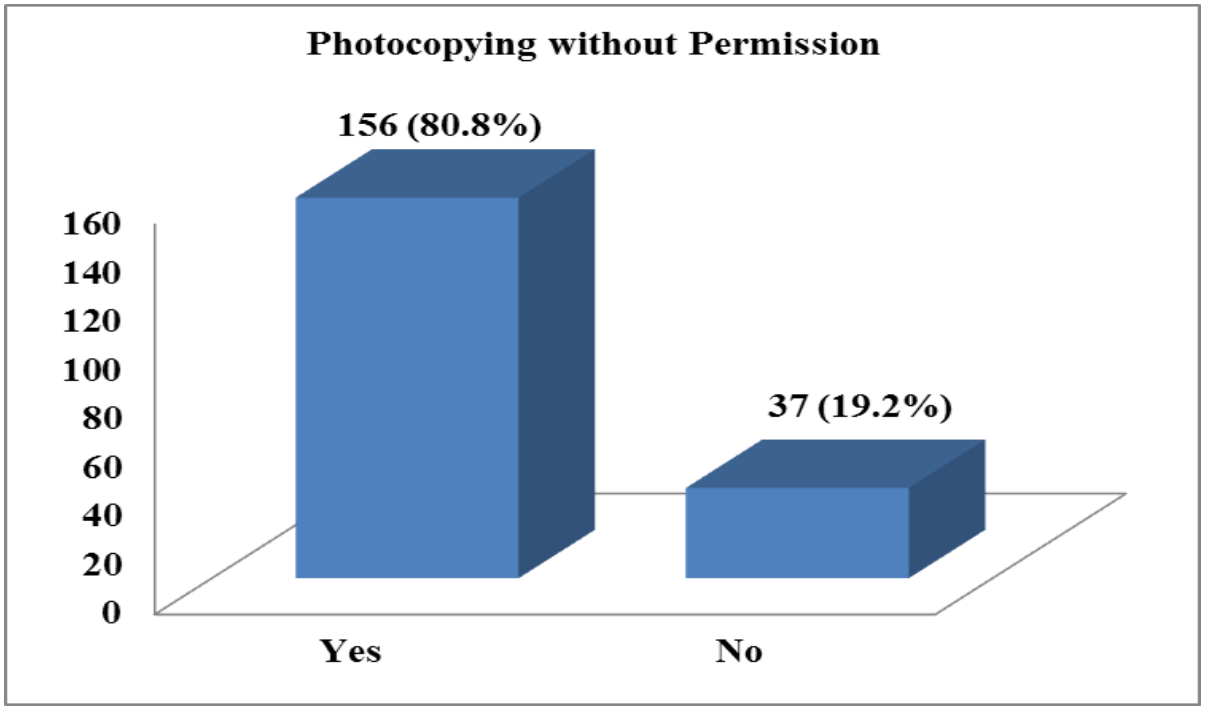

Figure 3: Photocopying without Permission

From Figure 3, 156 (50.8%) constituting most of the respondents said, ‘yes’ whiles 37 (19.2%) of the respondents said ‘no’. It can be inferred from the findings that most of the respondents have photocopied an entire book without the author’s permission before. This can be attributed to the fact that books are scarce, cheaper to photocopy, and some reserved books are not allowed to be borrowed.

The finding is in line with that of Sambo et al. (2016) who reported on a study of photocopying practice and copyright law in Nigeria Libraries. They indicated that most students photocopy textbooks. In support, (Adoki, 2002) who wrote on ‘economic and cultural basis for copyright protection’ indicated that photocopying of texts without regard to copyright law has become a norm, and an issue worth looking into. The finding indicates that the students know about the copyright issues relating to materials, but they still photocopy the entire books without the authors' permission. This implies that librarians need to be vigilant to make sure that students adhere to the copyright issues of photocopying in order not to violate them.

Copyright Law

Copyright is a lawful right that secures the proprietor of a protected innovation from being exploited. The fundamental motivation behind copyright law is to safeguard works that are protected from unpredictable duplicating by others. The law additionally aims to advance public welfare by improvement of knowledge, creativity, and innovation. Table 12 shows respondent awareness of copyright law against photocopying.

Table 12: Awareness of Infringement of Copyright Law against Photocopying

Variables	**Frequency**	**Percent**
Yes	185	95.9
No	8	4.1

Total	**193**	**100.0**

A follow-up question was asked based on the earlier question, 185 (95.9%) of the respondents acknowledged that they are aware that it is an infringement (breach) of copyright law for them to photocopy an entire book without the author's permission whiles 8 (4.1%) responded otherwise. The finding established that majority of the respondents acknowledged that they are aware that it is an infringement (breach) of copyright law for them to photocopy an entire book without the author's permission.

The finding is in tandem with the work of Wahid (2011) who examined 'the fairness of stealing knowledge for education and stated that the issue of illegal photocopying and plagiarism will be as a result of lack of awareness. Therefore, Odunowo (2002) supported the view that awareness creation is necessary. Therefore, students need to be made aware of the copyright law as well as the punishment for copyright violation. According to Onoyeyan (2018), violation of copyright legislation can lead to loss of income, discourage creativity, retard industrial, economic, and cultural growth and deprive the government of a huge amount of taxes in the copyright industries. Therefore, students' level of awareness of copyright law must reflect their photocopying practices and doctrine of fair use in the copyright law (Sambo et al., 2016).

Problems in Accessing Information

Jacobs and Herselman (2006) and Seretse et al. (2018) indicated that information is a driver of developments through knowledge but only becomes valuable and significant only if it can be accessed. This implies that people need to access the right information to make the right decision in the institution. Problems can affect the smooth accessibility of information and therefore may lead to faulty decisions. Respondents were requested to provide the problems they encountered in accessing information. Table 13 depicts their problems.

Table 13: Problems in Accessing Information

Variables	Frequency	Per cent
Low internet bandwidth	142	73.6%
Information illiteracy	24	12.4%
Inadequate information material in the library	65	33.7%
High cost of books and other information materials	129	66.8%
Lack of time	76	39.4%
Too much information (information overload)	129	66.8%

From Table 13, the study result revealed that the major problem in accessing information was 'low internet bandwidth' 142 (73.6%). Also, 129 (66.8%) of the respondents each indicated 'high cost of books and other information materials and 'too much information (information overload)' as the problem they encountered in accessing information. Subsequently, 76 (39.4%) and 65 (33.7%) indicated 'Lack of time' and 'High cost of books and other information materials' respectively as problems in accessing information. 'Information illiteracy' was the least problem encountered by respondents 24 (12.4%) in accessing information. It is an indication from the finding that most of the problems encountered by respondents in accessing information were low internet bandwidth, high cost of books and other information materials and too much information (information overload).

The finding supports the works of Kufuor et al. (2016) and Kumah (2015). Based on the findings of these existing literature, it can be warranted that frequently disrupted internet access services, information overload, inadequate opening and closing hours of libraries, unfamiliarity with search processes in libraries and difficulty in locating relevant information were some of the barriers to students' use of information in Ghana. This finding also agrees with that of

Akpovire et al. (2019); Anunobi & Ukwoma (2016) and Hinostroza et al. (2016) when they indicated that the problems in accessing information were lack of digital skills to effectively use the tools, uncertainty about the reliability of information found, weak access to librarian support, uncertainty about the resource to use, mobile interference, and inaccessibility of full texts. The finding contradicts with that of Slovakia, Fázik and Steinerová (2020) who investigated 'technologies, knowledge and truth: the three dimensions of information literacy of university students in Slovakia' affirmed that issues of online security, online addiction, and media multitasking are the major barriers to the use of information among university students. The differences with findings are related to the type of information. Fázik and Steinerová (2020) findings were more related to barriers encountered in using digital information.

CONCLUSION AND RECOMMENDATIONS

According to the study's findings, the majority of respondents require information to gain new knowledge in a subject area and to write assignments or project work. Moreover, most respondents rely on books, electronic books, and journals as their primary sources of knowledge. Furthermore, the majority of respondents claimed they get their information from the internet. In addition, most responders utilize the databases PubMed, ScienceDirect, and Google Scholar. Again, most responders are aware of the notion of plagiarism and will credit the author of a book if they utilize a portion of it in their work or study. Last but not the least, respondents' main issues with accessing information were limited internet bandwidth, high prices for books and other information materials, and information overload.

The following recommendations were made based on the study's findings. First, it is recommended that the CHS administration especially the CHS Library should maintain and develop their collections in that required and relevant information sources will be available for

students to use in their assignments and project works. Moreover, CHS administration should provide fast, reliable, and wide internet connection and infrastructure for students. Furthermore, the CHS administration should negotiate with publishers and/or bookshops for subsidised textbooks and other learning materials prices so that medical students can buy easily.

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