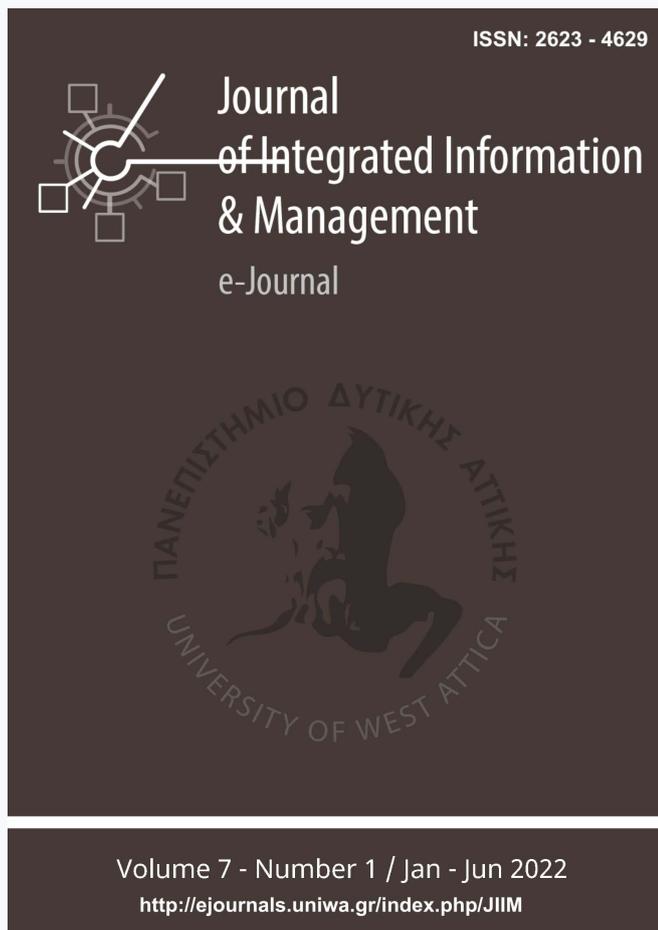


Journal of Integrated Information Management

Vol 7, No 1 (2022)

Jan-June 2022



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To cite this article:

Efthymiou, F., Kyprianos, K., Koulouris, A., Marketou, A., Kapllani, F., & Triantafyllou, I. (2024). Health information behaviour of undergraduate students in Information Studies and Physiotherapy: a comparative survey. *Journal of Integrated Information Management*, 7(1), 19–32. Retrieved from <https://ejournals.epublishing.ekt.gr/index.php/jiim/article/view/37898>

Health information behaviour of undergraduate students in Information Studies and Physiotherapy: a comparative survey

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Article Info

Article history:

Received 10 May 2022

Received in revised form 20 May 2022

Accepted 3 June 2022

<https://doi.org/10.26265/jiim.v7i1.4507>

Abstract:

Purpose – This survey investigated the health information behaviour of undergraduate students at the University of West Attica. In particular, the survey took place among students of the Department of Archival, Library and Information Studies, where information literacy is taught and in the Department of Physiotherapy, where health subjects are taught. The aim was to discover if any or if both of the above target groups have adopted efficient health information behaviour.

Design/methodology/approach – The survey investigated the following: the preferred formats of health information sources and the preferred search techniques of the two target groups; their preferred health information sources and the criteria they use to evaluate and trust a health-related source; the main criterion the participants use to evaluate the content of health information sources; and their perception of the term "information literacy". The methodological approach used was a mainly quantitative online survey administered to a sample from the two aforementioned target groups, within a limited time frame, in the winter of 2022.

Findings - Physiotherapy students seem less adequately information literate than Archival, Library and Information Studies students.

Originality/value – The findings of this comparative survey are unique in the Hellenic academic environment and lead to the suggestion that information literacy skills should be taught to every Department of the University.

Index Terms – Information Literacy, Information behaviour, Health information behaviour, Information studies, Health studies.

I. INTRODUCTION

The outbreak of the Covid-19 pandemic in late 2019 has rendered the efficient search, access, evaluation, and use of health information some of the most crucial information literacy skills an individual must develop. Every day, the Internet and the mass media are flooded with health

information that is intended for the public. However, there are numerous concerns about the reliability of this information, which may often need to be completed, corrected, and biased. This is where every individual's aptitude to evaluate the validity of the information comes into play. Critical evaluation of the information is a skill that can be developed via courses, seminars, and other initiatives relevant to information literacy. The latter's advantages are considered necessary skills, attitudes, and abilities for proper information production, dissemination, and consumption. It is worth mentioning that according to the NHS Education for Scotland, "Information literacy supports individual and organisational learning, creativity and innovation and contributes to improved healthcare delivery through a continuously evolving, reliable information base." [1].

To this end, undergraduate students at the University of West Attica, specifically in the Department of Archival, Library and Information Studies (hereafter ALIS), are offered the chance to learn core information literacy skills. On the other hand, undergraduates in the Department of Physiotherapy (hereafter Phys), at the same University learn about health information. Considering the above, it was interesting to investigate and compare the information behaviour of these two target groups on health issues. The aim was to discover if any or both have adopted efficient health information behaviour.

For this, an online survey was administered to a sample of both aforementioned departments' undergraduates, within a limited time frame, in the winter of 2022. The specific objectives of this survey concerned the exploration of the following topics: the format of health information sources and the search techniques the students prefer when searching for health information; their preferred health information sources and the criteria they use to evaluate and trust these sources; the main criterion the students use to evaluate the content of health information sources; as well as whether they are familiar with the term "information literacy" and the skills it fosters.

II. RELATED WORK

The relevant literature review focuses on two specific directions, namely scientific publications concerning the information behaviour of information scientists, which are reported first, and scientific publications concerning the information behaviour of health scientists. It has to be noted that there was a lack of bibliography about information behaviour especially focused on the health issues of these two target groups. Therefore, the literature review tries to identify how users of the two aforementioned sectors, namely information science and health science, locate, retrieve and assess the reliability of the information, and not, in particular, health information.

A. Information behaviour of users belonging to the Information Science sector

The first survey came from the Technological Educational Institute of Thessaloniki, where academic library directors and librarians were invited to be interviewed about the impact of Google on libraries [2]. According to the survey results, the ease of tools and the vast amount of information offered by this search engine are essential factors in librarians' decision to employ it. In particular, Google Scholar proved especially useful for locating scientific information. Nonetheless, they emphasise that the librarian/information scientist's knowledge and professional judgment are crucial for evaluating the quality of sources and properly using Google's tools.

Following that, in 2015, Saunders [3] explored students' information behaviour and skills in the Departments of Library and Information Systems with the help of twenty researchers from eighteen different nations. One of their fundamental research questions was discovering what information-seeking tactics students employ in different countries. According to the research results, students in the information science sector chose the following sources for their information needs: library shelves, personal collections, Wikipedia, library catalogues, and online forums. Furthermore, databases, search engines, social networking sites, video (YouTube), slide sharing (SlideShare) sites, and grey literature also appeared to be among the most frequently used sources [3]. The research also revealed other information resources, such as classmates, teachers, librarians, friends, and relatives.

In another survey, Natarajan [4] identified electronic information resources and the frequency with which students in the Information Science department in the social science library of Jimma University in Ethiopia use them. The survey explicitly listed dissertations, INASP databases, books, journals, digital libraries, other databases, and the University's institutional repository as the primary sources of information in electronic format. Digital maps, other references, CD-ROMs, and newspapers were used less frequently.

To continue, Kurniasih et al. [5] explored how students in the Department of Library and Information Science at Padjadjaran University in Indonesia used search engines. More specifically, the research found that students

mostly use Google/Google Scholar and, to a lesser extent, Yahoo and Bing search engines. The reasons explaining these choices were user-friendliness, the relevancy of retrieved results in digital journals and books, the simple keyword search, and so on [6]. Additionally, the techniques of information retrieval, from most to least common, as reported in this research, were "keywords/entry in pdf, ppt, etc. formats", "Boolean operators", "strategy query: short search with quotes", and "advanced search". According to the survey results, during the search process, participants stated that using proper keywords would get them the desired results; otherwise, the search would not be successful.

Okeji, Ilika, and Baro [6] conducted a more recent survey. The aim was to measure the information literacy competencies of senior library and information science students in Nigerian universities. According to the survey, most students seek information from journal articles, the Internet, databases, and books. This is followed by websites pertinent to their field of study, undergraduate course assignments, local newspapers, conference proceedings, and theses/dissertations.

Finally, another study from the University of Vietnam showed that the Google search engine is the first tool most students choose when looking for information [7]. The majority of them search for information using keywords and titles. It is also noteworthy that the students in their second and third years of study search for information by employing Boolean operators (AND, OR, and NOT) and prefer to search for articles based on the abstract or by analysing the whole content of a source.

B. Information behaviour of users belonging to the Health Science sector

Iordanou et al. [8] examined nursing students' techniques when looking for health information. The library, the Internet, conversation with fellow students, individual records, educational lectures, and conferences were the primary sources of knowledge they preferred, in declining order. Furthermore, participants relied on scholarly publications and articles from the health disciplines they studied. Several individuals looked for information in databases, the most common of which were MEDLINE and CHINAL. Moreover, students relied heavily on library staff, as opposed to some who turned to them only when they could not find the necessary information on their own.

Following that, Fell, Burnham and Dockery's [9] research focused on identifying the information sources used by physiotherapists when performing the essential steps to search for and retrieve information. Journal articles were prioritised as a source of information, followed by digital databases on medical issues. Furthermore, search engines, colleagues, educational programs, textbooks, and medical libraries fulfilled their need for information. To a lesser extent, physiotherapists used public libraries and other resources. PubMed, Cochrane Databases, CINAHL, MEDLINE via OVID, and Google Scholar were the main search engines for finding and retrieving information. Scopus and

ISI, Web of Science search engines/databases, were used infrequently.

Additionally, a related survey was conducted at the Cyprus University of Technology's (CUT) Department of Nursing [10]. The research's specific goal was to collect credible information and, as a result, to examine the motivations driving the Department's students' information behaviour on health issues. It was found that respondents used search techniques to locate the necessary health information, which was directly dependent on the tools offered by the search engines and by the database websites in the library of CUT. Moreover, familiarity with computer usage and regular Internet access led to more sophisticated search tactics. The most common and applicable search approach was using more than one keyword.

Finally, another survey was conducted in 2015 at Semnan University in Iran to determine whether the digital library contributed to offering reliable information. According to doctors, medical staff, and medical students, the results revealed that doctors relied on their professional experience at a higher percentage than the other two groups, who were primarily informed online. 81.3% of doctors, in particular, preferred to rely on personal experiences, whereas students and other medical personnel appeared to use PubMed and Medline as medical information sources primarily. Finally, it is worth mentioning that despite the instructional seminars provided to these users on how to search for information, participants often had the impression that they had identified the right information based on their needs when this was different [11].

III. METHODOLOGICAL APPROACH

The methodological approach used in this research is the online survey, administered to a sample from two specific target groups, within a limited time frame, in the winter of 2022.

Initially, a pilot questionnaire containing seven (7) sections and eighteen (18) questions, which arose from the study of the relevant literature review, was designed and distributed to twenty (20) volunteer undergraduate students of ALIS department. This took place to determine whether the wording of the questions was precise and whether the questions or the structure of the questionnaire needed improvement.

After the above procedure, the form of the questionnaire was finalised. The final questionnaire was designed using Google forms, containing informative text on the organisation's details, the purpose of the survey, and the security of the personal data of the respondents. After this, the questionnaire was divided into six (6) sections with fifteen (15) questions. In particular, the logic of the survey is primarily quantitative, namely with fourteen (14) closed-

ended questions (dichotomous, single-choice, multiple-choice, and Likert tertiary scale) and with a quantitative element, namely one (1) open, free text question.

The questionnaire was sent via email to the total number of undergraduate students in ALIS (approximately 400 active students) and in Phys (approximately 400 active students) Departments of the University of West Attica. 70 undergraduate students answered from ALIS (response rate of approximately 17.5%), while only 25 answered from Phys (response rate of approximately 6.25%).

The overall response rate is low for drawing valid conclusions about the health information behaviour of the above target groups. However, researchers of this survey consider that the presentation and the discussion of the data could offer a general but distinct insight into this specific topic.

IV. COMPARATIVE RESULTS

This section presents a comparative analysis of the results from the two target groups surveyed, namely undergraduates of ALIS and undergraduates of Phys, as well as a correlation with various published surveys concerning relevant topics.

A. Demographics

The first question in section one of the questionnaire asked about the gender of the respondents. It was observed that females predominate in both target groups, with 80% in ALIS and 60% in Phys (see fig. 1).

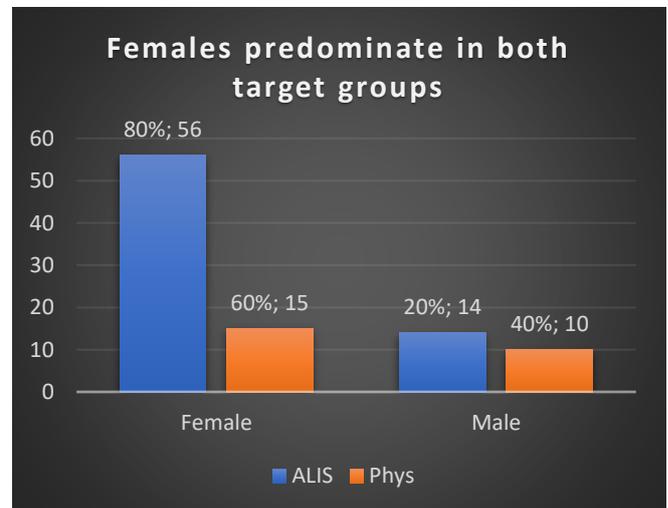


Fig. 1. Females predominate in both target groups

In the second question, participants were asked to choose their age group. The results showed that most participants were 18-25 years old, with 70% in ALIS and 84% in Phys, respectively. It is worth noting that the age group of 46+ years old received no response in Phys. However, it was represented by 14% of respondents in ALIS (see fig. 2).

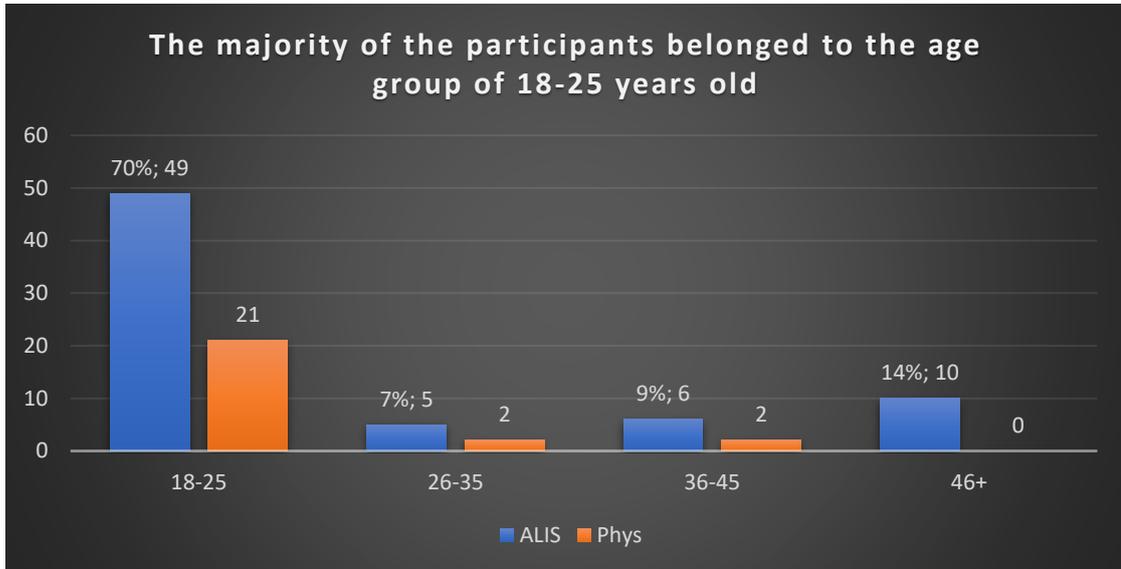


Fig. 2. The majority of the participants belonged to the age group of 18-25 years old

In the next question, about the year of study, it was found that the majority of both target groups were in their first or second year of study, with 63% in ALIS and 60% in Phys, respectively (see fig. 3).

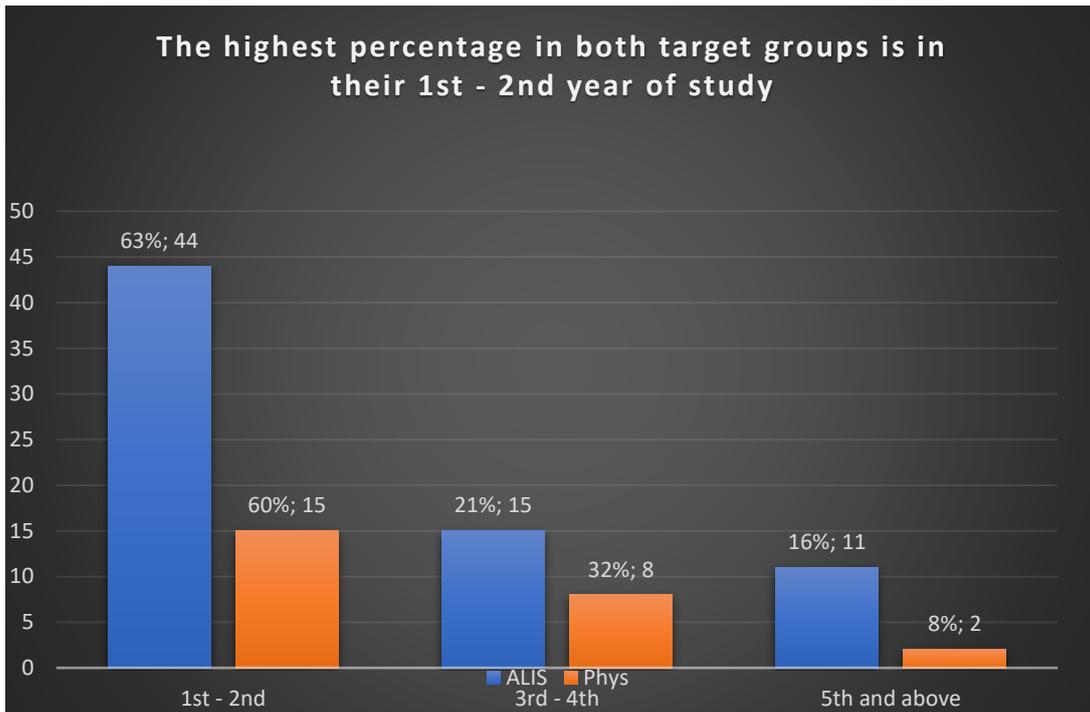


Fig. 3. The highest percentage in both target groups is in their 1st - 2nd year of study

To sum up, this survey reflects the views of the female population more than those of the male population. It also reflects more on the opinions of 18–25-year-old students in their first or second years of study.

B. Introductory questions

The first question in the second section of the questionnaire concerned the level of computer knowledge of the

undergraduates. In both departments, the highest percentage stated that "I have good computer knowledge," with 67% in ALIS and 64% in Phys (see fig. 4). A finding that is in line with the results of the surveys conducted by Thi & Thi [7] and Kahouei et al. [11], demonstrating the familiarity that students nowadays have with Information and Communications Technologies.

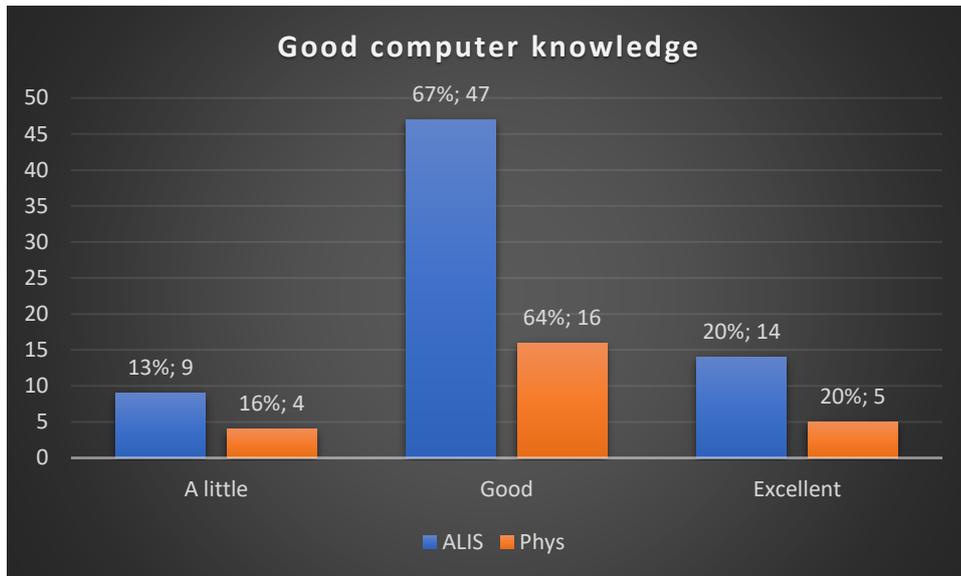


Fig. 4. Good Computer knowledge

The following question investigated the English language competence of the students in both departments. The disparity in English knowledge between the two groups is significant. The students in ALIS have adequate, though lower English knowledge than those in Phys. The findings

come to confirm the research by Thi & Thi [7], where Information Scientists have lower English language skills in contrast to Health Scientists, who have a better level of English [10] (see fig. 5).

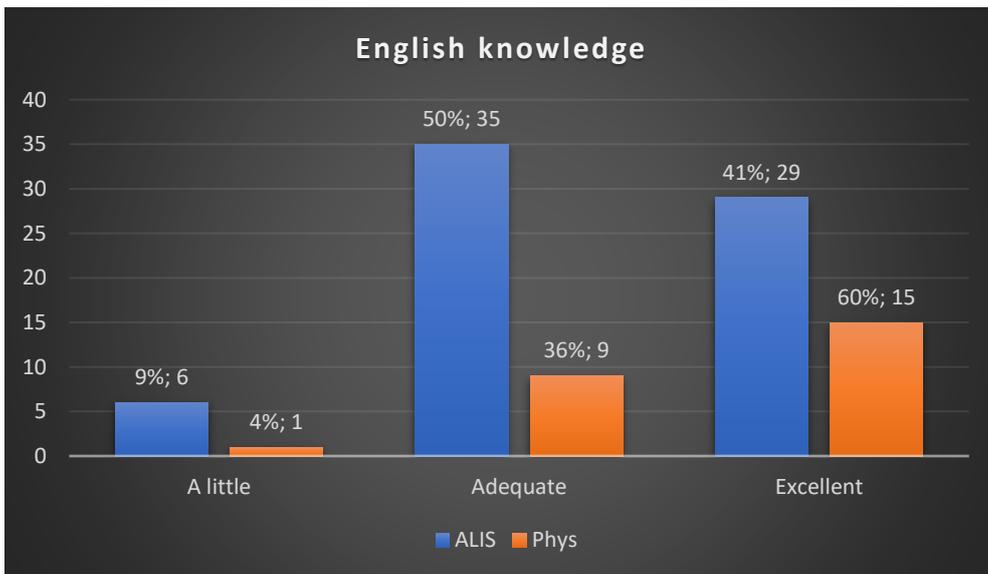


Fig. 5. English knowledge

C. The preferred format of health information sources and preferred search techniques

The first question in the third section of the questionnaire concerned the format of information sources students prefer when searching for health information. At this point,

sharp differences were observed. Phys students preferred equally both formats of information sources, namely digital and print, with a percentage of 80%. In contrast, half of the students in ALIS (50%) preferred mainly the digital format of information sources, and almost another half (46%) preferred both formats equally (see fig. 6).

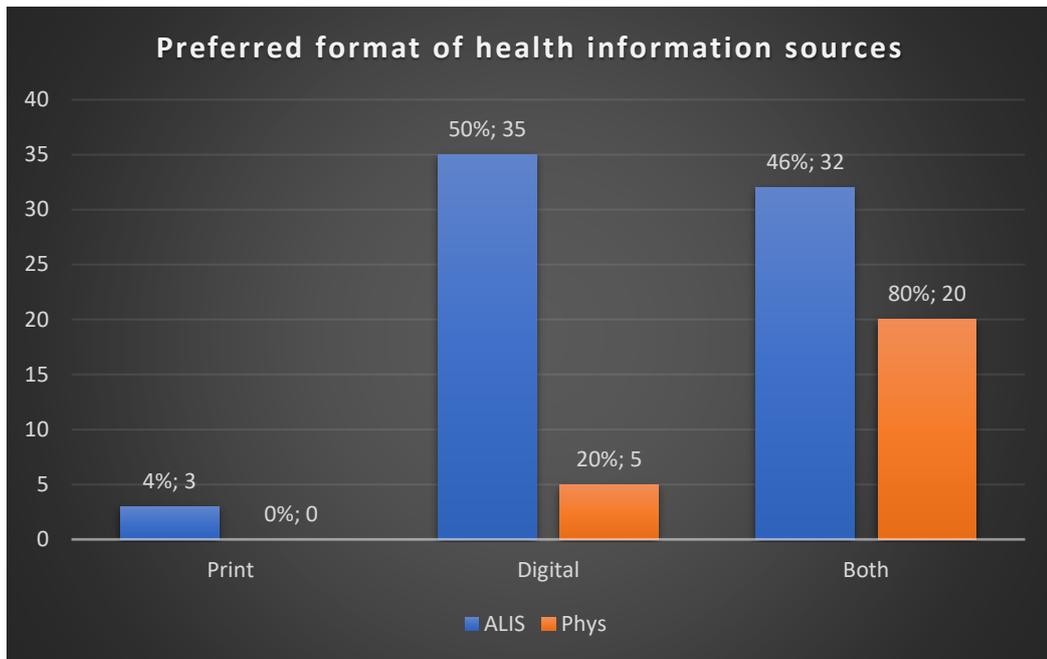


Fig. 6. Preferred format of health information sources

In Kahouei et al. [11] research, health students mainly use digital information. While in the survey by Iordanou et al. [8], both types of information are preferred by health students, which is entirely consistent with the present survey findings. In the sector of Information Science, the research by Okeji, Ilika and Baro [6] agrees with the findings of this research since, in both cases, the digital format of information predominates as a whole.

The next question concerned the preference for simple or advanced search techniques when searching for health information on the Internet, library catalogues, databases, etc. The simple search is preferred by 56% of the Phys participants. In ALIS, however, advanced search is chosen by 57% (see fig. 7). This is an expected difference that can be attributed to the fact that ALIS students are trained early in searching and retrieving information with advanced search methods.

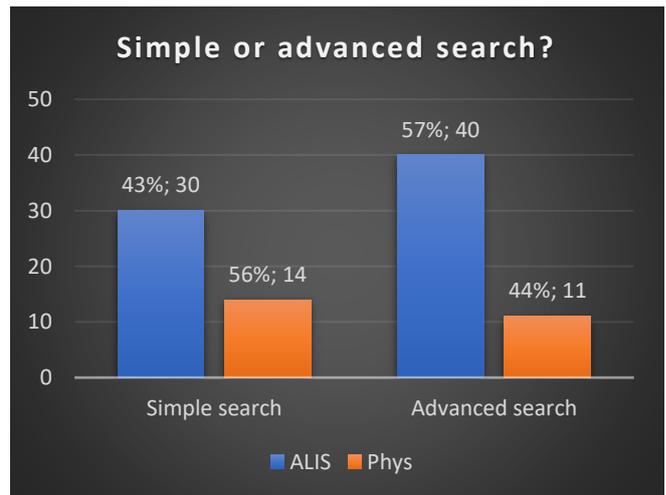


Fig. 7. Simple or advanced search

Afterwards, participants were asked about their preferred search technique every time they used the advanced search. At this point, the following similarity can be seen: the search technique of one or more keywords is preferred by both target groups, with 39% in ALIS and 60% in Phys, respectively (see fig. 8).

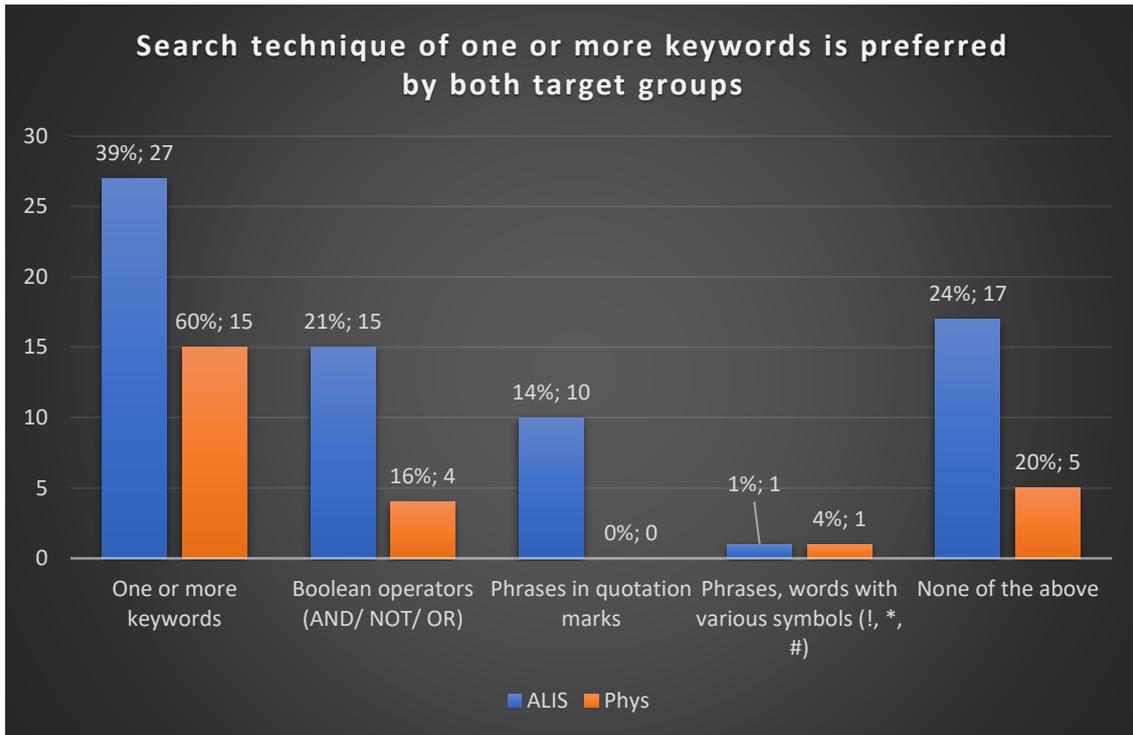


Fig. 8. Search technique of one or more keywords is the most preferred by both target groups

This is in line with the research of Thi & Thi [7], where Library Science students prefer advanced search techniques and, more specifically, they use "keyword" search techniques and search by the title of the source in question. In addition, students in the 2nd year and above use the search technique "Boolean operators". The results described above are similar to those of the Physiotherapy discipline since Stavrou's [10] research showed that the students preferred the search technique: "one or more keywords". However, according to the results of this research, it seems that Phys students largely preferred simple searches.

D. Preferred health information sources and criteria of source evaluation and trust

The fourth section of the questionnaire began with a question regarding the participants' preferred sources of health information when preparing an academic assignment. First, Phys students stated that they preferred mainly "books" (80%), whereas ALIS students preferred mainly "scientific articles" (76%) (see fig. 9 and 10). ALIS had a lower and/or no preference for "mass media (TV, radio, newspaper)" and "communication with librarians," with only 9% and 7%, respectively, while Phys did not choose such sources.

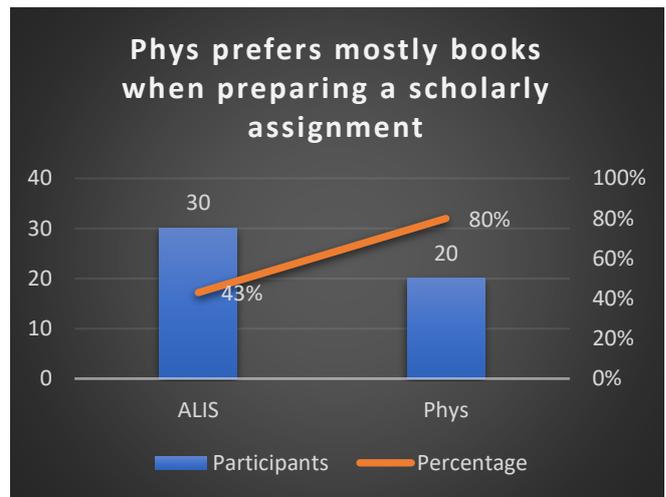


Fig. 9. Phys prefers mostly books when preparing a scholarly assignment

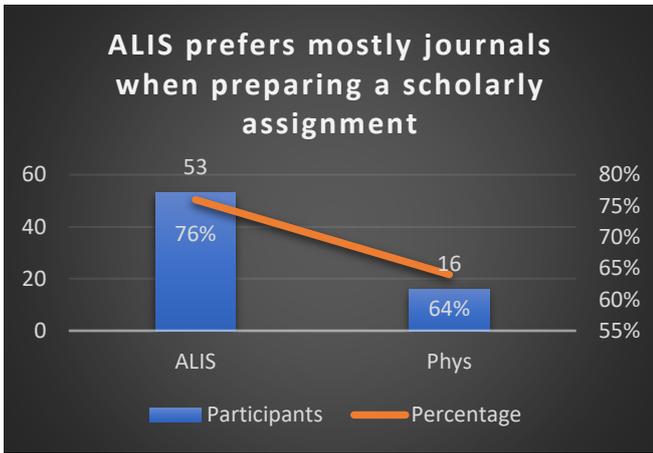


Fig. 10. ALIS prefers mostly journals when preparing a scholarly assignment

According to the relevant literature, the health sector appears to have heavily relied on library services in the past [8]. In contrast, Oluwaseye, Akanni, and Busuyi [12] discovered that students nowadays mostly trust the Internet and rarely the academic library. Furthermore, it is worth noting that librarians frequently assisted students in Stavrou's [10] research. However, in the present survey, librarians were not preferred at all.

In the field of Library Science, as in the current survey, Okeji, Ilika and Baro's [6] survey reveals that journals are the primary source chosen by students in this field. In contrast, the survey conducted by Saunders et al. [3] discovered that search engines such as Google are employed more frequently. It is worth noting that theses and dissertations are ranked last as sources of information in both of the previous research. Furthermore, local newspapers are in low preference [6], and students do not choose to communicate with librarians [3].

In the following question, participants were asked about the health information sources they prefer when they or someone familiar faces a health issue. The answers showed that students of both departments had a greater preference for "personal doctor/pharmacist", with 84% in ALIS and 80% in Phys, respectively. It must be mentioned that "communication with librarians" is not a choice in both target groups (see fig. 11).

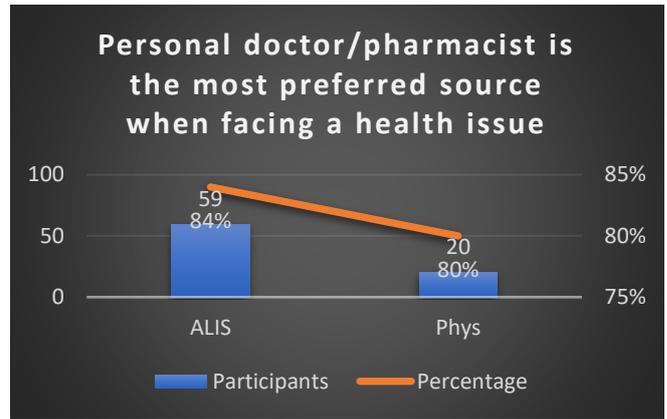


Fig. 11. Personal doctor/pharmacist is the most preferred source when facing a health issue

The third question in this section examined participants' sources of health information for their broader personal health information. Both target groups appeared to rely primarily on "search engines," with 63% in ALIS and 68% in Phys. As with the previous question in this section, "contacting librarians" is not a choice by the participants (see fig. 12).

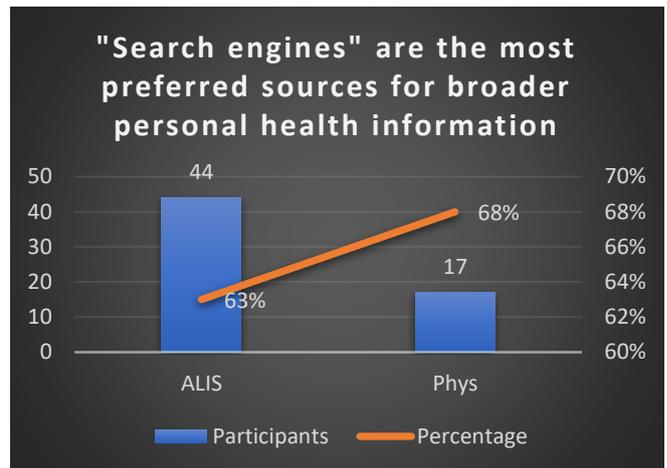


Fig. 12. "Search engines" are the most preferred sources for broader personal health information

Stavrou [10] identified that consulting librarians was the first preferred source of information for health students, followed by the library's online services and medical databases. The survey by Kahouei et al. [11] presents an entirely different scenario: patient relatives seem to be the most trusted source of information. Students' personal experiences, conference proceedings, doctors, and the media follow this in descending order. On the other hand, students in Information Science prefer to use search engines, with Google outperforming Yahoo and Bing [5].

The last question in this section explored the criteria for which the two target groups evaluate health information. Respondents of both target groups chose "provision of other literature references/electronic links (validity¹)" as a significant criterion of health information

¹ It has to be mentioned that researchers of the present survey consider a health source to be valid when it provides the users with other literature

references/electronic links and thus enabling them to check and decide on the degree of the validity of the source based on the referenced sources.

evaluation, with almost the same percentage, 67% in ALIS and 68% in Phys. However, "direct and user-friendly access to content" was used by both target groups to a lesser degree, namely 21% of ALIS students and 48% of Phys

students. Quite a difference was found between the two target groups using the criterion of objectivity of information, which came first with 72% in Phys and fourth with 56% in ALIS (see fig. 13 and 14).

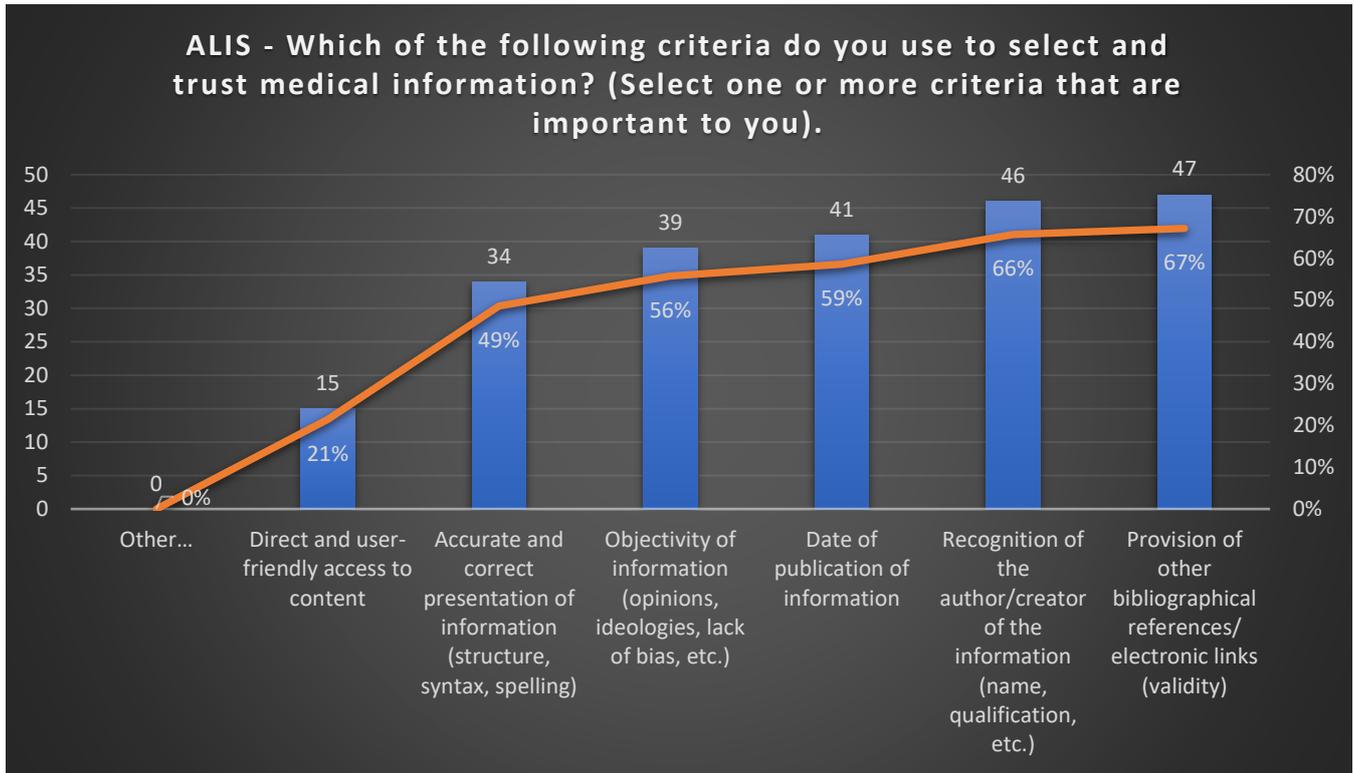


Fig. 13. ALIS Criteria to select and trust health information

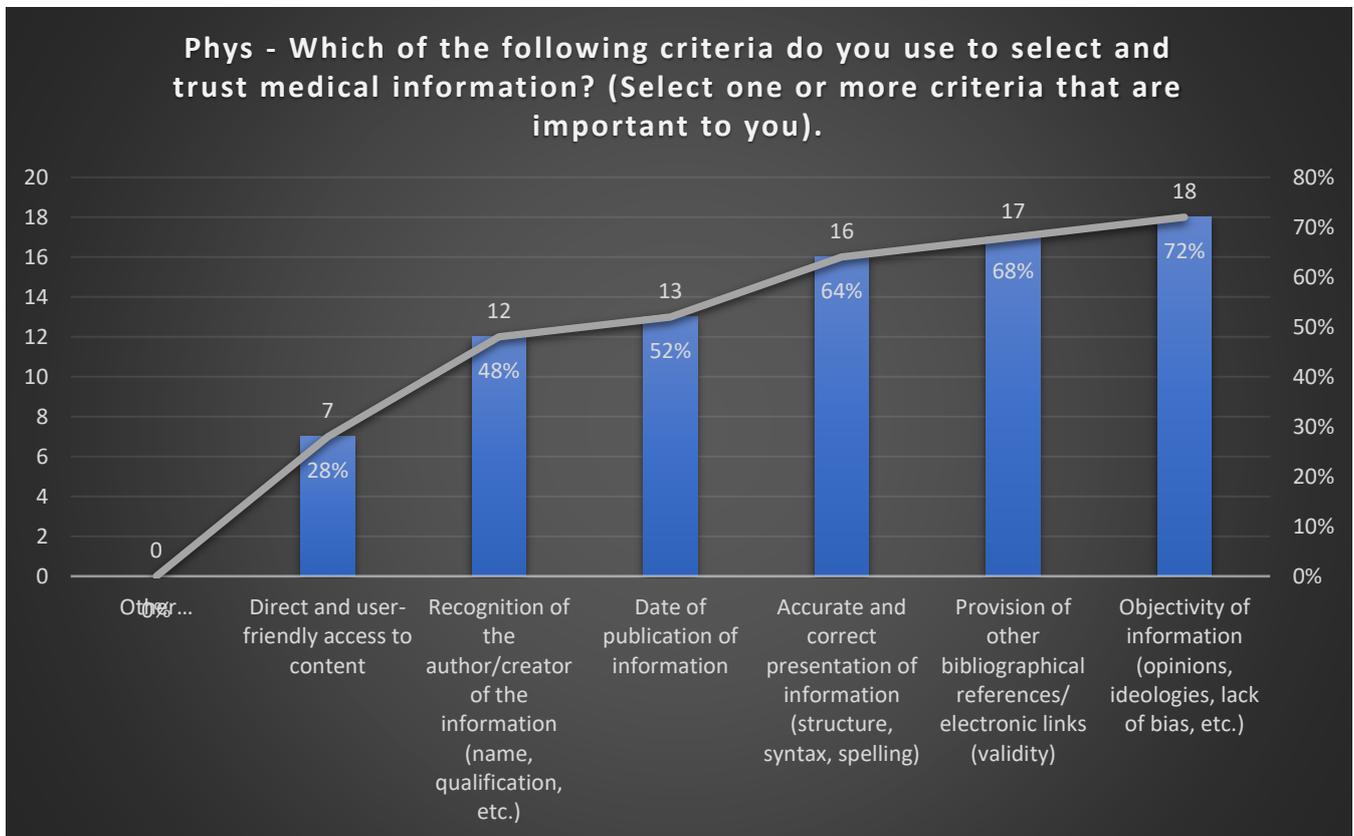


Fig. 14. Phys Criteria to select and trust health information

Although this research identified the validity and objectivity of information among the most preferred criteria for evaluating health sources, the literature review expresses different views. More specifically, in the research by Stavrou [10] and by Okeji, Ilika and Baro [6], information objectivity comes last as an evaluation criterion by students in both disciplines. The above studies unanimously cite free access to the content of the information and the date of publication as the main criteria for evaluating sources.

E. Evaluation of the content of health information sources

The fifth section of the questionnaire consisted of a single question that examined, in more depth, the participants' main criterion to evaluate the content of health information sources. With 73% in ALIS and 60% in Phys, the two target groups almost agreed that the main criterion was verifying the validity of the content of health information sources (see fig. 15).

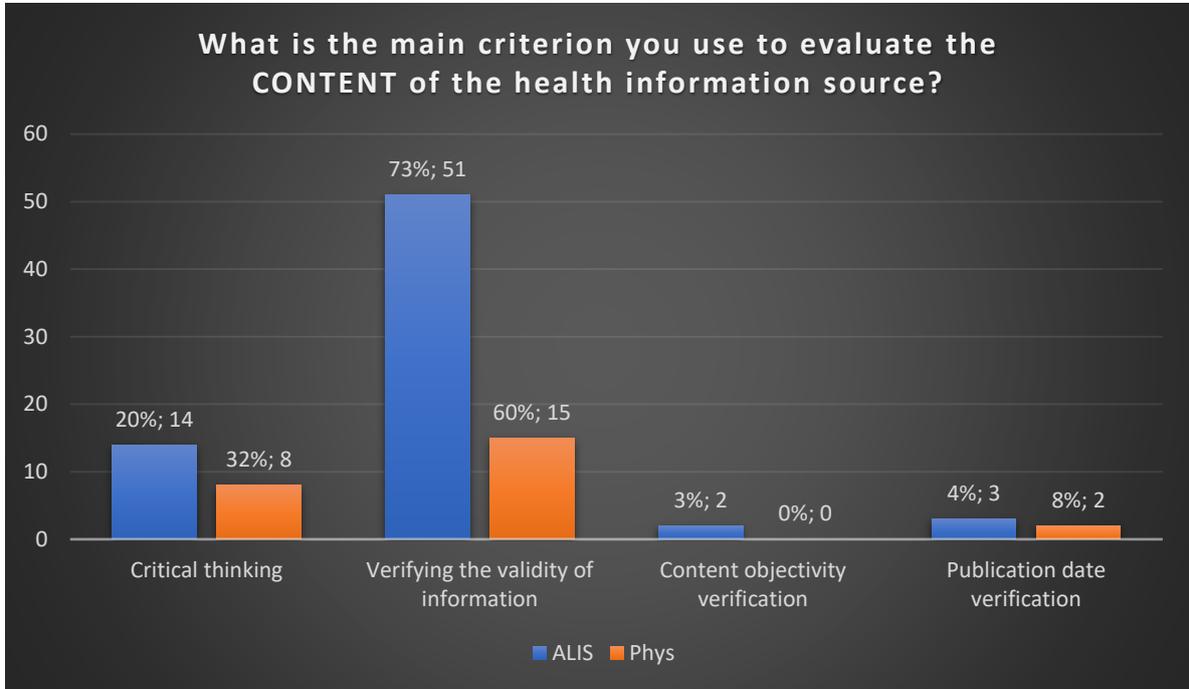


Fig. 15. Main criterion for evaluating information sources

F. Perceptions on Information Literacy

The first question in section six asked whether participants were familiar with the term "information literacy." In this case, the results were as expected, with 70% of students in ALIS answering that they were aware of the term since information literacy is a compulsory topic in the Department's curriculum. However, most students in Phys (80%) responded negatively. This clearly underlines that academic libraries in Greece have not so far promoted effectively information literacy programmes that would give students of various departments, other than information science, a chance to further develop their skills in information literacy (see fig. 16).

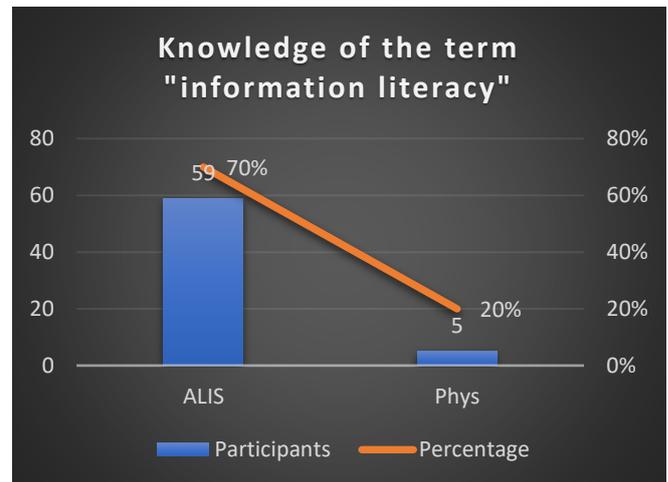


Fig. 16. Knowledge of the term "information literacy"

According to Okeji, Ilika and Baro's [6] survey, students of Library Science consider themselves to have moderate knowledge of skills in information literacy. It is worth noting that in that research, the student population was in their final year of study, while in the present research, most participants were in their 1st-2nd academic year. Unlike the results of Phys in this paper, the survey by

Oluwaseye, Akanni and Busuyi [12] shows that students exhibit some basic information literacy skills.

Furthermore, Okeji, Ilika, and Baro's [6] research in Information Science shows that students have acquired the skills of organizing, integrating, and utilizing information. They feel, however, that the ability to generate new information is still underdeveloped. The outcomes of researchers such as Iordanou et al. [8] and Oluwaseye,

Akanni, and Busuyi [12] in Health Science showed that participants had trouble correctly searching and accessing the needed information.

Finally, when participants were asked to choose the skills information literacy fosters, 50% in ALIS and 60% in Phys selected "information evaluation". The least common response was "collection of information", with 7% in ALIS students and 4% in Phys students (see fig. 17).

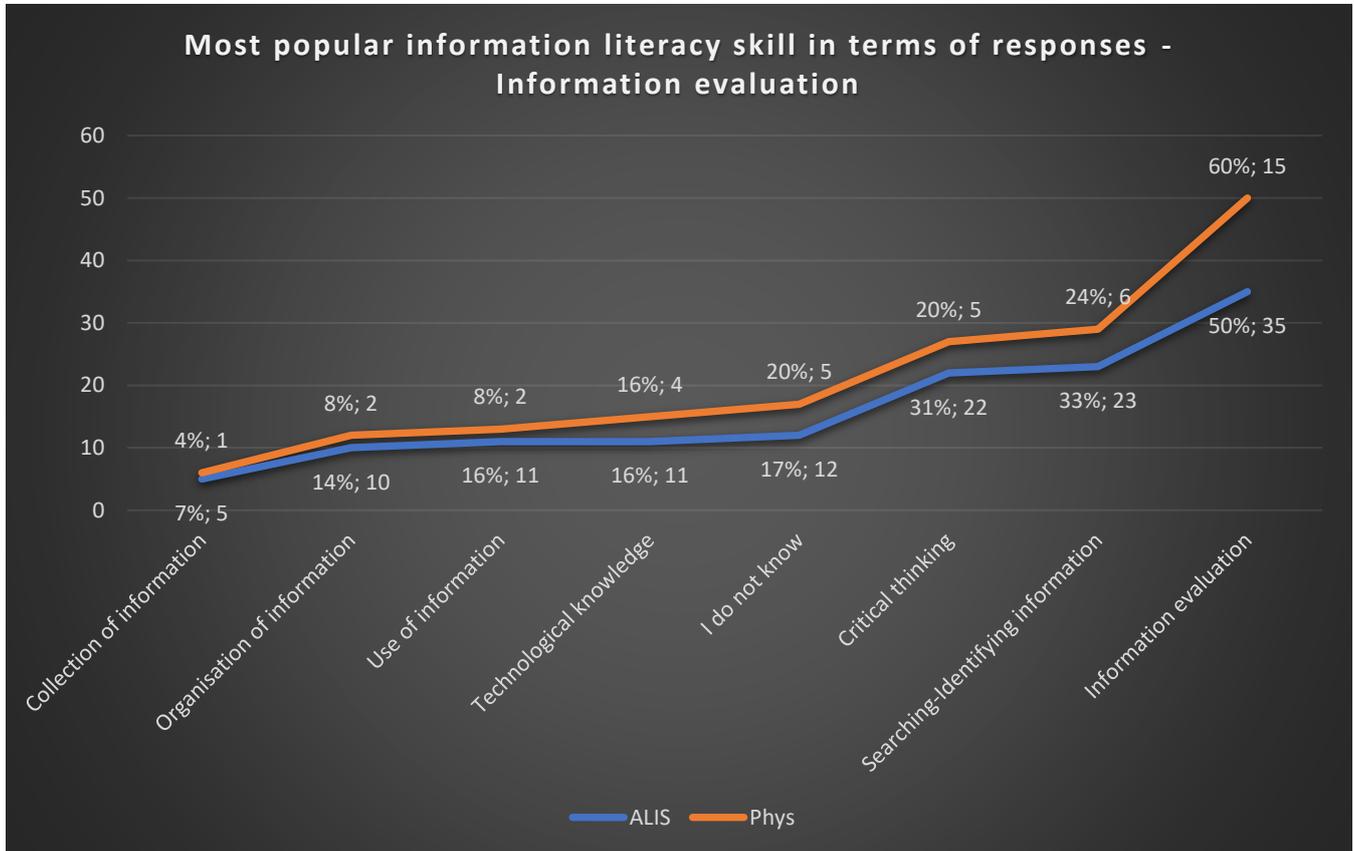


Fig. 17. Most popular information literacy skill is information evaluation

V. DISCUSSION

According to the present survey findings, students in both disciplines state that they possess an adequate level of computer knowledge. Consequently, it can be assumed that this competence allows them to satisfactorily search for information and use it in the digital era. Related studies reinforce this assertion [7, 11]. As a result, students can use numerous tools and services provided by the ICT and the Internet. Regarding English language competency, ALIS students appear to have a slightly lower level than Phys students. This may make it difficult for future Information Scientists to become competent in information literacy, as a vast amount of information is nowadays published in English.

Furthermore, the search and retrieval of health information appear to take place mostly in the digital environment, particularly among ALIS students. Nonetheless, a sizable number of Phys students trust both digital and print information. The relevant literature also

confirmed the conclusions described above. For example, even in the study by Iordanou et al. [8], concerning the medical sector, students used both formats of information sources.

Regarding the search approach, it has been found that Phys students favour simple searches and prefer to look for information using "one or more keywords." The conflicting fact that they perform advanced searches with multiple keywords while describing them as simple searches leads to the conclusion that they are, at the very least, unaware of theoretical concepts of information behaviour and literacy. This could be attributed to the fact that most students are freshmen and sophomores, and thus they have little experience with information behaviour.

ALIS students, on the other hand, prefer advanced searches, which is also supported by their use of the "one or more keywords" strategy, according to Thi & Thi's [7] research. Because they are still in their first and second years of study, it is understandable that they are more familiar with the aforementioned search technique and less so with

the "Boolean operators" technique, which is reported to be used by sophomore or senior library science students in the study of Thi & Thi [7].

Phys students choose books as a source of information when preparing a course assignment, although Oluwaseye, Akanni, and Busuyi [12] found that the Internet was the primary source for the research participants. Students' lack of trust/preference for mass media and librarians in their University is also significant. This could be related to their belief that the scientific books of medicine contain thorough information and knowledge, leading over time to the predicted confirmation of what has been recorded. According to Okeji, Ilika, and Baro's [6] study, students choose scientific journals as a source of knowledge in library science.

According to the survey results, the personal doctor/pharmacist is the source that both groups of respondents choose to consult when they or someone familiar face a health problem. Moreover, they do not consult their University librarians at all. The previous data could be considered reasonable because librarians working at the University library do not specialize in health information, but they can only direct the user to the desired information. On the contrary, the doctor/pharmacist is the one who, due to his/her field of expertise, can directly transmit the correct information to the interested person or even solve the issue that has arisen for the latter.

Both target groups rely heavily on search engines for their broader health information. However, it should be noted that neither response group has chosen librarians. In contrast, Stavrou's [10] study found that librarians were the leading source of information for health students, whereas Kahouei et al. [11] found that patients' families were the primary source of information. The survey results in Information Science are completely consistent with the findings of Kurniasih et al. [5].

Continuing with the topic of the preferred criteria for evaluating health information, ALIS students believe in validity, while Phys students think that objectivity of information is the most essential factor to trust sources of health information. The research by Stavrou [10] and Okeji, Ilika, and Baro [6] take a different stance, pointing to unrestricted access to the information's content and publication date as the most important criteria. This is entirely consistent with the movement's demands for open access to knowledge.

Concerning the criteria used to evaluate the content of health information sources, students from both disciplines unanimously answered, "verifying the validity of the information." According to information literacy, performing an information validity check is one of the most critical skills every user should develop. It is worth noting that the participants in this survey chose to use the aforementioned criterion despite being mainly in their first and second years of study.

Finally, based on the participants' statements, it can be concluded that most ALIS students are familiar with the

term "information literacy," which is to be expected given the nature of this Department's curriculum. However, in Okeji, Ilika, and Baro's [6] survey, senior students reported that their knowledge of information literacy skills needed to be improved. Phys students, unlike ALIS students, are unfamiliar with the term "information literacy". Even in Oluwaseye, Akanni, and Busuyi's [12] study, health students lacked information literacy skills.

VI. CONCLUSIONS AND FUTURE WORK

The current survey's primary result is that comparing the two target groups' health information behaviour does not provide a clear answer to the question of which group has developed information literacy skills better. However, a more thorough look at the results reveals that ALIS students answer the survey questions in a logical sequence and appear to comprehend them better.

Phys students, on the other hand, appear to have some information literacy skills but lack others, such as search techniques. For example, while they state that they prefer simple searches, they also respond that the search technique they employ is "one or more keywords." This demonstrates that they are unaware that this strategy is just one of many in the advanced search method. Furthermore, when asked if they knew what the term "information literacy" meant, most of them answered that they did not. Some of their responses to the open question also indicate that they consider information literacy more relevant to computer science. Three indicative answers are: "*Adopting behaviour and ways of learning and using information technology for personal education purposes etc.*"; "*Knowledge of using computers, mobile phones, etc.*"; and "*Using computers and navigating the Internet*".

As a result, a wise suggestion would be to incorporate information literacy as a course in the Department of Phys, if not in all departments of the University. Since the last decade has been characterized as an era of information production and consumption, it is critical for every aspiring scientist, let alone an expert in the health sector, to be a competent information literate individual.

In conclusion, this research introduces to the literature a comparative survey in information literacy between Information Science and Health Sciences students. Since the audience was limited to the students of the Phys department, as far as the Health Sciences are concerned, it would be quite interesting to make this comparison with other Health departments in the future. This way, a more in-depth understanding of the information behaviour between the two academic communities could be yielded.

Finally, a qualitative survey with interviews of potential participants is suggested, which could then be compared to the quantitative data gathered by the present survey.

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