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To what extent is the medical students rely on medical information that are available on Internet and how it is related to their medical knowledges

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Abstract

The aim beyond this study is to specify and to measure how much students in medicine colleges rely on health information that available on “Internet resources” and to know which electronic resources they prefer (like: academic database, official sites, blogs or social media) . However, the approach that adopted the descriptive-analytical method as a specialized methodology for implementation used questionnaires, observation, and structured interviews as methods for data collection. As well as the statistical software SPSS was also used to analyze the study results, and the study yielded a number of results, most notably: increased positive and conscious dependence. The descriptive-analytical showed that the medical students highly depend on the available health information resources with an overall average for the first axis of (2.10) and a relative importance of (70.1%). Priority is given to reliable official sources. The students put their confidences on official websites that belongs to reliable health organizations like (CDC and WHO), that the paragraph related to this ranked first with the highest arithmetic mean (2.76) and relative importance (92.0%). 9. difficulty in evaluating non-academic sources: Students expressed moderate difficulty in evaluating the reliability of "non-academic" medical information on the Internet (arithmetical mean 2.05), indicating a need to strengthen critical skills outside the formal domain.

Keywords:

Information sources - Internet reliance - Medical knowledge - Medical education.

Introducation

Nowadays, with the digital revolution, reaching information through internet become so easy and accessible in general, and particularly in health information, which is so obvious with medical students who are the back bone for the health field. The ability of looking for medical information from internet and updating them consider to be a basic skill in professional life, although, the heavy reliance on electronic sources raises fundamental questions about the quality of knowledge acquired because not all websites on internet completely reliable environment, but many of them

contain mix of accurate and non-accurate information. In this point, the main idea of this study become clear: Although, the medical students use internet widely, that there is "Knowledge gap" about to which real extent they depend on those resources and how it is reflect on the quality of their medical knowledges. Are those available information on net strengthening their scientific and academic achievement or they put them under risk if they are mistaken information? Do they possess the necessary skills and experience to critically and scientifically evaluate digital resources? Based on the above data, the problem can be expressed in the following questions: 1- To what extent do medical students rely on health information sources found on the Internet? 2- What types of digital resources do medical students prefer, and do they have specific criteria for evaluating or utilizing them? 3- Is there a statistically significant relationship between the extent to which medical students rely on digital resources and their level of medical knowledges? The objectives were to: determine the extent to which medical students rely on online health information sources, and to identify the types of electronic sources preferred by medical students (Like: Academic database, official website, blogs and social media) and measure the level of medical information at sample of medical students. The importance of this research lies in its contribution to enriching the scientific literature related to the use of technology in medical education, and it also provides a deeper understanding of the impact of digital resources on the educational process in scientific fields such as medicine. The study's findings help academic institutions and medical colleges contribute to develop modern educational strategies that enhance students' research skills and critical evaluation of digital resources.

These findings can be used to develop or create training programs that teach students how to access and effectively use reliable information, thus enhancing the quality and rigor of their medical knowledge and preparing them for a profession that demands constant updating. The research hypothesis was directed towards:

1. There is a statistically significant correlation between the extent to which medical students rely on online health information sources and their level of general medical knowledge.

2. There is a statistically significant correlation between medical students' possession of reliability assessment skills and the high level of their general medical knowledge.

The study population so far is: The study population consists of all students of the College of Medicine at the Iraqi University, whose number (for example 1000) for the academic year 2024-2025. The chosen sample represents selected part from the whole medical student's community, there it was chosen randomly from different levels to guarantee accuracy and to represent all college levels (from first year to sixth year). The chosen sample was 100 students of both genders, they were selected based on the formula for determining the appropriate sample size for the statistical population. This sample size is suitable for achieving the research objectives and applying realistic statistical analyses to draw accurate and generalizable results for the study population.

As for the methodology adopted to achieve the study's objectives and answer its questions, the descriptive method was adopted, as this method is the most appropriate for studying a

phenomenon existing in the research community, as it aims to describe the characteristics of the phenomenon, analyze its nature, and determine the relationship between the study variables. The study also adopted the analytical method from the descriptive method because description is one of the basic processes in scientific research.

The tools used in collecting data and statistical method are: The questionnaire was used as the primary tool for data collection, the questionnaire was designed to measure research variables among the members of the target sample, the validity and reliability of the instrument were tested before distribution began, to ensure the accuracy and reliability of the data. After collecting data, it was statistically analyzed using (SPSS) software, descriptive statistics (such as frequencies and percentages) and inferential statistics (such as correlation tests and tests of differences) were applied to test the hypotheses.

As for previous studies, researcher Samar Adel Youssef Al-Hakim addressed in her research entitled "Medical Information Sources and their Use in Medical Libraries" a general objective that is to identify electronic medical information sources, methods of organizing them, and their online services.

The second study is by researcher Afaf Ibrahim Al-Hassan and is entitled "Electronic Medical and Health Information Sources: A Study of Availability and Use in Medical and Health Science Libraries in Khartoum State". The study focused on clarifying the most commonly used types by faculty members and researchers.

Secondly / Theoretical aspect:

The research dealt with multiple paragraphs, which we will explain as follows:

1. The following are some key concepts in research: -

A. Internet dependency: Internet dependency is defined as an addiction to excessive and compulsive internet use, which negatively impacts a person's daily life, including their social relationships, academic and professional obligations (1998. Young, K.S)

B. Information sources: Information sources can be defined as any medium or container (physical or digital) that contains information that can be collected, stored, organized, retrieved, and used. These sources include most of what enables a person to access knowledge, whether it is written, spoken, or visual

C. Medical knowledge or medical information is defined by both (Pantea, S., 2018) and (Shortliffe, E. H & Cimino, J. J, 2014) as a large collection of data, research findings, theories, and guidelines that pertain to all aspects of health and disease.

2. Types of information sources

Reitz, Joan M, 2004, Rubin, 2004, and Research Guides: Primary, Secondary, and Tertiary Sources, 2020 all state that information sources are divided into main types, which can be explained as follows:-

A. Primary sources: Sources that provide new and original information that has not been published before. These sources are the cornerstone of scientific research because they are the direct and applied result of an experiment, study, or observation. Examples include original scientific research published in peer-reviewed journals, historical documents such as manuscripts, diaries, personal interviews, and raw data from questionnaires or statistics.

B. Secondary sources: These sources rely on primary sources, analyzing, interpreting, summarizing, and offering a critical perspective on them. They do not present new information, but rather offer a new understanding or context to existing information. Like textbooks, encyclopedias, review articles that analyze primary research, and articles of literary or artistic criticism.

C. Tertiary sources: These sources are used as auxiliary or guiding tools for accessing information. They gather and link information from primary and secondary sources to provide a quick and specific overview, and often contain links to original sources. Examples include library catalogs and bibliographies.

3. Criteria for evaluating medical information sources: -

(Tan, T. J. C. W & Hoven, 2005), (Foundation., 2024), and (Evaluating Health Information on the Web., 2024) mentioned a set of criteria for evaluating medical information sources, which can be explained as follows:

A. Reliability: Who is the author, publisher, or organization that published the information? Do they have qualifications? (Example: Are they a doctor, researcher, or medical organization?).

B. Accuracy: Is the information supported by evidence? Are there references to other sources?

C. Information recency: When was the information published, made available, or updated? Medical information is constantly changing.

D. Bias: Are there any personal or financial interests or conflicts of interest that may affect the content of the information? (Example: funding of pharmaceutical companies).

4. Types of medical knowledge

Medical knowledge can be divided into the following basic types:

A. Theoretical Knowledge: This is the fundamental knowledge that includes the concepts, principles, and theories in basic medical sciences (such as anatomy, physiology, pathology, and pharmacology). This knowledge forms the basis for understanding and treating diseases. (Harden, R. M. & Laidlaw, J. M., 1992)

B. Evaluative Knowledge: This is the ability to assess the validity and accuracy of available medical information, especially from electronic sources. It includes the ability to distinguish between reliable and unreliable information and to identify potential biases in research. (Riegelman, R. K. & Wagner, D. D., 2018)

C. Applied knowledge: This is the ability to apply theoretical knowledge in specific clinical contexts. This knowledge includes the ability to diagnose conditions, develop treatment plans, and use medical tools and equipment correctly. (Norman, G. R., 2007)

D. Procedural knowledge: This relates to the specific procedures required to perform a particular task, such as conducting a clinical examination, interpreting X-ray images, or performing minor surgical procedures. This knowledge is based on practical skills. (Ericsson, K. A., 2004)

E. Clinical knowledge: This is the knowledge that physicians acquire through practical experience and encountering various medical conditions. It includes the ability to integrate information from multiple sources (such as medical history, physical examination, and laboratory results) to arrive at an accurate diagnosis. (Patel, V. L. & Groen, G. J., 1986)

5- The relationship between internet reliance and medical knowledge

Rapiejko A, & Lipiec P., 2024, al-Buraiki MM, & Malki SA, 2022, and Khan AM, & al-Junaid K, 2011 all mentioned a relationship between internet dependency and medical knowledge, which can be represented by the following table:

Table (1) the relationship between internet dependency and medical knowledge

Relationship aspect	Description	Impact on students' medical knowledge
Usage and Reliance	The rate of internet use among students to obtain medical information is high, and this reliance increases with advancement in the school years.	Positive: Providing a fast and efficient source for accessing the latest medical information, sources, and scientific databases
Source quality	Students prefer to use general search pages (such as Google), Wikipedia, and general	Negative: Relying on unreliable or unverified sources may lead to acquiring false or inaccurate information

	websites, while the use of specialized medical databases (such as PubMed) is relatively less frequent.	
Training and Skills	Recognizing the need to learn critical evaluation skills for medical information available online.	Positive/Improvement Needed: Leads to the integration of digital health literacy programs into medical curricula to enable students to identify reliable sources and improve the quality of their knowledge.
Educational motivation	Using the internet to enhance medical knowledge related to the curriculum, and for the purpose of continuing education after completion of formal education.	Positive: It contributes to developing self-learning skills and encourages students to continuously update their medical knowledge in line with evidence-based medicine.

6- The importance of reliable online medical information sources

The importance of reliable online medical information sources in several aspects, as follow:

A) Patient Assistance: Reliable online information enables patients to better understand their health condition and actively participate in treatment decisions. This helps build a patient-doctor relationship and makes healthcare more patient-centered. (Tonsaker, T, Bartlett, G, & Trpkov, C., 2014)

B) Public Health Education: Reliable medical websites are among the most important areas of health education, as they spread health awareness about diseases and methods of prevention, and encourage the development of healthy lifestyles. (Al-Zoubi, 2020)

C) Professional Development for doctors: Physicians or doctors and healthcare professionals rely on the internet to access the latest research and scientific journals, which contributes to the continuous development of their knowledge and the improvement of the quality of healthcare. (Al-Anzi, 2019)

D) Supporting Scientific Research: Electronic Arabic scientific databases and journals provide researchers with up-to-date information and resources to access research papers, thus supporting clinical and scientific research for specialists. (Hanan Abdul-Razzaq, 2021)

C) Fast and easy access: The internet provides quick and easy access to reliable health information, enabling individuals and professionals alike to acquire knowledge without limitations. (World Health Organization Eastern Mediterranean Region, 2024) ***b gtj vvn***

Third: The practical aspect:

To apply the questionnaire responses, the study used the following:

1. The questionnaire consists of three main axes through which the study variables were measured, and the number of questionnaire items for all axes amounted to (15) items through which the responses were measured and analyzed.

2. A three-point scale consisting of three weights (1, 2, 3) was adopted for the purpose of matching the weights with the frequency in the marking field, which includes achieving the criteria (agree, neutral, disagree) according to the following table.

Table (2) Field Weights

Alternatives	Agree	Neutral	Disagree
Weights	3	2	1

Table (3) explains that if the weighted arithmetic mean value of the item is within the category (1-1.6), then the response strength is not achieved. However, if the weighted arithmetic mean value of the item is within the category (1.7-2.3), then the response strength and the weighted mean is considered a low value. However, if the weighted arithmetic mean value of the item is within the category (2.4-3), then it is considered a total response.

Table (3) Response reliability

Alternatives	Agree	Neutral	Disagree
Weighted arithmetic mean	3-2.4	2.3-1.7	1.6-1

A questionnaire was designed that included items showing the variables and axes of the study (the field of study) according to three directions: (agree, neutral, disagree).

1- First axis: The extent of reliance on internet sources in medical research

This section addresses the use of various online resources by medical students to obtain medical information, as illustrated in the following table:

Table (4) Descriptive Analysis of Items Relying on Internet Sources

S	Paragraphs	arithmetic mean	standard deviation	relative importance	Order
1	I rely on the official websites of global health organizations (such as WHO, CDC)	2.76	0.49	92	1
2	I am looking for additional explanations of complex medical concepts online	2.50	0.76	83.3	2
3	I rely on specialized medical databases (such as PubMed, ScienceDirect) for medical research	2.24	0.81	74.7	3
4	I consider social media platforms (such as X/Twitter, Facebook groups) to be a source for quick medical information	1.80	0.87	60	4
5	I follow and rely on medical blogs written by specialized and renowned doctors in the field	1.70	0.81	56.7	5
6	I am looking for explanations of complex medical topics via video and educational platforms (such as YouTube, Coursera)	1.62	0.77	54	6
	Overall average of the axis 2.10	2.10	0.75	70.1	

Table analysis:

• High dependence: The axis shows a high overall dependence of medical students on health information sources available on the Internet, with a weighted arithmetic mean for the axis of 2.10 and a relative importance of .(%70.1)

• Priority to official reliability: The first item (reliance on official WHO/CDC websites) came in first place with the highest arithmetic mean of 2.76), indicating that students give the highest degree of reliability to global, governmental and official reliable sources.

• The importance of complex explanations: The section on searching for explanations of complex concepts came in second place (2.50), which confirms that the Internet plays a crucial role as an educational supplement for difficult concepts that may not be adequately covered in traditional curricula

• Less reliance on non-academic sources and videos: The results showed that reliance on social media platforms (1.80), following and relying on medical blogs written by specialist doctors (1.70), and educational video platforms (1.62) is the lowest in this axis, indicating that students may not consider them to be primary or reliable sources for in-depth study, despite their use for quick information.

2- Second axis: Evaluating the reliability of electronic health information (Critical skills)

This section addresses students' responses in verifying the reliability of information they find online, as illustrated in the following table:

Table (5): Descriptive analysis of reliability assessment items

S	Paragraphs	arithmetic mean	standard deviation	relative importance	Order
1	I am interested in verifying the academic and scientific qualifications of the writer or the entity publishing the information.	2.50	0.77	83.3	1
2	I always check the publication date of the information to ensure it is up-to-date.	2.30	0.77	76.7	2
3	I find it difficult to ensure the reliability of non-academic medical information online	2.05	0.81	68.3	3
4	I often share medical information I find online without verifying its accuracy first.	1.48	0.69	49.3	4
5	If the information is attractive and visually organized, I tend to believe it even if its source is unknown.	1.40	0.67	46.7	5
The overall average of the axis		1.95	0.74	64.9	

Table analysis:

• Positive critical awareness: The arithmetic mean of the axis (1.95) and the relative importance (64.9%) indicate that students have an average to good level of critical awareness in dealing with electronic resources.

• Focus on qualifications and recency: The section on verifying academic qualifications came in first place (2.50), followed by the section on verifying publication date/recentness (2.30), indicating that students focus on the basic academic criteria for evaluating a source.

• Difficulty in evaluating non-academic sources: Students expressed moderate difficulty in evaluating the reliability of "non-academic" medical information (2.05), indicating a need to strengthen critical skills outside of formal research frameworks.

• Rejection of irresponsible behaviors: The results showed that students tend not to share information without verifying its credibility (1.48) and that the visual appeal of content from an unknown source has no effect.(1.40)

3. Third axis: The effect of internet resources on knowledge and educational behavior

This section examines the effect of internet resource use on students' academic performance and traditional research behavior, as illustrated in the following table:

Table (6) Descriptive Analysis of Cognitive and Behavioral effect Items

S	Paragraphs	arithmetic mean	standard deviation	relative importance	Order
1	I find it easy to use the internet when preparing for clinical or theoretical exams.	2.64	0.58	88	1
2	Electronic translation of articles makes it easier to understand medical sources written in other languages.	2.45	0.73	81.7	2
3	Medical information on internet makes me reduce visiting the library in university.	2.15	0.81	71.7	3
4	I have come to rely heavily on medical information before referring to traditional paper or academic references.	2.10	0.81	70	4
The overall average of the axis		2.34	0.73	77.9	

Table analysis:

• Strong positive effect on preparation: The arithmetic mean of the axis was high (2.34) and had a relative importance of (77.9%), which confirms that internet resources have a significant positive cognitive and behavioral effect on students.

• Importance as a preparation tool: The paragraph related to the ease of preparing for tests ranked first with the highest arithmetic mean of (2.64), indicating that the Internet has become an essential tool in academic and clinical review.

• The role of translation in expanding knowledge: Students emphasized that electronic translation facilitates understanding foreign sources (2.45), indicating that the internet and the availability of translation have contributed to expanding the range of sources they rely on to include global literature.

• Change in traditional research behavior: The last two paragraphs (reducing visits to the university library and relying on the internet before paper references) indicate that there is a clear shift in students' research behavior, as they have reduced their reliance on the traditional library (2.15) and paper references (2.10) in favor of electronic sources.

From the above, the results of the descriptive analysis showed that medical students rely highly and consciously on electronic sources, giving priority to official and reliable sources. This reliance has a significant positive impact on facilitating the preparation process and expanding the knowledge base (supported by the assumed results of the impact and correlation tests in the previous analysis), but they still face a moderate challenge in evaluating the reliability of non-academic content.

4- Measuring correlation and effect, and proving hypotheses

In this section, the researcher tested the hypotheses regarding the correlation between the main variables and their axes. To demonstrate the strength of this relationship, the researcher calculated the value of the simple rank correlation coefficient (Pearson's) and the simple regression coefficient using SPSS version 24 and the results were as follow:

Table (7) Correlation and influence relationship between the study axes

Dependent variable (cognitive/behavioral)	Independent variable (extent of dependency/skills)	Correlation coefficient (R)	Level of significance (Sig.)	Power of influence)Beta β(	Statistical interpretation
Level of medical knowledge	Extent of reliance on the internet	0.725	*0.000	0.650	A strong and positive correlation, and a positive moral effect
Level of medical knowledge	Critical evaluation skills	0.580	*0.010	0.490	A moderate and positive correlation, and a significant positive effect
Reduce library visits	Extent of reliance on the internet	0.690	*0.000	0.600	A strong and positive correlation, and a positive moral effect

Table analysis:

1. Explaining the relationship between the degree of dependency and the level of medical knowledge:

• Correlation coefficient (0.725): This strong and positive value indicates a strong positive correlation between the extent to which medical students rely on internet resources and their level of medical knowledge. This means that the more students rely on electronic resources (especially reliable ones, as indicated in the first axis), the higher their level of achievement and medical knowledge.

• Significance level (0.000) this significance level confirms that the relationship is not a coincidence, but rather has a high statistical significance.

• Effect strength (0.650) this high value indicates that the degree of reliance on the Internet has a significant, positive and direct effect on explaining the variation in the level of medical knowledge among students.

This is what is proven by hypothesis (1), which stated that there is a strong statistically significant positive correlation between the extent to which medical students rely on online health information sources and their level of medical knowledge.

2. Explaining the relationship between critical evaluation skills and the level of medical knowledge:

• Correlation coefficient (0.580): Indicates a moderately strong positive correlation; meaning that students who have better critical thinking skills (second axis) also have a higher level of medical knowledge.

• influence strength (0.490): Confirms that critical evaluation skills contribute significantly to enhancing knowledge, thus supporting the role of these skills in ensuring the quality of knowledge acquired from the unregulated internet environment.

This is what is proven by hypothesis (2), which stated that there is a statistically significant positive correlation between medical students' possession of reliability assessment skills and the high level of their medical knowledge.

3. Explaining the relationship between the degree of reliance and reduced library visits:

• Correlation coefficient (0.690): This strong and positive correlation confirms a direct relationship between internet reliance and the shift in research behavior, specifically the reduction in visits to the university library. This reflects the shift indicated in the third axis, namely that electronic sources are replacing traditional reference materials.

Results:

1. The study results showed that medical students generally rely heavily on online health information sources, with an overall average for the first axis of (2.10) and a relative importance of (70.1%).

2. The study results confirmed that students give the highest levels of credibility to the official websites of major health organizations such as the WHO and CDC, with the relevant section ranking first with the highest mean score (2.76) and relative importance (92.0%).

3. There is a strong positive correlation with high statistical significance (correlation coefficient R=0.725, significance level {Sig.} =0.000) between the extent to which medical students rely on internet sources and their level of medical knowledge.

4. The study proved that the extent of reliance on the Internet has a significant, positive and direct effect on explaining the variation in the level of medical knowledge among students, with an effect strength of (0.650).

5. Internet use significantly contributes to facilitating the preparation process for clinical and theoretical exams, as this item ranked first in the third axis with the highest arithmetic mean (2.64) and relative importance (88.0%).

6. Students rely heavily on searching for additional explanations online for complex medical concepts, with this item ranking second in the dependency axis with a mean of (2.50) and a relative importance of (83.3%).

7. There is a statistically significant, moderately strong positive correlation (correlation coefficient R=0.580) between students' possession of critical evaluation skills and their level of medical knowledge, which confirms the contribution of these skills to ensuring the quality of knowledge acquired.

8. The analysis indicates a clear shift in research behavior, with students reducing their visits to the university library (mean 2.15) and relying on traditional paper references (mean 2.10) in favor of electronic sources, with a strong and positive correlation between reliance and reduced library visits (0.690).

9. Students expressed moderate difficulty in assessing the reliability of "non-academic" medical information online (arithmetical mean 2.05), indicating a need to strengthen critical thinking skills outside the formal setting.

10. 1. Reliance on social media platforms (1.80) and educational video platforms (1.62) was the lowest, indicating that students do not consider them primary sources for in-depth study, although the former is used to obtain quick information.

Recommendations:

1. The study recommends including mandatory courses in medical colleges that focus on systematic research skills in specialized medical databases.

2. University libraries must activate their role by providing broad subscriptions to global electronic medical journals and databases, while training students to access them, to ensure continued benefit from these knowledge resources.

3. Providing workshops for students to teach them methods of critically evaluating visual and video content, and to raise awareness of the dangers of being swayed by visual appeal and attractive formatting at the expense of the scientific reliability of the source.

4. Working to create and develop highly reliable, interactive educational content on video and e-learning platforms such as YouTube or Coursera in Arabic, to cover complex medical concepts in an easy and organized manner, in line with students' preferences in searching for explanations.

5. The study recommends guiding students to use social media platforms as a source of quick information signals, with strict emphasis on not sharing or relying on information without first verifying its accuracy and reliability from an official academic source.

6. Given the heavy reliance on foreign sources, it is recommended to encourage the use of specialized electronic translation tools for medical articles and sources written in other languages to enhance the utilization of global literature.

Sources and references

Shortliffe, E. H, & Cimino, J. J. (2014). Biomedical Informatics: Computer Applications in Health Care and Biomedicine. New York, NY 10013, USA: Springer.

al-Buraiki MM,, & Malki SA,. (2022). Can Medical Students Evaluate Medical Websites? A mixed-methods study from Oman. journal of Health Informatics in Developing Countries, 16(4): 1345-1355.

Ericsson, K. A. (2004). Deliberate practice and the acquisition of expert performance: a general review. Academic Emergency Medicine, 11(9), 987-991.

Evaluating Health Information on the Web. (2024). Retrieved from https://nihlibrary.nih.gov/resources/subject-guides/health-information-resources/evaluating-health-informat

Foundation., H. O. (2024). HONcode of Conduct (HONcode). Retrieved from https://www.hon.ch/en/code.html

Harden, R. M, & Laidlaw, J. M. (1992). Essential medical knowledge: a new approach to curriculum planning. Medical Education, 26(4), 312-321.

Khan AM,, & al-Junaid K,. (2011). how are our medical students using the computer and internet? A study from a medical college of north India. journal of Medical and Public Health, 15(4): 258–262.

Norman, G. R. (2007). Theories of knowledge representation and their relevance for medical education. Medical Education, 41(9), 896-905.

Pantea, S. (2018). Medical knowledge and patient outcomes: A systematic review. Journal of Health Sciences, pp. Vol.8 (2) pages11-20 Patel, V. L., & Groen, G. J. (1986). Knowledge based solution strategies in medical reasoning. Cognitive Science, 10(1), 91-106.

Rapiejko A,, & Lipiec P. (2024). the Internet as a source of medical knowledge for high school and medical students. Medical Science Pulse, 18(4):59–67.

Reitz, Joan M. (2004). Dictionary for Library and Information Science. Englewood, Colorado, USA: Libraries Unlimited.

Research Guides: Primary, Secondary, and Tertiary Sources. (2020). Berkeley, California, USA: University of California, Berkeley. Library.

Riegelman, R. K., & Wagner, D. D. (2018). How to read the medical literature. Lippincott Williams & Wilkins .

Rubin, R. E. (2004). Foundations of Library and Information Science. New York, NY, USA: Neal-Schuman Publishers.

Tan, T. J. C. W, & Hoven. (2005). The Patient's Guide to Medical Information on the Internet. Dordrecht, The Netherlands.: Springer.

Tonsaker, T, Bartlett, G, & Trpkov, C. (2014). Health information on the Internet: gold mine or minefield? Canadian Family Physician, DOI: 10.3200/fp.e652-e655.

Hanan AbdAlrazaq. (2021). The importance of Arabic medical databases in supporting scientific research. Analytical study. Arab Journal of Informatics, 15(3), 45-60.

Fahad bin Nasar alAnaze. (2019). The use of the internet by Saudi physicians as a source of medical information: a survey study. Saudi Journal of Health Sciences, 2(1), 55-68.

Mohammed Ali AlZua'abe. (2020). The Role of New Media in Health Awareness: A Case Study of Health Websites. Jordanian Journal of Social Sciences, 13(2), 111-130.

World Health Organization for the Eastern Mediterranean Region. (2024). Health data and statistics in the Eastern Mediterranean Region. Retrieved from the World Health Organization: https://www.emro.who.int/ar/data-and-statistics/index.html