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Awareness, Use, Purpose, and Satisfaction of E-Resources among Medical College Libraries Users in Punjab, Pakistan

Dr. Tahir Jan
Deputy Librarian, University of Peshawar, Pakistan. tahirjan@uop.edu.pk
Saba Habib
Senor Librarian, Bakhtawar Amin Medical & Dental College, Multan, Pakistan. sabamux2020@gmail.com
Tahir Hanif
M. Phil Scholar, Department of Library & Information Management, Superior University Lahore.
Dr. Shahzad Orakzai
Professor, Department of Urban & Regional Planning, University of Peshawar. orakzai@knu.ac.kr

Abstract

We examined electronic resources routine of medical college library users in Punjab, particularly in the southern region. It also explores gender-based variations in awareness, purpose, usage, satisfaction, and barriers to e-resources. A cross-sectional survey was conducted using a well-structured questionnaire, distributed to library users mostly medical college students and faculty in the Multan, Pakistan, yielding an overwhelming 88% response rate. Findings indicate that most library users are moderately aware of e-resources approach as primarily users' utilization for book writing, social networking, lecture preparation, entertainment, research, and education. However, medical e-resources such as electronic newspapers, e-books, CD-ROM databases, and Wikipedia are rarely used. Despite overall satisfaction with e-resources, users face significant barriers, including a lack of training, slow internet speed, energy crises, limited full-text journal access, and inadequate IT infrastructure. No statistically significant gender differences were found in awareness, usage, satisfaction, or barriers. These findings offer valuable insights for improving digital library services in Pakistan's medical

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colleges, particularly in Punjab's Multan division. Enhancing online services and IT infrastructure could foster a stronger virtual culture and more efficient access to e-resources in health sciences libraries.

Keywords: E-Resources, Awareness, Purposes, Use, Satisfaction, Barriers, Medical Colleges, Library Users, Punjab, Pakistan

Background of Study

The swift advancements in Information and Communication Technology (ICT) have profoundly reshaped the information landscape, providing a wide range of solutions for the effective management of diverse information resources. Notably a recent development in the field of information and communication Technology (ICT) has created an essential alteration in the field of information related circumstances, giving rise to a few new options to handle varied information sources appropriately and slickly. The ICT has revolutionized the way information is retrieved, making e-resources a fundamental part of library services. Over time, the significance and usage of these resources have expanded considerably. With alternative new innovative option, e-resource have become the main user-friendly tool for modern library collection in meeting the diverse needs of students, faculty, and researchers with minimal effort and in a timely manner. Information and communication technology has transformed the world, making it one of the most essential tools for retrieving information. With the ongoing advancement of modern and innovative technologies, electronic information resources have become an integral component of library collections. Over-time, the value and utilization of information related resources, particularly e-resource, have improved significantly.

There has been numerous studies conducted to investigated different aspects of the utilization of different electronic resources by faculties, students and researchers (Bhat and Ganaie, 2016; Hamutumwa et al., 2017), impact of e-resources, its importance, access and factors influencing the awareness and

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practice of e-resource utilization was significantly explored by Ani et al. (2014) and Makori, 2015; Natarajan, (2017) .

However, the scarcity and lack of research publication indicates that only handful of studies has been conducted on the use of e-resources users of medical colleges and universities level students (Anbarasu & Muruganandham, 2019; Ankrah & Atuase, 2018; Tella et. al., 2018; Thanuskodi & Kumar, 2017). However, there seems scarcity in research studies with a focus on the awareness, ease of use and satisfaction of e-resources among users of medical college students of libraries in the South region of Punjab. Sensing a gap in previous research, it was decided to conduct a study with a primary focus on the objectives to determine various types of e- resources awareness, satisfaction, purpose and barriers by medical college library users in Multan division Punjab. This study will be helpful to improve e-resources of medical college libraries, additionally, the findings will help to improve policy formulation about the use of e-resources and how to better facilitate its users. Furthermore, it will help medical students, professionals, and librarians to have a better understanding about the medical related e-resources tools so that a timely service can be initiated.

Numerous studies have been conducted to explored various aspects of e-resource usage among students, faculty, and other users, including search strategies and user behavior (Bhat & Ganaie, 2016; Hamutumwa et. al., 2017), the impact and importance of e-resources, access factors, and awareness levels (Ani et. al., 2014; Makori, 2015; Natarajan, 2017). However, limited research has focused on the use of e-resources by medical college and university users at the international level (Anbarasu & Muruganandham, 2019; Ankrah & Atuase, 2018; Tella et al., 2018; Thanuskodi & Kumar, 2017).

In Pakistan, Ali, et. Al., and Habib et al. (2022) conducted a study examining the utilization of medical electronic resources among users of medical college libraries within the Multan division. However, there remains a scarcity of

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research focusing on the awareness, usage patterns, and user satisfaction regarding electronic resources among medical college library patrons in the southern region of Punjab.

Therefore, the current study aims to examine the awareness, satisfaction, purpose, and barriers associated with e-resources among medical college library users in the Multan division of Punjab. The findings will contribute to enhancing e-resources in medical college libraries and guide policy formulation on e-resource utilization. Additionally, this research will assist medical professionals and librarians in improving digital literacy regarding medical-related e-resources.

Objectives of the Research Study

The research study focuses on libraries of Multan division to achieve the following objectives:

1. To assess the level of awareness among users of medical college libraries regarding the availability of electronic resources
2. To determine the main purpose for which e-resources are utilized in the libraries for medical related material
3. To evaluate the current status of e-resource usage in the medical libraries.
4. To assess the level of user satisfaction with e-resources in the medical college libraries of the Multan division.
5. To identify the challenges faced by users in accessing e-resources in the medical libraries of the Multan division.

Research Questions

1. What is the level of awareness among users of medical college libraries regarding the availability of electronic resources?
2. What is the main purpose for which e-resources are utilized in libraries for medical-related material?
3. What is the current status of e-resource usage in medical libraries?

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4. What is the level of user satisfaction with e-resources in the medical college libraries of the Multan division?

5. What are the challenges faced by users in accessing e-resources in the medical libraries of the Multan division?

Hypotheses Development

H_1: There is no significant difference in awareness of e-resources based on gender

H_2: There is no significant difference in the purpose of e-resource usage based on gender

H_3: There is no significant difference in the use of e-resources based on gender.

H_4: There is no significant difference in satisfaction with e-resources based on gender

H_5: There is a no significant difference in the barriers faced by different genders using e-resources.

Review of Previous Literature

Basic of Digital Resources

Electronic resources short for e-resources is known as digital materials accessible via internet. According to Johnson et al. (2012), e-resources refer to electronic versions of information that can be retrieved through digital systems and computer networks. These resources include any information stored and accessed electronically using devices such as computers, tablets, and Smartphones.

E-resources encompasses CD-ROM/DVD databases, online search engine, online research material (such as google scholar), online databases, federated search facility, online public access catalogs (OPACs), the internet, e-newspapers, e-newsletters, audio and video materials, and other computer-based digital networks (Quadri et al., 2014).

Various Types of Electronic Resources

There is various type of Electronic Information Resources available in various formats, including:

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- Electronic journals and electronic books
- Scientific and research news
- Electronic thesis and dissertations and electronic databases

Formats of Electronic Information Resources

Electronic resources exist in multiple digital formats, including:

- MS Word, Excel, RTF and PDF Formats
- JPG and Image files
- Microsoft Reader's Literature
- HTML Format

Among the above mentioned, PDF and HTML formats are the most widely used for e-books and digital documents (Hitchcock et al., 1997; Norshuhada et al., 2003).

E-Resources Awareness

Awareness refers to an understanding of a situation based on information or experience (Ani & Ahiauzu, 2008). It can also be defined as knowledge, recognition, realization, or acknowledgment of a particular issue, state of affairs, or development. Several studies have examined users' awareness of e-resources in libraries.

Soni et. al., (2018) conducted a survey to assess the current status of awareness, accessibility, and usage of digital resources, including electronic journals, electronic books, online databases, CD-ROM databases, and Online Public Access Catalog (OPAC) of various libraries. The result of the study indicates that majority of the scholars were highly aware of electronic resources(e-Resources), particularly those accessed through institutional websites. Furthermore, the result of the study highlights that the theses database namely "Shodhganga" was one of the most frequently visited and utilized digital materials. Similarly, Yebowaah and Plockey (2017), also check the level of awareness and utilization of resources amongst university researcher and faculty members. The result of the study indicates that 88.8% of participants were utilized the library,

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and among 65% were fully aware of the availability of electronic resources subscribed by the university. However, despite high awareness, actual utilization remained low. The main reason identified by users were no orientation and training regarding the available resources.

Singh and Gupta (2020), conducted a research study and explored the level of accessibility and awareness, useability of digital resources among medical students. The study used survey method. The result shows that maximum medical practitioners were familiar with electronic resources, particularly with open-access. The basic reason for utilizing open-access material, free of cost and accessible from anywhere. However, the subscribe resources are only accessible within the campus.

In Pakistan, Habib et. al., (2022) examined the perception of medical practitioners in Multan and found that medical practitioners were "slightly aware" about the online subscribed databases like, MEDLINE database, Springer database, PubMed database, Science Direct database, Blackwell Synergy database, and Global Health. However, they had little or no awareness of e-resources like, BIOSIS Previews database, ProQuest theses and dissertation databases, Clinical Evidence database, BioMed Central, Open access database DOAJ, and EBSCOhost databases.

These studies highlight a recurring pattern: while the awareness of e-resources amongst medical students is generally high, their actual utilization often remains limited. Addressing this gap requires targeted efforts to improve digital literacy, training, and accessibility to ensure optimal use of electronic resources in academic environments.

Purpose and Usage of Electronic Information Resources

Numerous research studies were published by the researchers, authors, and scholars to examine the various aspects and purposes overdue to utilize the digital resources. Chanda (2021) highlighted key reasons for utilizing e-resources,

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revealing that 91.6% of respondents use them for study purposes, 81.7% for classwork and assignments, 73.8% to update their domain knowledge, and 58.1% to enhance education. Additionally, 26.4% reported using e-resources for writing term papers, Similarly, 16% use for projects reports, and only 7% utilized these resources for presentation.

Satyanarayana et. al., (2018) studied the awareness and usage of online resources among engineering college students in Nellore District, India. Their findings indicated that e-resources play a vital role in education and research. Mostly respondents/participants acknowledged extensive use of online resources and viewed digital platforms as crucial tools for democratizing information and knowledge.

Joel (2020), conducted a study and explored the utilization of electronic resources by library and information science (LIS) postgraduate students, noting that they frequently used them for sourcing materials for research and writing projects, completing class assignments, accessing the electronic catalog (OPAC) for library searches, retrieving current literature for studies, and engaging in blog discussions related to their subject areas.

Pandian and Geetha (2018) conducted a research study and observed that a significant number of students and faculty members from various engineering disciplines—including Civil, Mechanical, and Electrical—frequently accessed diverse types of e-resources, such as e-journals, e-books, e-theses and dissertations, and e-magazines. Additionally, users were able to access library resources. Thanuskodi and Kumar (2017), found that ophthalmologists under the age of 35 years showed greater interest in electronic resources for multiple purposes, including study, research, journal club presentations, teaching, and publications.

Owolabi and Okocha (2016), examined undergraduate students' use of digital resources and found that all 188 respondents (100%) utilized e-resources for academic functions, coursework, and online applications or registrations.

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Additionally, 94% of participants used electronic resources for assignments, research, project writing, and other purposes.

Users' Satisfaction with E-Resources

User's satisfaction is one of the most important indicators of libraries. To know the user's satisfaction the libraries, conduct user's satisfaction surveys. User satisfaction serves as a crucial indicator of service quality in libraries, enabling institutions to assess and improve their resources and services (Kumar, 2012). In this context, satisfaction with electronic resources refers to whether a library's digital offerings meet users' information needs and expectations.

A study conducted by Alabdulwahhab et. al., (2021), in the Kingdom of Saudi Arabia examined the use of online resources among undergraduate medical students at the College of Medicine, Majmaah University. The statistical data revealed that the majority of respondents were generally satisfied from e-resources and used them for learning and research purposes. Explicitly, 131 (72.7%) of the respondents reported during COVID- 19 they utilized digital resources and were very satisfied.

To assess user satisfaction with library digital resources at Madurai Kamaraj, University Library conducted a survey. The statistical data revealed that the satisfaction levels with various types of e-resources, including e-journals, e-books, e-databases, e-theses, and e-references, were very high (Maheswari & Aravind, 2021). A survey conducted among users indicated that most respondents rated the e-resources as "Good," and the overall findings confirmed a high level of satisfaction. Similarly, Kundu (2021), study conclude that more than 80% of respondents were very strongly satisfied with library resources available to them in digital format.

Barriers to E-Resources

Despite the numerous benefits of e-resources, several challenges hinder their effective utilization. Lawal and Kannan (2020) highlighted major challenges

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encountered by business education students, such as slow internet speed, difficulty in locating relevant information, an overwhelming volume of online resources, time inefficiencies in accessing and downloading content, limited availability of computer systems, power disruptions, insufficient ICT skills, inadequate business education databases, a lack of proficiency in navigating e-resources, high internet subscription costs, and restricted access due to weak network infrastructure.

Research studies on the impact of Information and Communication & Technologies (ICTs) have also highlighted various obstacles in accessing e-resources. Common issues include slow internet connectivity, information overload, loss of access due to subscription cancellations, lack of relevant e-resources, and challenges related to remote access. These factors significantly shape users' perceptions of university libraries (Okogwu & Mole, 2019).

Bahader et. al., (2021) revealed that university libraries in Pakistan suffer from poor information and technology infrastructure. Many libraries still lack modern IT facilities, which is a critical concern in the digital era. In a subsequent study, Bahader (2022), further identified key barriers faced by university libraries in Pakistan, including a shortage of qualified and experienced staff, inadequate IT infrastructure, financial constraints, and insufficient knowledge among library personnel.

Similarly, Habib et. al., (2022), pointed out major barriers to e-resources are; lack of training, slow internet speed, energy crises, inadequate IT infrastructure, and limited user knowledge about e-resources.

Research Methods and Design and Data Collection Tool

A quantitative research approach was adopted, utilizing a survey research method for data collection. Given the quantitative nature of this study, various data collection tools were considered, including questionnaires, interviews, and observations. However, the researcher selected a structured questionnaire as the primary data collection instrument, designed in alignment with the study's

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objectives. The questionnaire was developed based on an extensive literature review and underwent multiple revisions following feedback from the research supervisor before finalization.

Population of the Study

The target population of this study comprised of 5,473 students and faculty members from medical colleges as well as from the dental colleges in the Multan division, Punjab, Pakistan. The institutions included in the present research study were:

Nishtar Medical College, Multan (PMC, 2021), Bakhtawar Amin Medical & Dental College, Multan (BAMDC; PMC, 2021), Nishtar Institute of Dentistry, Multan (PMC, 2021), CMH Multan Institute of Medical Sciences, Multan (CMH, 2020; PMC, 2021), Multan Medical & Dental College, Multan (MMDC, 2021; PMC, 2021), Shahida Islam Medical College, Lodhran (PMC, 2021; SIDC, 2020; SIMC, 2020).

These institutions represent both public and private medical and dental colleges in the region.

Sample Size

A subset of the population being studied in a research study is called a sample (Goode & Hatt, 1952). The sample is representative of the entire population under study. The present research study shows that there were Four hundred and fifty nine (459) medical faculty and One Hundred and Seventy Three (173) dental faculty members in the six medical and dental colleges, along with 4000 MBBS and 841 dentistry students. Using the Taro Yamane (Yamane, 1967) formula, the sample size for this study was determined to have a 95% confidence level and a 5% margin of error. Using Yamane's formula, the sample size was determined as follows:

$$n = \frac{N}{1+N(e)^2} \quad \text{In formula: } n=\frac{5473}{1+5473(0.05)^2}, \; n = 373 \text{ (Rounded)}$$

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After calculating the sample size by putting the values in formula, the sample size is 373 students and faculty members.

Sample Size Calculation

In this study, the total population includes:

- 4,000 MBBS students
- 841 Dental students
- 459 Medical faculty members
- 173 Dental faculty members

This results in a total population (**N**) of 5,473 individuals. To determine the appropriate sample size, Taro Yamane's (1967) formula was used, ensuring a 95% confidence level and a 5% margin of error**:**

n=N1+N(e2) n = \frac{N}{1 + N(e^2)}n=1+N(e2)N

Substituting the values:

n=54731+5473(0.05)2n = \frac{5473}{1 + 5473(0.05)^2}n=1+5473(0.05)25473

n=54731+5473(0.0025)n = \frac{5473}{1 + 5473(0.0025)}n=1+5473(0.0025)5473

n=54731+13.6825n = \frac{5473}{1 + 13.6825}n=1+13.68255473 n=547314.6825n = \frac{5473}{14.6825}n=14.68255473 n≈373n \approx 373 n≈373

Thus, the final sample size is 373 students.

Sampling Techniques

A convenience sampling technique, a type of non-probability sampling, was used to collect data from the target population.

Data Collection

In the initial stage data was collected through survey tool namely questionnaires. The questionnaire was distributed among medical students as well as among the faculty members of selected medical and dental colleges. Participants were contacted through email, WhatsApp, and other social media platforms to facilitate data collection.

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Response Rate and Ethical Considerations

A total of 373 questionnaire was returned and responses rate is 88%. Participation in the study was voluntary, and respondents were assured of confidentiality and anonymity.

Data Analysis

The data collected was entered into and analyzed using SPSS (Version 26). To do this each survey question was assigned a specific code. In descriptive statistics, including frequencies and Average Mean scores, were calculated to assess the usage of e-resources.

Results of the Study

Gender-wise Response Rate

The statistical data shown in Figure No. 1 demonstrates that out of 329 respondents 139 (42%) were male and 190(58%) were female. The data shown that majority of the respondents were female.

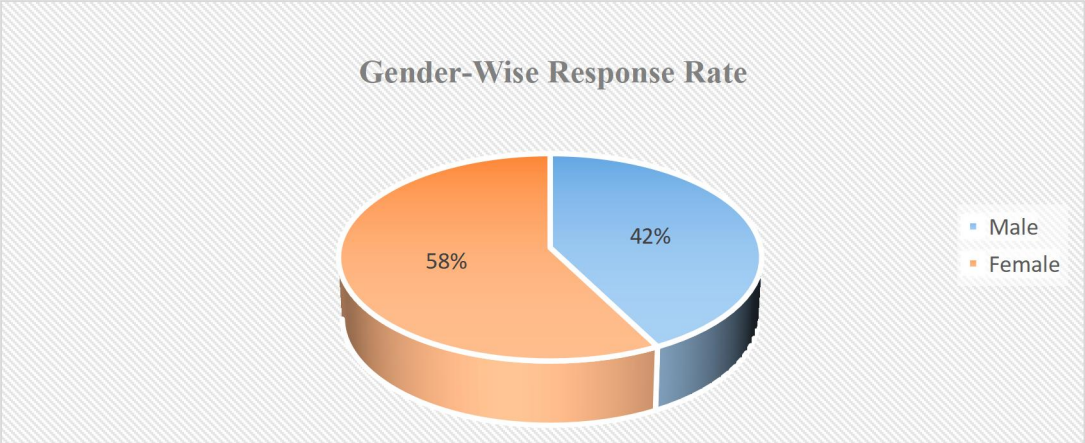

Figure No. 01: Gender-Wise Response Rate of Respondents

User's Awareness about the Electronic Information Resources

The Statistical data illustrates that user's awareness about electronic information resources is Table No. 01. The survey participants from medical college libraries in Punjab were asked to indicate their level of awareness regarding various e-resources. Table No. 01, presents the average Mean and Standard Deviation (SD) values of their responses.

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The response of the survey was recorded and revealed that the use of electronic books among the medical students and faculty were Rank at top followed by Electronic Newspapers and CD-ROM Databases at 3rd Position. Similarly, Electronic Journals were place at 4th Position and Wikipedia at 5th and HEC Digital Library resources were placed at 6th in rank.

The overall Average Mean score for awareness of e-resources was **2.5 (Standard Deviation = 1.1)**, which falls within the mid-range of the scale, indicating that respondents have a **moderate level of awareness** regarding e-resources. Among the listed e-resources, e-books had the highest awareness level (Average Mean = 3.3), while reports had the lowest (Average Mean = 1.8). This suggests that while some digital resources are commonly known, others require greater promotion and training among medical college library users.

Table No. 01: *User's Awareness about Electronic Information Resources (n=329)*

Electronic Information Resources	Rank	Average Mean	STANDARD DEVIATION
Electronic Books	1	3.3	1.1
Electronic Newspapers	2	3.2	1.1
CD ROM Databases	3	2.0	1.0
Electronic Journals	4	2.6	1.1
Wikipedia	5	2.5	1.1
HEC Digital Library/databases	6	2.5	1.2
Subject directories	7	2.3	1.1
Electronic Dissertation/Theses	8	2.0	1.1
Case Studies	9	1.8	1.1
Reports	10	1.8	1.1
Overall Average Mean Score of the Awareness		**2.5**	**1.1**

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Purpose of Electronic Information Resources

The respondents were requested to state the purpose of e-resource utilization. Table 02 displays the responses of the respondents, and the attribute that stands out the most is purpose: writing a book (Average Mean = 1.9, Standard Deviation =.2), followed by social networking (Average Mean = 1.9, Standard Deviation =.2), preparing lectures (Average Mean = 1.9, Standard Deviation =.3), entertainment (Average Mean = 1.9, Standard Deviation =.3), research supervision (Average Mean = 1.8, Standard Deviation =.3), writing an article (Average Mean = 1.8, Standard Deviation =.4), research (Average Mean = 1.57, Standard Deviation =.49), to update knowledge (Average Mean = 1.47, Standard Deviation =.50), learning (Average Mean = 1.4, Standard Deviation =.5), and education (Average Mean = 1.3, Standard Deviation =.5), respectively. The data shows that majority of the medical students utilized the electronic information resources for the purpose of writing books followed by social networking purposes. It is further illustrated that a very a smaller number of medical students used electronic resources for education.

The overall Average Mean score for the purpose of e-resource utilization is 1.7, with a Standard Deviation of 0.4, putting it on the Yes/No scale. It reflects that users of the medical colleges' library among the target population mostly use e-resources for the purposes given in Table 02.

Table No 02: Purpose of Electronic Information Resources Utilization (n=329)

Purpose of E- Resources	Rank	Average Mean	Standard Deviation
Writing a Book	1	1.9	0.2
Social Networking	2	1.9	.2
Preparing Lectures	3	1.9	.3
Entertainment	4	1.9	.3
Research Supervision	5	1.8	.4
Writing an article	6	1.8	.4
Research	7	1.6	.5

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To update knowledge	8	1.5	.5
Learning	9	1.4	.5
Education	10	1.3	.5
Overall Average Mean Score of the Purpose		**1.7**	**0.4**

Use of Electronic information Resources

The participants were asked about the use of electronic resources. Table No. 03 shows the answers to the survey, and the first attribute of use is electronic newspapers (Average Mean= 2.9, Standard Deviation =.9), followed by electronic books (Average Mean= 2.9, Standard Deviation =.8), CD ROM databases (Average Mean=2.4, Standard Deviation =.9), Wikipedia (Average Mean=2. 4, Standard Deviation =1.1), electronic journals (Average Mean=2.2, Standard Deviation =1.2), HEC digital library resources/databases (Average Mean=2.2, Standard Deviation =1.1), subject directories (Average Mean=1.9, Standard Deviation =.9), case studies (Average Mean=1.9, Standard Deviation =1.1), electronic dissertation/theses (Average Mean=1.5, Standard Deviation =.9), and reports (Average Mean=1.7, Standard Deviation =1.1) respectively. The overall Average Mean score of the use of electronic resources (Average Mean = 2.2, Standard Deviation = 1.0) lies in the second value of the scale. It reflects that users of the medical colleges' libraries are "rarely" using e-resources.

Table 03: *Use of Electronic Information Resources (n=329)*

Use of E-Resources	Rank	Average Mean	Standard Deviation
Electronic News papers	1	2.9	.9
Electronic Books	2	2.9	.9
CD ROM Databases	3	2.4	.9
Wikipedia	4	2.3	1.1
Electronic Journals	5	2.2	1.2

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HEC databases/HEC Digital Library	6	2.2	1.1
Subject directories	7	1.9	.9
Case Studies	8	1.9	1.1
Electronic Dissertation/Theses	9	1.7	.9
Reports	10	1.7	1.1
Overall Average Mean Score of the Use of E-Resource		2.2	1.0

Satisfaction with Electronic Information Resources

The participants of the survey were asked to show their level of satisfaction with e-resources. Table 05 depicts the results of the survey, and the attribute that secured the highest score is e-books (Average Mean= 3.8, Standard Deviation = .7), followed by e-newspapers (Average Mean= 3.7, Standard Deviation = .7), CD ROM databases (Average Mean= 3.5, Standard Deviation = .6), e-journals (Average Mean= 3.4, Standard Deviation = .7), HEC databases (Average Mean= 3.4, Standard Deviation = .7), Wikipedia (Average Mean= 3.2, Standard Deviation = .7), subject directories (Average Mean= 3.2, Standard Deviation = .5), e-dissertation /theses (Average Mean= 3.2, Standard Deviation = .6), case studies (Average Mean= 3.2, Standard Deviation = .6), and reports (Average Mean= 3.1, Standard Deviation = .6) respectively. The statistical data shows that medical students were utilized the electronic books for their studies and place the satisfaction level at rank first, followed by electronic Newspapers at 2nd and electronic Journal at 4th and HEC Digital Library Resources at 5th Position.

Similarly, The Overall, Average Mean score of satisfaction is (Average Mean= 3.4, Standard Deviation = .6) and reflects that users of the medical colleges' library are "satisfied" with the e-resource. The Researcher used the satisfaction

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scale the s*cale: 1= Highly dissatisfied, 2= Dissatisfied, 3= Neutral, 4= Satisfied, 5= Highly satisfied*

Table No. 05: ***Satisfaction with Electronic Information Resources (n=329)***

Satisfaction with E- Resources	Rank	Average Mean	Standard Deviation
Electronic Books	1	3.8	.7
Electronic Newspapers	2	3.7	.7
CD ROM Databases	3	3.5	.6
Electronic Journals	4	3.4	.7
HEC digital library Resources/databases	5	3.4	.6
Wikipedia	6	3.2	.7
Subject directories	7	3.2	.5
Electronic Dissertation/Theses	8	3.2	.5
Case Studies	9	3.2	.6
Reports	10	3.1	.6
Overall Average Mean Score of Satisfaction		**3.4**	**.6**

Challenges Faced by Medical Students Using the Electronic information Resources

In order to know about the barriers to e-resources, participants were asked to score different options with 1 indicating strong disagree and 5 strong agree and the results in Table 06 revealed that the facts got the highest value is insufficient of training about e-resources (Average Mean= 3.7, Standard Deviation =1.1), followed by low speed of internet/bandwidth (Average Mean= 3.5, Standard Deviation = 1.1), Loadshedding/energy crisis (Average Mean= 3.4, Standard Deviation = 1.2), Non-availability of full-text access to the majority of journals (Average Mean= 3.2, Standard Deviation = 1.3), lack of knowledge of e-resources (Average Mean= 3.2, Standard Deviation = 1.3), information overload (Average Mean= 3.1, Standard Deviation = .7), and inadequate it infrastructure in medical colleges (Average Mean= 3.1 Standard Deviation = 1.2) respectively. This statistical data show that

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medical students faced various challenges. Among these the medical students rank Insufficient training about the use of electronic information at top followed by Low speed of internet and Bandwidth at 2nd and so on. The overall Average Mean score of barriers (Average Mean= 3.3, Standard Deviation = 1.1) lies in the fourth value of the scale. It reflects that user of the medical colleges' library "agreed" with the barriers to e-resources in Punjab. The scholar used the scale for the problems being faced by the medical students. *Scale: 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree*

Table No. 06: ***Descriptive Statistics of Challenges Faced by Users (n=329)***

Barriers	Rank	Average Mean	Standard Deviation
Insufficient training about E- resources	1	3.7	1.1
Internet Speed/Bandwidth	2	3.5	1.1
Energy Crisis/ Loadshedding	3	3.4	1.2
Lack of non-availability of full text Articles	4	3.2	1.0
Lack of knowledge of electronic resources	5	3.2	1.0
Information burden	6	3.1	.7
Insufficient IT infrastructure in colleges	7	3.1	1.2
Overall Average Mean Score of the Barriers		**3.3**	**1.1**

Testing of Hypotheses

An independent sample t-test was applied to investigate the Average Mean variations of awareness, purpose, use, and barriers to e-resources with regard to gender-wise. The results of the five hypotheses are given in Table No. 07.

To test the Hypothesis H_1: There is no significant gender difference in users' awareness of e-resources (t =.5, p =.6>.05), This show that the t-test value is 0.5, which lies in the acceptance region so we accept the H_1.

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Hypothesis H_2: Results of purpose to e-resources (t = -1.1, P =.3>.05) show that there is no significant gender variation in the purpose of e-resources. Hypothesis H_3: Results of the use of e-resources (t = -.5, P = .6>.05) show that there is no significant gender variation in the use of e-resources. Hypothesis H_4: Results of the satisfaction to e-resources (t = -.2, P = .8>.05) show that there is no significant gender difference in the satisfaction of e-resources. Hypothesis H_5: Results of the barriers to e-resources (t = -.4, P = .7>.05) show that there is no significant gender-wise diversity in the barriers to e-resources.

Table No. 07: ***E-Resources Awareness, Usage, Satisfaction and Barriers based on Gender-wise (n=329)***

	Gender						
Variables	**Male 139 (42%)**		**Female 190 (58%)**		***t*-stats (df=327)**	**P-value**	**Results**
	Av. Mean	**SD**	**Av.Mean**	**SD**			
Awareness of E-Resources	2.5	1.0	2.5	1.0	0.5	0.6	H_1: Accepted
Purpose of E-Resources	1.7	0.2	1.7	0.2	-1.1	0.3	H_2: Accepted
Use of E-Resources	2.2	0.8	2.3	0.8	-0.5	0.6	H_3: Accepted
Satisfaction	3.3	0.5	3.4	0.5	-0.2	0.8	H_4: Accepted
Barriers of E-Resources	3.3	0.6	3.3	0.6	-0.4	0.7	H_5: Accepted

*$P< 0.05$

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Discussion

A closer examination of the results indicates that users of medical libraries in Punjab are "moderately aware" of e-resources, except for e-books. These findings align with the study by Habib et. al., (2022), which reported that medical college library users exhibit only slight awareness of medical e-resources. However, these results contrast with studies by Soni et. al., (2018), Yebowaah and Plockey (2017), and Singh and Gupta (2020), which found higher levels of awareness among library users regarding e-resources.

The study also reveals that most users access e-resources for various purposes, including writing books, social networking, preparing lectures, entertainment, research supervision, writing articles, and conducting research. These findings are consistent with the studies by Chanda (2021), Satyanarayana et al. (2018), and Joel (2020). However, despite the broad range of applications, the study indicates that users of medical college libraries "rarely" utilize e-resources. This aligns with findings by Yebowaah and Plockey (2017) and Habib et. al., (2022), which reported low e-resource utilization, but contrasts with Thanuskodi and Kumar (2017), and Pandian and Geetha (2018), who observed frequent e-resource use for academic purposes.

Regarding user satisfaction, the results indicate that medical college library users are "satisfied" with e-journals, CD-ROM databases, e-books, electronic newspapers, and HEC databases. These findings are consistent with studies conducted by Alabdulwahhab et. al., (2021), Maheswari and Aravind (2021), Kundu (2021), and Murithi et al. (2020), which concluded that a significant number of library users were content with the available e-resources.

However, the study also highlights several barriers to e-resource utilization. Users reported facing challenges such as a lack of training, low-speed internet, an energy crisis, limited access to full-text journal articles, and inadequate IT infrastructure. These findings align with studies by Bahader et. al., (2021), Habib

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et. al., (2022), Bahader (2022), and Lawal and Kannan (2020), which identified similar obstacles in university libraries in Pakistan, including poor internet connectivity, insufficient networked computers, and a general lack of knowledge about medical e-resources.

Additionally, the study found no statistically significant gender-based differences in awareness, usage, satisfaction, or barriers to e-resources. Since all significance values were greater than the p-value ($P > 0.05$), the null hypotheses H_1, H_2, H_3, H_4, and H_5 were accepted.

Overall, while medical college library users in Punjab demonstrate moderate awareness and satisfaction with e-resources, their usage remains low due to persistent infrastructural and accessibility challenges. Addressing these barriers through improved IT infrastructure, better internet services, and enhanced user training programs could significantly enhance e-resource utilization and academic productivity.

Conclusion

The primary role of medical college libraries is to provide users with the latest, comprehensive printed and electronic resources. Electronic resources are crucial for advancing research, education, and development in medical and health sciences. This study found that medical library users are **moderately aware** of e-resources and primarily use them for academic and professional purposes, including book writing, social networking, lecture preparation, entertainment, research, and learning. However, resources such as e-books, CD-ROM databases, electronic newspapers and Wikipedia are **rarely** used.

While users expressed overall **satisfaction** with e-resources, they faced several barriers, including a lack of training, slow internet speeds, energy shortages, limited full-text access to journals, and inadequate IT infrastructure. Notably, no significant gender-based differences were observed in awareness, usage, satisfaction, or barriers related to e-resources.

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These findings provide valuable insights for library professionals, enabling them to enhance digital library services and proactively address existing challenges. Additionally, this study contributes to the existing literature on e-resources in health sciences libraries and offers recommendations for promoting online services, digital libraries, and virtual learning environments, particularly in medical colleges in Pakistan's Punjab Multan.

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