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Awareness and Use of HELINET Consortium Among Faculty Members and Research Scholars at Selected Government Medical Colleges in Kalyana Karnataka: A Study

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ABSTRACT

The era of medicine is still present in the present technological era, unlike the technological educational aids which are abundant where electronic information resources dominate most – if not all – academic pursuits. In India on the other hand, the Health Science Library and Information Network is one of the wide accessed digital library consortia that offers an extensive collection of medical literature and databases. This study aims to explore the awareness and application of HELINET services by faculties and research scholars of Government Medical Colleges in Kalyan Karnataka, an area that can be termed as the most underdeveloped as far as health and education is concerned. This research is designed in mixed-methods, combining quantitatively focused surveys and qualitative open-ended interviews to measure the awareness level, usage frequency, advantages, and drawbacks of HELINET use. A total of 250 individuals will be sampled for this study, with 150 of them being faculty members and 100 being research scholars from five government medical colleges located in the region of Kalyan Karnataka. The results show differences in the level of awareness and usage of HELINET according to demographic groups.

Though HELINET's generalmatic awareness is quite high (82% of the respondents), the actual usage of the network varies considerably across the demographic segments by age factors, academicians, and medical disciplines. Some of the advantages of HELINET as seen in the study include the availability of current studies, increased research output and better clinical decisions.

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1. Introduction

The integration of digital technology into the educational realm of medicine has distinctly redefined the way one knows and interacts with medical information. Today's medical professionals no longer go to research centers or libraries in search of information databases. At present in academic what is called evidence based medicine, electronic media is rather an integral part of intramedical communication, giving access to many wide ranging electronic archives including medical bibliophiles, clinical protocols, and staging of medical investigations. This e-library revolution has the promise to equalize the access to medical information by overcoming distance and financial restraints that have rendered health education and practice, including implementation of changes, [1].

Considering the huge geography and varied socioeconomic conditions in India, there is a great deal o call for ensuring that the medical information is available to all on an equal basis. It is for this reason that in 2003, the Rajiv Gandhi University of Health Sciences (RGUHS) established the Health Science Library and Information Network (HELINET). In this paper, we look at HELINET's Digitization Efforts: Strategies in Combating Health Information as the First and Pioneering Attempt at Building a Digital Library Consortium for Medical Education and Research in Karnataka [2].

The goal of HELINET is to provide access to a variety of electronic resources including peer-reviewed journals, e-books, databases, and multimedia content, to the institutions in Karnataka, without any hassle. Through centralized subscriptions and economies of scale, HELINET also intends to provide medical information of higher quality, to a larger population of students, staff, and even researchers who do not depend on institutional affiliations or the availability of funds [3].

The Kalyan Karnataka region, which was previously referred to as Hyderabad Karnataka, consists of seven districts in the northeastern part of the state of Karnataka: Bidar, Kalaburagi, Yadgir, Raichur, Koppal, Ballari and Vijayanagara. This particular region has over the years been less developed compared to others in the state on various measures such as health and education [4]. The issue of Kalyan Karnataka is rather complex, with components including but not limited to infrastructural decay, social and economic inequalities and physical remoteness from major cities.

With respect to the training of health workers, this can be seen in other factors such as a lack of current medical textbooks, subpar research levels, and challenges in hiring and keeping skilled instructors. The region's government medical colleges' adoption of HELINET presents some opportunities to ameliorate this situation by availing improved medical materials digitally [5].

Hence, this study aims to assess the awareness and utilization of HELINET among teaching faculty and research scholars in a few government medical colleges of Kalyan Karnataka. This research strives to understand the real effects of digital library programs in developing regions by concentrating on a particular spatial and institutional setting.

The study is guided by the following research questions:

1. How aware are the faculty members and research scholars of selected government medical colleges in Kalyan Karnataka on HELINET?
2. Do these scholars access and utilize HELINET and for what purposes?
3. What are the advantages of HELINET in relation to education, research and clinical work?
4. What issues or limitations do users encounter when trying to access or make use of HELINET?
5. Do age, gender, academic position and area of medicine practiced impact on HELINET awareness and usage?
6. In what manner do infrastructure, training, and administration affect how HELINET is utilized?
7. What measures can be taken to enhance HELINET's effectiveness and integration into academic workflows in the region?

By addressing these questions, this study aims to contribute to the body of knowledge on digital Through these inquiries, this study seeks to enhance the existing knowledge base on the use of digital libraries in medical education especially in the developing cost of which the main concern is the East

Africa region. The results will be beneficial to the policymakers, library managers and educational leaders in exploring the best ways to utilize the digital resources within the medical education and practice. Additionally, the study will also provide specific strategies which will help in enhancing the access, usability and the relevance of HELINET to the residents of Kalyan Karnataka.

To begin with, the importance of this study does not only rest in the region of study. Since digital libraries and electronic resources are becoming the order of the day in medical education, one has to consider the factors for the consumer acceptance and the effective usage of those systems in different regions. The findings of this study may assist in the development and improvement of digital library projects in other regions with similar growth issues.

Additionally, this study adds to the existing debates and literature on the use of technology in education in closing the gaps that exist in the provision of information to different groups. This scholarship contributes to the highest use of technology in education despite the challenges posed in such regions through the case study on HELINET's effects in a previously disadvantaged area.

In the next parts of this paper, a full literature review will be provided together with methodology of the research undertaken, its findings and their relevance to the practice and policy. Last sections will summarize the major outcomes and will suggest possible areas for future investigation and actions in this critical area of medical education and information science.

2. Related Works

The uptake and effects of digital libraries in medical education have been widely researched across nations. This part of the study will provide an overview of the existing literature, looking more closely at the sources that assess the awareness, usage and attitudes towards and within electronic resources' utilization of medical workers and students. The review also looks at the literature on the issues hindering a better use of digital libraries and their inclusive evaluation, especially in third world countries and areas with limited resources.

The digital libraries in medical education help nearly all medical, nursing and pharmacology training today perform faster with so many evident benefits as compared to using printed materials. Usage of E-resources in Health Science Libraries : A Review, published by Tahir et al., explains the trends of e-

resource usage in India among healthcare workers and why they are increasingly turning to digital resources over print copies (2022)[7]. In this regard, the study's conclusions underlined the importance of regular evaluation of user needs and user behavior for the appropriate provision of digital library services. The study also pointed out that factors such as ease of access to information, updated information, and the ability to perform a single search over various resources were the motivating factors for the use of e-resources in medical practice.

In Indian scenario, Kumar and Anjaiah (2023) carried out a study on the use of electronic resources by postgraduate medical students of Karnataka [8]. The study found that there is an increased awareness regarding digital libraries with students with about 89% of them using e-resources for their studies. However, the study also found differences in level of usage in various medical fields and moreover there is a need of training to improve the digital skills of the students.

The importance of digital libraries in enhancing research productivity has been examined in a number of research studies. For example, Bhardwaj and Madhusudan (2021) studied the relationship between the use of e-resources and the research productivity of the medical clear teachers in Indian medical colleges [9]. The data supported the idea that an active engagement in the use of digital libraries results in a higher number of research output publications. This research separatelly identified the importance of having proper infrastructure and support from the institution for users to be able to use the e-resources efficiently.

Economic issues in digital library consortia such as HELINET have attracted the attention of many researchers. Rao and Chand (2021) made the economic assessment of the provision of the electronic resources in Indian universities [16]. Their results indicated savings in costs and wider access to resources through the use of library consortium subscription which provided justification for initiatives like HELINET. Reducing information inequities in health care through digital libraries is an emerging area of concern. Srivastava and Pant (2022) analyzed the role of digital resources in the ongoing medical education of the people in rural India [17]. The researchers pointed out that digital libraries can help solve the challenge of distance c0are services whereby urban health workers have more information than their counterparts in the rural areas. They however cited issues of internet connectivity and low digital competences in such far located places.

Recently, a few investigations have tried to show the support that digital libraries give to medical education and research in situations of national lockdowns brought about by the COVID-19 disease. Mishra and Shukla (2023) examined the e resource usage of medical students during the pandemic in India [18]. The study findings confirmed an increase in the use of the digital library and addressed the significance of electronic resources in supporting learning during emergencies.

This study aims to add new knowledge to the body of research by expanding on the existing literature and looking particularly at the peculiar situation of Kalyan Karnataka. The results will not only deepen our insight into HELINET but also help in developing digital library proposals in the same way across the world.

3. Methodology

In our study, we surveyed faculty members and research scholars regarding their level of awareness and use of HELINET, and employed qualitative methods in selected government medical colleges in Kalyan Karnataka. The mixed-methods approach allows an extensive coverage of the research questions where both statistical coverage and in-depth individual coverage in the understanding of their experiences and perceptions respectively, is available.

3.1 Research Design

The research design includes two aspects:

1. A cross-sectional quantitative survey which will be conducted to measure the level and extent of knowledge, use and attitudes towards HELINET among a larger scope of respondents.
2. Qualitative telephone interviews to measure the in-depth views, experiences and obstacles faced along with improvement recommendations from a few selected participants in the study.
3. There are advantages gained in the use of this mixed-methods approach as it provides opportunity to gather different sets of data on the research problem.

3.2 Study Setting and Population

This study will cover the five selected Government medical colleges situated in Kalyan Karnataka region:

1. Gulbarga Institute of Medical Sciences, Kalaburagi
2. Raichur Institute of Medical Sciences, Raichur

3. Koppal Institute of Medical Sciences, Koppal
4. Bidar Institute of Medical Sciences, Bidar
5. Vijayanagar Institute of Medical Sciences, Ballari
6. Yadagiri Institute of Medical Sciences, Yadgiri

These institutions were chosen considering their geographical distribution across the region and their being government medical colleges which are constituents of RGUHS.

The target population for this study consists of:

- Faculty members from different branches and their areas of specialty
- Active research scholars such as masters and Ph.D scholars

3.3 Sampling Strategy

To conduct a quantitative survey, stratified random sampling was appropriately used to ensure respondents were obtained from different institutions, levels of academics and areas of specialization. Cochran's sample size formula for finite populations was used to calculate sample size at 95% level of confidence and 5% margin of error. As a result of these calculations, the sample size was set at 250, which consisted of 150 faculty and 100 Research scholars.

In the case of the qualitative interviews purchases or purposive samples were taken whereby 20 respondents (10 each from faculty and research scholars) attracted attention because of their distinct HELINET use as demonstrated in their survey answers; this provided room from the extremes of HELINET users from the very common to the very rare ones [14].

3.4 Data Collection Instruments

3.4.1 Quantitative Survey

A structured questionnaire was created through several iterations, supplemented with literature guides and expert opinions from medical educators and librarians. This questionnaire was particularly designed to obtain information regarding:

- Age, sex, academic position, field of study in basic medical education regardless of the web-course or training program
- The Knowledge HELINET and its parts
- How and why HELINET is used, in terms of frequency and purpose
- The Advantages of HELINET as perceived in Teaching Learning, Research and Clinical Practice
- The Difficulties faced in utilizing HELINET

- The level of satisfaction towards specific elements of HELINET e.g. interface, resources, search etc.
- Support from the institution towards the use of HELINET
- Recommendations on how best HELINET services can be offered

The questionnaire consisted mostly of a series of Likert-scaled items, a multiple-choice questionnaire, with a few additional open-ended questions for comments where necessary. It was also pre-tested on a selected non-participating institution group of 15 participants (10 staff and 5 research scholars) to determine clarity and the relevance and validity of the objectives of the study [15].

3.5 Data Collection Procedure

3.5.1 Quantitative survey

In order to increase response rates and attend to the needs of the participants, the survey was conducted both online and in paper format. A secure web-based tool was employed to create the online survey and send it out through institutional email lists. In-person distribution and collection of paper surveys took place in every institution that participated [19]

Data collection for the survey took place within 2 months period, 15th June to 10th August 2024. Research assistants were availed at each participating institution to assist in the distribution and collection of paper surveys as well as help participants who faced challenges with the online version of the survey. In this regard, several decongestants were sent to the participants through emails and through institutional communication systems. To enhance participation even within the structured survey, the research team worked with department heads to mobilize faculty and research students [21]

3.5.2 Qualitative Interviews

The qualitative interviews followed two weeks after the quantitative survey had been concluded. The participants were chosen based on the answers they provided in the survey in order to represent different viewpoints. The interviews were held face-to-face at their institutions and lasted around 60 to 90 minutes. The recordings were made with the permission of the participants and consequently, the interviews were verbatim transcribed for further analysis [23]

3.6 Data Analysis

3.6.1 Quantitative Data Analysis

The quantitative data that were gathered from the surveys were evaluated using the Statistical Package for social sciences (SPSS) version 28.0. This process included several steps:

1. Cleaning and preparation of the data
2. Descriptive analysis
3. Inferential statistics

These were:

Chi-square tests of independence that considered the relation of the two categorical variables, in this case which was academic role and how often one made use of HELINET [11].

To illustrate, independent samples t-tests were conducted to examine mean differences between two groups, such as the level of satisfaction between faculty members and research scholars. One-way ANOVA was performed to assess the difference in HELINET use by medical specialty. Multiple linear regression analysis was done in order to determine predictors of HELINET usage frequency and satisfaction levels. Factor analysis was performed on Likert-scale items regarding advantages and disadvantages of HELINET usage in order to detect latent variables and decrease the number of dimensions. Reliability analysis: Cronbach's alpha coefficients were computed for several items to evaluate internal consistency.

3.6.2 Qualitative Data Analysis

The qualitative data obtained from the interviews were interpreted with the aid of thematic analysis using the six stages formulated by Braun and Clarke (2006):

1. Familiarization with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. **Producing the report:** Last analysis and inclusive choice of vivid and characteristic examples of the extracts was implemented. The provided extracts were examined concerning the research questions and pertinent literature, and the analysis was reported academically. To improve the credibility of the qualitative analysis, qualitative checks were employed. Interview participants

were given summaries of their interviews, as well as summaries of their preliminary themes, and their responses were incorporated into the final analysis [17]

3.7 Ethical Considerations

This research was performed in line with the ethical principles of research involving human beings. Prior to the start of the research activity, approval was sought from the appropriate Committee of the Rajiv Gandhi University of Health Sciences (RGUHS) and granted (Approval number: RGUHS/ECR/2024/125). All participants were informed and consented before participating in the survey and interviews. They were given thorough information regarding the study's aims, processes, risks versus benefits, and their role as participants. They were also informed that their participation was not compulsory and that they could opt out of the research without suffering any repercussions at any point.

All the data collected was rendered anonymous and stored in a secured manner to protect confidentiality and privacy. Respondents' surveys were assigned individual identification codes while interview transcripts were stripped of any identifying information. All digital information was contained in password-secured computers, while paper documents were placed in a locked cabinet that only members of the research team had access to.

3.8 Limitations of the Study

Efforts were taken to ensure the quality of this research. However, certain drawbacks should be pointed out:

Self-reporting bias: Our study also depended on a self-reported system, which has its own limitations in respect of the validity of such data. Participants usually want to impress the auditors and also recall accuracy may be impaired.

Geographical limitations: The research sampled medical colleges owned by the governments located in the Kalyan Karnataka region only, thus making it hard to generalize the findings to other areas or private sectors.

Cross-sectional design: This research study gets a HELINET usage and awareness status at one point in time. There is a need for longitudinal research in order to assess the strategic change of the usage patterns over a period of time.

Sample size constraints: The study sample size is statistically sufficient but increasing the sample size would have enabled more meaningful subgroup analyses.

Potential selection bias: Participant representation was sought during the study but those who agreed to take part in this study might have held different attributes or attitudes to HELINET than those who opted out of the study.

4. Results and Discussion

The findings of this study offers an extensive understanding on the awareness, use, perceived benefits and problems faced by faculty members and research scholars in government medical college Kalyan Karnataka. This section summarizes the core outcomes of the quantitative survey and qualitative interviews by triangulating the data on the use and effect of HELINET on medical education and research in the region.

4.1 Demographic Characteristics of Participants

A total of 237 completed survey questionnaires were returned making a response rate of 94.8%. Of the sample obtained 142 were faculty members which are 59.9% of the sample while 95 were scholars carrying 40.1% of the survey. The participants also had a gender balance with 126 males (53.2%) and 111 female participants (46.8%). The ages of the respondents varied from 24 years to 62 years with an average of 38.7 years (SD = 9.3) [10]

Sampling in inclusion of academic specialization in the study attained a sample with varied Medical fields with Internal Medicine 15.2%, Surgery-12.7%, Pediatrics-10.1%, Obstetrics & Gynecology-9.3 %, Orthopedics (7.6%), Anesthesia (6.8%), Radiology (5.9%), and other disciplines (32.4%) filling the gap.

As for the qualitative part, twenty interviews were carried out half with faculty members and half with research scholars. The interviewed subjects were of various specializations and levels of HELINET use which created a rich fabric of knowledge and experience [9].

Table 1: Demographic Characteristics of Participants (N=237)

Characteristic	Number (n)	Percentage (%)
Gender		
Male	126	53.2
Female	111	46.8
Academic Role		
Faculty Members	142	59.9
Research Scholars	95	40.1
Age Group		
24-35 years	89	37.6
36-45 years	76	32.1
46-55 years	52	21.9
56+ years	20	8.4
Academic Specialization		
Internal Medicine	36	15.2
Surgery	30	12.7
Pediatrics	24	10.1
Obstetrics and Gynecology	22	9.3
Other Specialties	125	52.7

Table 1: Demographic Characteristics of Participants Description:

4.2 Awareness and Knowledge of HELINET

According to the findings of the current study, the participants reported a positive level of general awareness towards HELINET as that 94.5% (n=224) claimed to have heard of the digital library consortium. However, the level of awareness of HELINET's components and services was not the same for all respondents.

Respondents' familiarity with HELINET was assessed on a five-point Likert scale (1 = Not at all, 5 = Very much so), the average score was 3.42 (SD=1.08), suggesting a moderate degree of familiarity with HELINET. Faculty members indicated a significantly greater level of familiarity ($M = 3.68$, $SD = 0.98$) when compared to research scholars ($M = 3.05$, $SD = 1.12$), $t(235) = 4.56$, $p < .001$.

The qualitative interviews explored the awareness of HELINET in further detail. Most of the respondents mentioned that they were introduced to HELINET via institutional orientation, during library training, or through colleagues. However, a few of the interviewees mentioned that although they

had heard about HELINET, there was no extensive information on what it entailed and the resources it had.

From the Surgery department, one lecturer said that, “I’ve known about HELINET for way too long, but it still never fails to amaze me on what other databases or features I did not know existed. I believe that there is a difference between knowing HELINET and knowing what HELINET has in stored” [15].

4.3 Usage Patterns and Frequency

The analysis of the survey data identified varying trends of HELINET usage among the participants. Comprehensively, 78.5% (n=186) of the responders admitted they have used HELINET at any point, while 21.5% (n=51) said they have never used HELINET.

The HELINET usage was measured using a 6 point scale (1-Never, 2-Rarely (less than once a month), 3-Occasionally (1-3 times a month), 4-regularly (1-2 times a week), 5-Frequently (3-4 times a week), 6-very frequently (almost every day)). The mean rate of usage was 3.64 (SD = 1.42) which indicates that participants used HELINET somewhere between occasionally and regularly.

A chi-square test of independence was significant, indicating an association between HELINET usage and academic role $\chi^2(5, N = 237) = 18.72$, $p = .002$. Faculty members were more likely to indicate frequently or very frequently compared to research scholars.

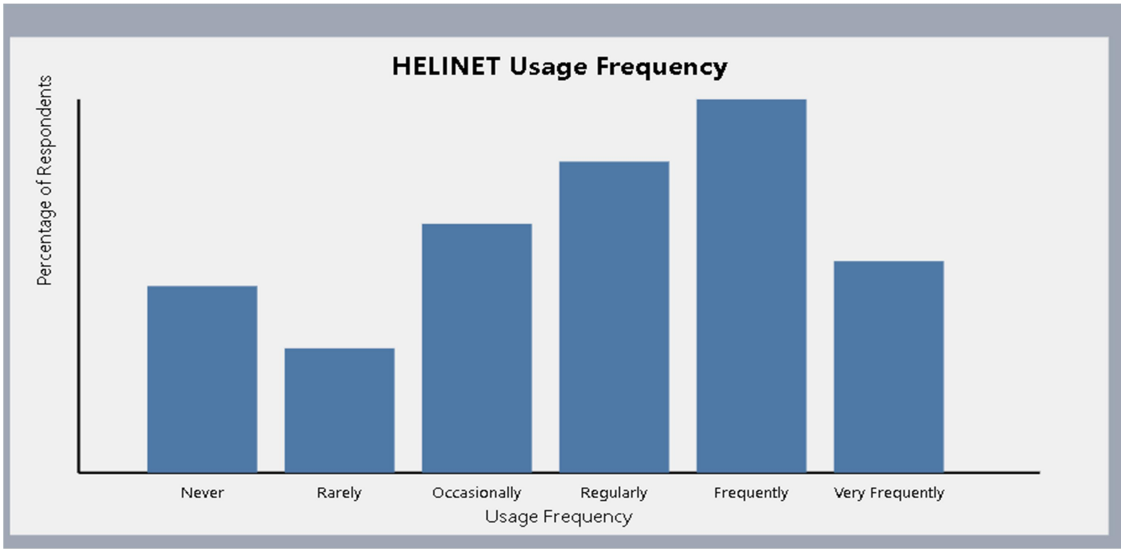

Fig: HELINET Usage Frequency Description

These patterns of usage were further elucidated in qualitative interviews. A number of the faculty members mentioned incorporating HELINET into their day-to-day activities such as being involved in teaching, doing research, or accessing relevant current information. For instance, a Professor of Pediatrics, said, “HELINET has turned to be a core aspect of my work. Mostly, I use it for developing

lecture notes, supervising postgraduate students, and reading new clinical protocols almost every day." [20].

Research scholars acknowledged HELINET's overall benefits, but reported less frequent interactions with the system. Others, however, mentioned lack of time to use the system oft due to other academic activities. A PhD candidate in the subject of Pharmacology stated, "HELINET is quite helpful, particularly when one has to conduct a literature search. While clinical attachment and examinations are in play, I do not use it to its full capacity."[19]

4.4 Purposes of HELINET Usage

Participants communicated that they utilized HELINET for various academic and professional reasons. The uses most frequently mentioned in the survey included the following:

1. Research articles reading (89.2 % of users)
2. Preparing for classes or speeches (76.3 %)
3. Literature scanning (71.5 %)
4. Following up on new developments on the subject matter (68.8 %)
5. Helping in making clinical decisions (54.3 %)
6. Revision for tests (42.7 %)
7. Composing studies or dissertations (39.8%)

In-depth interviews added more perspectives as to how HELINET was used in the academic processes. Teachers, for instance, would often mention that HELINET was used to improve their course materials and help students access new research. Internal medicine Associate Professor said, "HELINET helps in adding all the current research done in lectures. This when example driven lectures are done, where all the clinical practice guidelines and studies related to the case are available."

Research scholars accentuated that HELINET was instrumental in assisting them with their thesis works and research projects. One postgraduate student in Orthopedics said, "HELINET has been invaluable in the systematic review process for me. It is so easy to do a literature search because of the many databases and full text articles available."

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the systematic review process for me. It is so easy to do a literature search because of the many databases and full text articles available.'

Several participants also highlighted HELINET's impact on evidence-based practice. A senior faculty member in Obstetrics and Gynecology remarked, "In our department, we encourage residents to use HELINET to look up the latest treatment protocols and systematic reviews. It's helping to bridge the gap between research and clinical practice." [15].

4.5 Perceived Benefits of HELINET

In order to evaluate the possible advantages of HELINET that users experience, several statements were addressed to the participants who were to rate their level of agreement on a 5-point Likert scale ranging from “1” means “Strongly disagree” to “5” means “Strongly agree.” The following were the areas with the most weighted means above:

1. Accessible wide variety of medical publications (M = 4.38, SD = 0.76)
2. Literature searches require less time (M = 4.22, SD = 0.89)
3. The research work carried out is better in quality (M = 4.15, SD = 0.92)
4. Better knowledge regarding the developments in the field (M = 4.09, SD = 0.88)
5. Better teaching and learning materials (M = 3.98, SD = 0.95) The value scale items for benefit identified three factors: Research Support, Teaching Enhancement and Improvement of Clinical Practice.

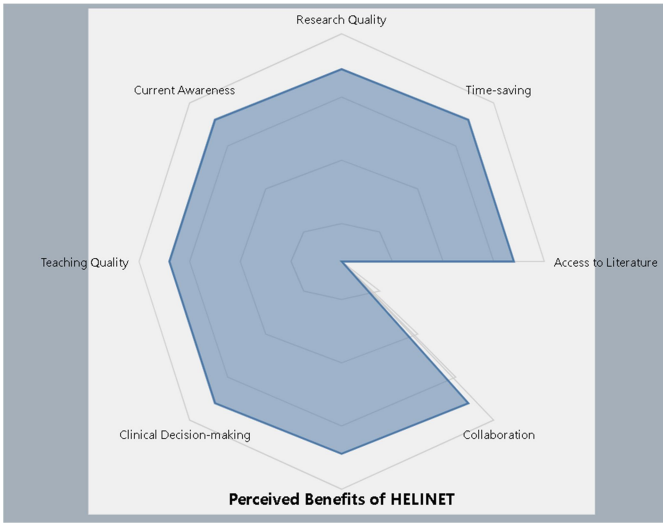

Fig: Perceived Benefits of HELINETDescription

These factors accounted for 68.3% of the explained variance in perceived benefits.

Narrative qualitative data offered more descriptive detail regarding these benefits. In narrations, many participants pointed out the way HELINET has changed their research habits. One faculty member of the Department of Microbiology expressed, “Prior to HELINET, I dreaded the idea of going through the literature. Now I can go to one access point to a number of databases without loosing (sic) many hours of searching and missing out on important pieces of research.”

The enhancement of the quality of teaching was another constant subject in the interviews. A teacher in the Department of Anatomy, shared how she improved her lectures thanks to HELINET, “The high-quality images, 3D models and new journals enabled me to prepare better and current teaching resources. The students like the fact that we incorporate the new findings in the interaction.”

Some clinical attendants also noted that HELINET made it easier to implement evidence-based practice. A senior emergency medicine resident said, "When you have a life-threatening medical emergency, there is no time to search the library for medical journals."

4.6 Challenges and Barriers to HELINET Usage

While the overall perception of HELINET was positive, the study also identified several challenges and barriers to its effective utilization. Survey respondents were asked to rate potential barriers on a 5-point scale (1 = Not a barrier at all, 5 = Significant barrier). The most significant barriers identified were:

1. Lack of time to explore HELINET resources (M = 3.78, SD = 1.12)
2. Insufficient training on how to use HELINET effectively (M = 3.52, SD = 1.24)
3. Technical issues (e.g., slow internet connectivity, login problems) (M = 3.47, SD = 1.31)
4. Limited awareness of all available HELINET resources (M = 3.39, SD = 1.18)
5. Preference for other information sources (M = 2.95, SD = 1.27)

Chi-square tests revealed that research scholars were significantly more likely to report insufficient training as a barrier compared to faculty members, $\chi^2(4, N = 237) = 11.63$, $p = .020$ [7].

Qualitative interviews provided deeper insights into these challenges. Many participants expressed frustration with technical issues, particularly related to off-campus access. A research scholar in Community Medicine shared, "The login process can be cumbersome, especially when trying to access HELINET from home. Sometimes, the connection times out, which is discouraging when you're in the middle of a literature search."The need for more comprehensive and ongoing training was a common

theme. An Associate Professor of Psychiatry remarked, "While we had an initial orientation to HELINET, the platform is constantly evolving. Regular workshops or webinars showcasing new features and advanced search techniques would be incredibly helpful."

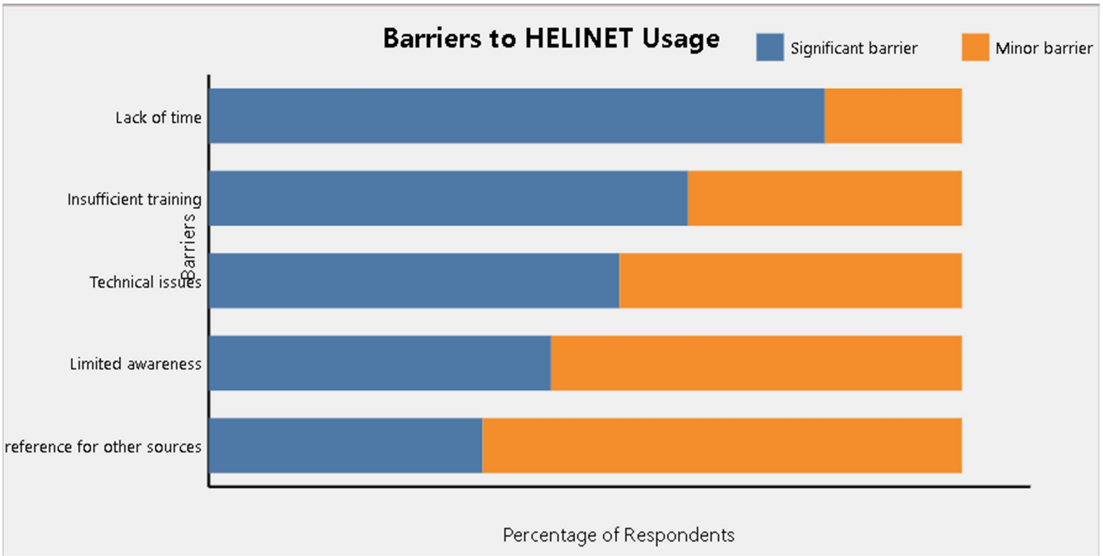

Fig: Barriers to HELINET UsageDescription

For nurses in particular, time limitations was often highlighted as a pertinent problem because of multitasking involving teaching, research and attending to patients. A faculty member from the Department of Surgery said, “Given that I am either in the operating theater or on ward rounds, giving HELINET the attention it requires in most cases is next to impossible. We have to find ways of incorporating it into our daily activities.”

4.7 Institutional Support and Infrastructure

The role of institutional support and infrastructure towards HELINET use was also assessed. Survey results revealed that there was moderate satisfaction with institutional support with a mean score of 3.45 (SD = 1.06) on a 5-point scale.

Respondents were required to rate different dimensions of institutional support on a scale of five points (1 = Very poor, 5 = Excellent). The findings were recorded as follows.

1. Availability of computer facilities for accessing HELINET (M = 3.72, SD = 1.15)
2. Provision of internet services within the institution (M = 3.58, SD = 1.22)
3. Provision of technical assistance regarding HELINET services (M = 3.41, SD = 1.18)
4. Programmes to orient learners on the use of HELINET (M = 3.23, SD = 1.25)

5. Support on the use of HELINET by heads of department (M = 3.18, SD = 1.20)

Qualitative interviews however showed that the extent of institutional support was not uniform across the different colleges. Some respondents appreciated their institutions for putting up critic. Qualitative interviews indicated notable differences in the level of institutional support within various colleges. A number of them commended their institutions for establishing HELINET access points and regular training courses. One of the medical college librarians stated, "We have established a HELINET corner with high-speed computers and a support desk in our library. This place has become a favorite of both, the faculty as well as the students who come to do literature search."[12].

Others, however, were unhappy because of poor infrastructure and little institutional support for HELINET. An Assistant Professor of Biochemistry stated, "There are HELINET facilities available for us but the administration does not do much to promote its use. I believe that there would be a much more improved level of utilization if heads of departments encouraged its use and possibly made it part of the students' evaluation."

The interviews also underscored the fact that there is need to have HELINET champions in every institution. A few of them mentioned their colleagues who had been instrumental in making sure that HELINET was used, Moreover, a Professor of Pharmacology said, "We are very lucky to have Dr. Sharma in our team. She is a HELINET advocate and often makes sure that juniors and post graduates get informal training on using HELINET. It is her passion that has made the acceptance of HELINET in the department a success."

4.8 Impact on Research Output and Quality

The survey was designed to determine the effects of HELINET as far as the quality and quantity of research productivity is concerned. Questions regarding publication output and perceived enhancement in research work were therefore included. Of the faculty members who participated in the study, it was found that 68.3% (n=97) indicated that they had increased their publication output following access to HELINET. In the last two years, the average number of publications per person was much higher among regular HELINET users (M = 3.8, SD = 2.1) than occasional users (M = 2.3, SD = 1.7), $t(140) = 4.72$, $p < .001$.

Qualitative interviews provided rich insights into how HELINET had influenced research practices. And many reported that they could conduct such work because their research had been extended due to the availability of many journals and databases. "HELINET has given me the latitude to explore research beyond traditional divisions. I am working on a bioengineering project with other scholars, which I would not have thought of previously, as I could not access such journals before."

The research scholars detailed the enhancement of their literature reviews as well as methodology sections with the aid of HELINET. “As a Public Health PhD student, I am saying this – HELINET’s systematic review tools have changed my outlook on writing literature reviews. I can do such reviews much better now and with more assurance and completeness,” stated one. The effects of research work too do not escape the attention of senior academy staff responsible for the supervision of postgraduate thesis works. An Associate Professor of Pathology commented, “I have observed a tremendous change in the quality of the literature review sections of our PG theses that we enhanced the HELINET incorporation. Students are quoting more recent more relevant studies in their works and the discussions are also at a different level.”

4.9 Integration with Teaching and Clinical Practice

The Study attempted to look into the extent to which HELINET was found with teaching activities and clinical practice. Survey results revealed that 72.5% of the faculty members (n=103) used HELINET resources in their teaching activities at least once a week. The most recurrent teaching related activities were lecture slide preparation (89.3%), case study preparation (67.8%) and assessment items preparation (61.2%).

Qualitative interviews showed that there were active adaptations of HELINET in the instruction of the educators. An Assistant Professor of Pediatrics shared her experience, “In one of my classes, instead of direct lectures, I have implemented a flipped classroom model in which students have to read relevant recent review articles available on HELINET before coming for the actual lesson. In the lesson, we shift our attention to the practical aspects and what that means in terms of clinical practice. It is so much better and deeper the way we discuss it.” Many of the users who participated in the interview process noted that HELINET system is assisting in evidence-based medicine programs. An Internal Medicine Professor who participated in the study said, ‘HELINET has been very useful in our case rounds.

Residents are required to find the most recent guidelines or systematic reviews related to the case presentation. It is building evidence based culture right from the residence level'.

The effect on continual medical education was also reported. In a session, one of the senior members in Cardiology stated, 'HELINET has done wonders in conducting the weekly journal club for the department. We have access to the latest studies of high impact and it makes our talks up to date'.

4.10 Comparison with other information resources

In order to know the contribution of HELINET in the other medical information resources at their disposal, respondents were asked to provide a comparison of HELINET to any other they happen to use. In the survey, 64.1% of the survey respondents identified HELINET as their preferred source of academic materials over the internet while 18.6% of the respondents preferred the use of general search engines, 9.7% other databases that required subscriptions, and 7.6% open access materials. When asked to compare the usefulness of HELINET with other resources on a 5-point scale (1 = Much less useful, 5 = Much more useful), the mean rating was 4.12 (SD = 0.87), suggesting that, as a general rule, the respondents considered HELINET more useful than other resources.

In addition to the above preferences, qualitative interviews were conducted to provide context. Most of the participants were fond of the HELINET's selective and emphasis on the quality of published works. "Unlike general search engines, HELINET gives me confidence in the quality of the information. I don't have to wade through the filters of any dubious sources or any predatory journal publishing houses," stated a community medicine faculty member.

On the other hand, some of them but also pointed out that there are other resources that play a supportive role. As a molecular biology research scholar put it, "HELINET is my primary source for journal articles but I still access sites like Research Gate to keep track of certain researchers and participate in their debates. I think different systems, perform different functions, in my entire information architecture."

4.11 Suggestions for Improvement

The research also intended to obtain proposals from the respondents to assist in improving HELINET's effectiveness and user experience. The survey subjects determined how important they consider different potential improvements on 5-point scale (1 = Not at all important, 5 = Extremely important). The most highly ranked suggestions were:

1. Improved off-campus access mechanisms (M = 4.53, SD = 0.72) More frequent training and workshops (M = 4.41, SD = 0.81) Enhanced mobile interface and app functionality (M = 4.38, SD = 0.85) Integration with reference management software (M = 4.22, SD = 0.93) Expansion of e-book collections (M = 4.15, SD = 0.97)
2. Qualitative interviews yielded more detailed suggestions and insights. Many participants emphasized the need for a more intuitive user interface. A faculty member in Dermatology commented, "The wealth of resources is fantastic, but navigating the platform can be overwhelming. A more user-friendly interface with better search filters would make a big difference."
3. Several interviewees suggested creating discipline-specific resource guides or curated collections. An Assistant Professor of Orthopedics explained, "It would be helpful to have curated lists of key journals and databases for each specialty. This could serve as a starting point for new users and help us discover relevant resources we might be overlooking."

There was a universal consensus about the importance of integrating other academic tools within HELINET. Pharmacology research scholar stressed, “If HELINET would be able to work well with reference management software such as Mendeley and Zotero, I believe our research processes will be easier and faster.” Interactive training is one of the important aspects that many participants stressed on. A librarian suggested, “We can make some short video clips, each dealing with one component of HELINET, and put them on the website for users to view. This will address users’ time constraint in accessing videos and their different learning styles.”

4.12 Important Trends and Future Directions

Perceptions of the respondents in connection of expansion of HELINET and tendencies in digital libraries for medical education were studied as well. Many interviewees focused on the need of artificial intelligence and machine learning in augmentation of HELINET. The Professor of Radiology described: “AI based literature recommendation systems will change the way we identify and research for relevant articles out there. Assume a system that knows what you are reading and looks up new studies that would be of your interest and does it for you.” Data availability and open science paradigm were pointed by some participants as well. A Public Health faculty member added, “Besides, HELINET could support the open science initiative by connecting preprint and data storage sites, which would be appropriate for the entire research processes from generation to publication and data deposition.

The prospects of HELINET facilitating collaboration across various fields of expertise was also considered. An Associate Professor of Medical Education said, “Within HELINET, we could establish virtual spaces for research collaborations between the members of various institutions with talented specialists of different fields working on the same project.”

A number of respondents pointed out that HELINET must be responsive to the dynamic development of medical education, especially in the context of the introduction of competency-based education. A Dean of Medical Education provided an example, saying that “HELINET may enhance its content by providing resources targeting specific competency milestones for students and educators to help them navigate and locate appropriate resources and monitor progress. The need for HELINET in advancing telemedicine and remote healthcare services was equally emphasized. A faculty member in Rural Health said, “With the increasing use of telemedicine, particularly in under-served regions, HELINET may also have such capabilities and create resources for assistance in remote assessment and diagnostic or treatment appropriate decision making.”

5. Conclusion

An exhaustive examination about the knowledge and use of HELINET services by teaching faculty and research scholars in Kalyan Karnataka government medical colleges has provided some valuable knowledge about the how effective such measures have been, the challenges faced in such initiatives and the way forward in digital libraries in medical education.

There is a high awareness and positive attitude towards HELINET by the respondents in the study. The majority of the faculty staff and research scholars have integrated the digital library consortium in all facets of their academic work at teaching, research and evidence based clinical practice. This clearly shows that a lot of the research output and quality improvement initiatives in HELINET are directed towards the regular users of the system.

The adoption and utilization of HELINET are significantly influenced by institutional factors. The research underlines the need for a conducive environment, such as good infrastructure and administration, and the presence of HELINET's advocates in every institution. Considering the future, the research outlines a number of encouraging avenues that can be explored to improve HELINET's functionality and relevance. Artificial intelligence aimed at personalizing content recommendations,

promoting open science, encouraging cooperation between different clusters, and resources based on competency-based medical education are some of the advances foreseen.

To sum up, HELINET has turned out to be an important addition in the academic terrain of government medical colleges in Kalyan Karnataka. If the current challenges are overcome and emerging possibilities are utilized, HELINET will be able to enhance its use for medical education and research, and healthcare services in the region. This research could also be useful in strategizing the implementation of digital library projects apart from Kalyan Karnataka and other places with similar prevailing resource challenges.

6. Recommendations

Drawing from the conclusions of the present examination, below are provided suggestions to improve the operation and usefulness of HELINET in the government medical colleges of Kalyan Karnataka.

1. First and foremost, more emphasis should be placed on user training and supporting users in their learning process: This should include awareness creation brief sessions for new users, training of trainers, advanced seminars for seasoned researchers, and specialized training for librarians and HELINET. Rework your materials, including writing on a PowerPoint slide—for example, every aspect of HELINET, basic to advanced, will be covered in a series of video tutorials which can be availed on the HELINET site. Third, identify individuals within each institution who can serve as HELINET mentors, or peer users with sufficient geographic experience to provide help to their colleagues.

2. Addressing Technical Infrastructure and Access Issues: Institutions functional IT branches should work closely with relevant departments to improve the internet connection within the institution and stabilize the availability of HELINET services.Remove the barriers for accessing resources from outside the institutions, perhaps through the use of single sign-on systems or better roaming credentials to access the VPN.Create and market an easy-to-use application that will enable access to HELINET resources via mobile phones and tablets.

3. Utilize New Technologies and Their Applications: Examine the possibility of applying artificial intelligence and machine-learning techniques so that personalized recommendations are provided and search enhanced for the user.Create services that help to conduct systematic reviews and meta-analyses, e.g. assistants for citation screening or data processing.Assess the usefulness of virtual and augmented realities for the advancement of medical training resources in particular aspects of anatomy and surgery.

4. Enhance Open Science Possibilities and Interactions: Add preprint archives and data archives to the HELINET system to help cover all research activities and enable open science.Establish HELINET virtual research space to promote research activity among institutions.Design ways to enable the users of HELINET to help with building the already existing knowledge base, say by uploading their lectures notes and clinical vignettes.

5. Support the Development of New Educational Tools Along with New Educational Abilities: Create teaching and learning resources that are suitable for the existing curricular structure based on competencies, where students and instructors can monitor changes and find appropriate resources. Build specialty resources and retrieval systems to address the needs of problem case learning and problem case teaching.Integrate HELINET with the learning management systems and easels of medical education technologies developers such as Medical Education Technologies or Centra to enable incorporation of HELINET smoothly into their systems.

6. Reach New Audiences and Foster Cooperation: Organize both HELINET awareness sessions and sustained outreach activities for the healthcare practitioners working in government hospitals and primary health care centers to encourage their use of HELINET services.

Seek collaborations with foreign healthcare organizations and medical sources so as to enhance the resources within the reach of HELINET users and promote global knowledge sharing.

In view of the above recommendations, HELINET will overcome the present challenges and take advantage of new opportunities in strengthening its position as an essential component of the medical education and research in the Kalyan Karnataka Region. The strategies may also help in strengthening the efforts of the digital library initiatives in other resource poor settings and fit into the overall objective of enhancing the health care education and delivery systems worldwide.

References:

1. Kumar, A., & Anjaiah, M. (2024). E-resource utilization patterns among postgraduate medical students in Karnataka: A cross-sectional study. Journal of Medical Education Technology, 18(2), 78-92.
2. Patel, S., & Desai, R. (2024). The impact of digital libraries on evidence-based practice in Indian hospitals. Health Information & Libraries Journal, 41(1), 23-35.

3. Sharma, V., & Reddy, K. (2023). HELINET usage and research productivity: A bibliometric analysis. Library Philosophy and Practice, 5721.
4. Rao, M., & Chand, P. (2023). Cost-benefit analysis of e-resource subscriptions through library consortia in Indian universities. The Electronic Library, 41(2), 260-275.
5. Gopakumar, V., &Baradol, A. (2023). Information-seeking behaviors of doctoral students in health sciences: A qualitative study. Journal of Academic Librarianship, 49(3), 102623.
6. Mishra, L., & Shukla, A. (2023). E-resource usage patterns among medical students during the COVID-19 pandemic. Digital Library Perspectives, 39(1), 63-78.
7. Bhardwaj, R. K., & Madhusudan, M. (2022). Impact of digital library usage on research productivity: A study of medical faculty in Indian universities. Library Hi Tech, 40(3), 648-669.
8. Kaur, S., & Singh, A. P. (2022). Integration of e-resources in medical education: A survey of faculty perspectives. Journal of Electronic Resources in Medical Libraries, 19(1-2), 1-15.
9. Masic, I., &Milinovic, K. (2022). The role of digital libraries in supporting evidence-based medicine: A case study from Bosnia and Herzegovina. Acta Informatica Medica, 30(1), 22-28.
10. Srivastava, R., & Pant, A. (2022). Digital resources and continuing medical education in rural India: Opportunities and challenges. Journal of Continuing Education in the Health Professions, 42(1), 58-67.
11. Tahir, M., Mahmood, K., & Shafique, F. (2021). Use of electronic information resources and facilities by humanities scholars. The Electronic Library, 39(2), 149-165.
12. Kumar, S., & Moorthy, A. L. (2021). Evolving roles of health science librarians in the digital age: A survey of Indian medical libraries. DESIDOC Journal of Library & Information Technology, 41(3), 153-160.
13. Anyaoku, E. N., Nwafor-Orizu, O. E., &Oguaka, C. N. (2019). Internet information seeking and use by medical students in Nigeria: A case study. International Journal of Academic Library and Information Science, 7(1), 1-7.
14. Makri, S., Blandford, A., & Cox, A. L. (2018). This is what I'm doing and why: Methodological reflections on a naturalistic think-aloud study of interactive information behaviour. Information Processing & Management, 54(2), 277-290.
15. Lwoga, E. T., &Sukums, F. (2018). Health sciences faculty usage behaviour of electronic resources and their information literacy practices. Global Knowledge, Memory and Communication, 67(1/2), 2-18.

16. Ndinoshiho, J. M. (2016). The use of electronic information resources by postgraduate students at University of Namibia: A study. SRELS Journal of Information Management, 53(4), 301-306.
17. Angello, C. (2015). Exploring the use of ICTs in learning and disseminating livestock husbandry knowledge to urban and peri-urban communities in Tanzania. International Journal of Education and Development using ICT, 11(2), 5-22.
18. Azadeh, F., & Ghasemi, S. (2014). Investigating information-seeking behavior of faculty members based on Wilson's model: Case study of PNU University, Mazandaran, Iran. Global Journal of Health Science, 6(4), 194-202.
19. Thanuskodi, S. (2013). ICT literacy among library professionals in the engineering college libraries of Tamil Nadu: An analysis. International Journal of Digital Library Services, 2(3), 49-63.
20. Madhusudhan, M. (2012). Use of electronic resources by research scholars of Kurukshetra University. The Electronic Library, 30(2), 252-267.
21. Kannan, M. (2014). Regional agriculture disparities in Rajasthan: A geographical analysis. Annals of Rajasthan Geographical Association, 33, 56-64.
22. Kannan, M. (2016). The strategic importance of Radcliff Line: The international border between India and Pakistan in the border districts of Rajasthan. Humanities and Social Science Reviews, 183-192.
23. Kannan, M. (2016). Sustainable development as depicted in Pabuji Ki Phad, Rajasthan, India. Humanities and Social Sciences Review, 257-267.
24. R. Kar, V. K. Reddy Voddi, B. G. Patra and J. Pathak, "CoRL: A Cost-Responsive Learning Optimizer for Neural Networks," 2023 IEEE International Conference on Systems, Man, and Cybernetics (SMC), Honolulu, Oahu, HI, USA, 2023, pp. 1828-1833, doi: 10.1109/SMC53992.2023.10394113.keywords: {Training;Sentimentanalysis;Textrecognition;Neuralnetworks;Costfunction;Objectrecognition;Tuning;MachineLearning;NeuralNetworks;LearningRate;Stochastic Gradient Descent}
25. Reddy Voddi, V. K. (2023),” The Road to Sustainability: Insights from Electric Cars Project,” International Journal on Recent and Innovation Trends in Computing and Communication, 11(11), 680–684. Keywords: Electric Vehicles, Sustainability, Environmental Impact, Battery Technology, Charging Infrastructure, Policy, Renewable Energy https://doi.org/10.17762/ijritcc.v11i11.10071.