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Digital Infrastructure and Institutional Capacity in Government Medical College Libraries of Madhya Pradesh

A descriptive secondary analysis of thirteen surveyed institutions

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Abstract

Background: Digital medical libraries require coordinated investment in connectivity, automation, electronic collections, professional support and user education. Institutional provision may remain uneven despite widespread installation of basic technology.

Objective: To describe digital infrastructure, selected services, staffing and training provision across thirteen surveyed government medical college libraries in Madhya Pradesh, and to identify gaps requiring institutional verification.

Methods: A descriptive secondary analysis was conducted using college-level tables from a 2026 doctoral thesis. The institution was the unit of analysis (N = 13). Counts and percentages were recalculated from named college rows. Conflicting indicators were retained as separate measures; no composite readiness score, inferential test or causal analysis was undertaken.

Results: Campus local area networking was reported by all thirteen libraries. Nine (69.2%) reported an e-library, comprising 370 listed terminals, while eight (61.5%) were described as computerized and six (46.2%) as having a digital library. Five (38.5%) reported automation. E-Granthalaya was named by ten (76.9%), although a separate generic software item was positive for only four (30.8%). Seven (53.8%) reported e-journal subscriptions in the college-level subscription schedule. Orientation was reported by eight (61.5%), and six (46.2%) listed a cataloguer. No institution reported an established institutional repository. Conflicts in software, automation, database and e-journal indicators restricted interpretation of operational access.

Conclusion: The surveyed libraries had a common networking foundation but uneven digital services and professional capacity. Priorities include verification of operational access, supported automation, targeted training and a shared repository framework. These findings describe reported provision in the surveyed institutions rather than verified statewide performance.

Keywords: medical college libraries; digital infrastructure; library automation; institutional capacity; electronic resources; information literacy; Madhya Pradesh

1 Introduction

Medical college libraries connect learners and faculty with the literature needed for education, research and clinical enquiry. Their institutional capacity depends on more than collection size. A network connection, a software installation and a journal subscription address different parts of the information pathway. Effective provision requires reliable access, searchable records, suitable collections, skilled mediation and support for users.

Evidence from a multisite study of health professionals associated library and information services with perceived contributions to patient care, illustrating why evaluation should extend beyond holdings [1]. Such findings do not establish that a particular installation improves outcomes in a different setting. They do, however, justify examining whether the institutional components necessary for useful services are present.

Digital development is especially relevant when public medical education spans institutions with different histories and resources. In this setting, a college-level inventory can reveal gaps that user satisfaction alone cannot explain. It can also expose inconsistent terminology: computerized library, digital library, e-library and automated library may be used interchangeably even when they refer to different functions.

The parent doctoral study examined library resources and services in government medical colleges of Madhya Pradesh [2]. Two companion manuscripts from the same study focus on users in Ratlam and in Bhopal–Vidisha. This paper addresses a different question: what institutional infrastructure and professional support were reported across the thirteen surveyed libraries? It retains the full institutional sample and does not repeat the companion papers' user-satisfaction comparisons.

2 Objectives

The objectives were to describe networking, computerization, automation, software and e-library provision; examine selected electronic-resource and service indicators; document staffing, staff development and user orientation; and identify data inconsistencies that affect interpretation and future service planning.

3 Methods

3.1 Design and source

This was a descriptive secondary analysis of institutional aggregate tables in the doctoral thesis Use and Impact of Library Resources and Services in Government Medical College Libraries of Madhya Pradesh, dated 2026 [2]. The parent study describes structured questionnaires for library personnel and users, supplemented by interviews, observation and discussion. The present paper used the institutional schedules only. It did not reanalyse individual user questionnaires or undertake new fieldwork.

3.2 Institutions and unit of analysis

The thirteen institutions were located in Indore, Jabalpur, Gwalior, Bhopal, Rewa, Sagar, Vidisha, Ratlam, Shivpuri, Chhindwara, Khandwa, Shahdol and Datia. Each named college contributed one institutional record. Consequently, N = 13 denotes libraries, not library personnel or students. The colleges constitute the surveyed set; this analysis does not assume that they represent all government medical colleges operating in Madhya Pradesh in 2026.

3.3 Variables and extraction

Variables included campus LAN, computerized-library and digital-library status, automated status, named software, e-library terminals, e-journal subscription, reported MEDLARS/MEDLINE provision, institutional repositories, staff categories, training and selected services. Values were transcribed from college-level rows. The source's printed table numbering is inconsistent in places; reproducible extraction is therefore anchored to table headings and college names rather than numbering alone.

Binary entries were retained as reported. A named software package was not treated as evidence of complete automation. E-library terminals were kept separate from the general computer inventory because the schedules did not establish whether equipment overlapped. A dash in the Chhindwara terminal field was treated as unquantified, while its e-library status remained no. No missing or contradictory entry was silently replaced.

3.4 Analysis and quality checks

Percentages were calculated as the number of positive institutional rows divided by thirteen and rounded to one decimal place. Terminal totals were summed only across positive e-library entries with numerical counts. Staffing ranges and category counts were recalculated from named rows. Source grand totals were checked before use. No significance testing was performed because the purpose was an institutional description and the survey did not provide a probability-based state sample or adequately harmonized operational measures.

Cross-table disagreement was reported explicitly. In particular, broad resource availability, formal subscription and delivery of an ICT service were not collapsed into one indicator. A composite digital-readiness score was avoided because its inputs would require common definitions and external validation. Survey dates and original approval documentation are not established by the extracted institutional tables; the thesis date is not used as the fieldwork date.

3.5 Ethics and relationship to other reports

The analysis used institutional aggregate information without individual identifiers. Ethics approval or exemption and consent arrangements for the parent study require confirmation from the original university records before journal submission. The thesis is cited as the data source [2]. Related manuscripts from the same study should be disclosed to the editor, with their publication status and bibliographic details supplied by the authors.

4 Results

4.1 Connectivity and digital provision

All thirteen colleges reported campus LAN. Positive e-library status was recorded for nine institutions, with eight listing forty terminals and Jabalpur listing fifty, giving 370 listed terminals. Eight colleges were described as computerized, six as having a digital library, and five as automated. These measures showed different patterns and cannot be interpreted as successive validated stages of maturity.

Table 1 Reported institutional digital provision

Indicator	Libraries n/N	Percent
Campus LAN	13/13	100.0
E-library	9/13	69.2
Computerized library	8/13	61.5
Digital library	6/13	46.2
Automated library	5/13	38.5
E-Granthalaya named in software schedule	10/13	76.9
Generic library software item positive	4/13	30.8
E-journal subscription in college schedule	7/13	53.8
MEDLARS/MEDLINE reported	6/13	46.2
Institutional repository established	0/13	0.0

Source: College-level institutional tables in the parent thesis [2]. LAN denotes local area network. Indicators retain their original questionnaire labels and are not interchangeable.

Table 2 College-level automation and access indicators

College	Auto	E-G	E-library terminals	E-journal subscription
MGM Indore	Yes	Yes	40	Yes
NSCB Jabalpur	No	Yes	50	Yes
GRMC Gwalior	Yes	Yes	40	Yes
GMC Bhopal	Yes	Yes	40	Yes
SSMC Rewa	No	Yes	40	Yes
BMC Sagar	No	No	40	Yes
ABV GMC Vidisha	No	Yes	40	No
GMC Ratlam	Yes	Yes	40	Yes
GMC Shivpuri	No	No	0	No
CIMS Chhindwara	No	No	—	No

College	Auto	E-G	E-library terminals	E-journal subscription
GMC Khandwa	No	Yes	40	No
GMC Shahdol	Yes	Yes	0	No
GMC Datia	No	Yes	0	No

Auto = automated status; E-G = E-Granthalaya named in the software schedule. Chhindwara reported no e-library and an unspecified terminal entry (dash). Software naming indicates reported provision, not verified operational use. Source: parent thesis [2].

4.2 Electronic resources and service coverage

Seven colleges reported e-journal subscriptions in the detailed subscription schedule. Six reported MEDLARS/MEDLINE provision, while none reported Excerpta Medica or BIOSIS in that schedule. These responses describe reported local provision; a no response does not demonstrate that an internet-connected user cannot search freely available biomedical databases.

Reservation facilities were reported at all thirteen libraries. Interlibrary loan was reported at nine, reprographic services at six, reference services at five, and current awareness services at five. No institution reported selective dissemination of information in the conventional-services matrix. Since an ICT-specific schedule reported current awareness at four colleges, the conventional and ICT indicators were retained separately.

Table 3 Selected services and user education

Provision	Libraries n/N	Percent
Reservation facility	13/13	100.0
Interlibrary loan	9/13	69.2
Reprographic service	6/13	46.2
Reference service	5/13	38.5
Current awareness in conventional-services matrix	5/13	38.5
Selective dissemination of information	0/13	0.0
Library visits for user education	13/13	100.0
Orientation programme	8/13	61.5
User seminar	2/13	15.4

Source: Conventional library-services and user-training tables [2]. Provision was reported as yes/no; frequency, quality and participation were not measured.

4.3 Staffing training and repositories

Each institution listed one librarian and at least one assistant librarian. College totals ranged from five to ten staff members. Six colleges listed a cataloguer. The named college rows sum to 91 staff members, whereas the printed grand total is 95. The recalculated figure is a row-based descriptive sum and should be reconciled against original staffing records; neither figure represents the number of staff survey respondents.

Table 4 Staffing and staff development

Indicator	Recalculated result
Total staff per college	Range 5 to 10

Indicator	Recalculated result
Librarians across named rows	13
Assistant librarians across named rows	20
Cataloguers across named rows	6
Supporting staff across named rows	52
All staff across named rows	91
Colleges listing a cataloguer	6/13 (46.2%)
Staff workshops	7/13 (53.8%)
Staff conferences	6/13 (46.2%)
Individual in-house staff training	6/13 (46.2%)
Training outside the institution	7/13 (53.8%)

Source: Staffing and staff-training schedules [2]. Training categories are nonexclusive. Recalculation corrects arithmetic only and does not independently validate personnel records.

All thirteen institutions reported awareness of institutional repositories and interest in establishing one, but none reported an existing repository. Eight institutions reported user orientation and all thirteen reported library visits. These entries document reported activity without information on regularity, curriculum integration, attendance or demonstrated learning.

4.4 Disagreements affecting interpretation

Several source tables could not be combined without introducing unsupported assumptions. Table 5 identifies the main disagreements and the treatment applied. The discrepancies are part of the measurement limitations of the source and should not be read as proof of institutional misreporting.

Table 5 Source inconsistencies and analytical treatment

Issue	Source pattern	Treatment
Software	Generic item positive at 4 colleges; E-Granthalaya named at 10	Report separately; verify installation and active modules
Automation	Shahdol automated but not computerized in another schedule	Retain both responses; do not assign maturity rank
E-journals	Availability at 13; subscriptions at 7; ICT e-journal service at 5	Distinguish availability, subscription and service
Databases	E-databases at 5; online-database service at 13	Avoid a combined access estimate
Staffing	Printed total 95; named rows sum to 91	Report recalculation and require record reconciliation
Equipment	General computers listed separately from e-library terminals	Do not add inventories or assume distinct machines

5 Discussion

5.1 Networking does not establish effective digital access

The principal finding is a gap between universally reported networking and less widespread provision of several digital services. LAN availability is a useful foundation, but its presence does not establish internet uptime, sufficient

bandwidth, authentication, licensed full text or effective discovery. The results therefore support evaluating functioning pathways to information rather than counting installed components alone.

The distinction between free searching and licensed content is particularly relevant to the MEDLINE responses. PubMed is a free biomedical search resource, whereas access to linked full text depends on the source [3]. Accordingly, a no response to local MEDLARS/MEDLINE provision cannot be converted into a claim that biomedical searching was impossible. Future questionnaires should ask separately about search access, mediated searching, full-text entitlement and off-campus authentication.

5.2 Software and automation require functional definitions

The difference between ten institutions naming E-Granthalaya and five reporting automation suggests that software identification and operational automation measure different things, although inconsistent coding is also possible. No causal explanation can be chosen from these tables. Verification should record version, deployment, catalogue coverage, active circulation, user accounts, public catalogue availability, backups and the date each function was tested.

An installation may be partial, inactive or used for selected workflows. Conversely, staff may interpret automation narrowly. A common functional checklist would make comparisons more defensible than a single yes/no question. The contradictory Shahdol entries particularly caution against ranking institutions or calculating a readiness score from the available binary responses.

5.3 Professional support and progressive training

Only six colleges listed a cataloguer, and orientation was reported by eight. These findings identify uneven provision of named staff roles and introductory training; they do not establish workforce adequacy or user competence. Workload, qualifications, vacancies, enrolment and task allocation would be needed to assess staffing requirements fairly.

The 2016 ACRL Framework treats information literacy as a developmental educational responsibility and advocates integration across the academic programme [4]. Applied locally, that approach would support progressive training in database searching, evaluating sources, citation management and responsible information use. It should be adapted to medical curricula and evaluated through authentic search tasks rather than attendance alone.

The multisite patient-care study provides an example of assessing perceived service contributions beyond institutional inventories [1]. A subsequent local evaluation could link mediated-search transactions and training to search success, time taken and user-reported application. Clinical or educational improvement must remain an outcome to be measured rather than a benefit presumed from infrastructure.

5.4 Repository development and shared support

Universal reported interest in repositories, alongside their absence, suggests a suitable area for coordinated support. A shared technical platform could reduce duplicated maintenance, while institutional policies govern deposition, copyright, embargoes, metadata quality and preservation. Clinical records and identifiable patient material should not be deposited through a general scholarly repository workflow.

Resource sharing should likewise distinguish contractual entitlement from technical delivery. Joint licensing can be considered after checking demand, package overlap and usage. The detailed subscription schedule contains a very large Sagar package relative to other colleges, but package size may reflect bundled access rather than comparable unique titles. This analysis therefore does not aggregate journal-title counts or use them to rank collection quality.

5.5 Priorities for implementation

The first priority is an institutional verification exercise using common definitions and evidence such as live catalogue checks, entitlement records, equipment registers and staff rosters. The second is to establish a minimum functioning service pathway: dependable access, discoverable holdings, a staffed help route and recurring user instruction. The third is to build shared specialist support for automation, licensing and repositories where local teams cannot sustain these functions independently.

Monitoring should combine network uptime, successful authenticated access, catalogue coverage, active automation modules, search-support requests, training completion and task-based learning outcomes. These indicators are proposed management measures, not results of the present survey. Repeating them at defined intervals would distinguish initial installation from sustained delivery.

6 Strengths and limitations

This analysis uses the institution as its explicit unit, recalculates values from named rows and distinguishes infrastructure from service delivery and impact. Its comparison with the companion manuscripts also establishes a separate institutional research question within the same doctoral dataset.

The study is limited by secondary aggregate reporting, binary items with incompletely specified definitions, cross-table contradictions and the absence of independent operational verification. The extraction does not establish survey dates or current service status. No probability-based statewide sampling frame was available, so percentages apply only to the thirteen surveyed libraries. Staff headcounts cannot establish staffing adequacy, and terminal inventories cannot establish effective access without enrolment and utilization data.

The analysis cannot measure educational attainment, publication output, clinical decision quality or patient outcomes. It cannot identify the reasons for institutional differences or show that additional technology would independently improve service use. Original schedules should be reconciled before making regulatory-compliance claims or using these findings for budget allocation. Reported absence is an absence in the relevant source item, not a verified current absence.

7 Conclusion

Across thirteen surveyed government medical college libraries in Madhya Pradesh, campus networking was universal, but automation, electronic subscriptions, user orientation and named specialist roles were unevenly reported. No institution reported an established repository. Important disagreements between schedules limit precise estimates of operational digital readiness. Institutional development should combine verified access, functioning workflows, professional support and progressive training, supported by common reporting definitions and periodic service assessment.

Declarations

Ethics approval and consent: This secondary analysis used institutional aggregate tables. Approval or exemption details and consent arrangements for the parent study require author verification from original records before submission.

Data availability: The analysed institutional tables are contained in the parent doctoral thesis [2]. Access to underlying schedules is subject to the researcher's and institution's authorization.

Related reports: Two companion manuscripts concern library users in Ratlam and Bhopal–Vidisha. This manuscript examines institutional capacity across thirteen colleges. Authors should disclose the companion manuscripts and their status to the receiving journal.

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