



Information-seeking behaviour of students at the Medan Polytechnic of Health Sciences

Habibah Salsabila Addary¹, Franindya Purwaningtyas²

^{1,2}Library Science Study Program, Universitas Islam Negeri Sumatera Utara

Jl. Lapangan Golf No. 120, Kec. Pancur Batu, Kabupaten Deli Serdang, Sumatera Utara 20353, Indonesia

*) Corresponding author salsabilaaddary@gmail.com

Received: June 2026; Accepted: August 2026; Published: August 2026

Abstract

Background: The massive availability of health information presents a significant risk of medical misinformation. Although previous studies have examined general information-seeking behaviour, limited attention has been given to how health vocational students adapt established information-seeking models under academic and clinical pressures. Purpose: This study aims to map, explore, and reconstruct the information-seeking behaviour of health vocational students using David Ellis's Information Seeking Behaviour Model, integrated with Risk Awareness and Evidence-Based Practice (EBP). **Methods:** This qualitative descriptive study employed a case study design involving seven final-year Diploma III students representing seven study programmes at Poltekkes Kemenkes Medan. Participants were selected through purposive sampling. Data were collected through semi-structured interviews supported by non-participant observation for methodological triangulation and analysed using an interactive model of data condensation, data display, and conclusion drawing. Results: Students demonstrated pragmatic information-seeking tendencies by prioritising efficiency during the starting, chaining, browsing, and extracting stages while consistently omitting the monitoring stage. However, during verification, they applied rigorous data triangulation by comparing clinical information with authoritative guidelines from the Ministry of Health and the World Health Organization. When information was considered invalid, students returned to the browsing stage, demonstrating a non-linear feedback pattern. **Conclusion:** The findings indicate that health vocational students reconstruct Ellis's traditional model through a dynamic pattern termed Pragmatic Adaptation. This pattern reflects Risk Awareness Information Behaviour (RAIB), in which students balance search efficiency with rigorous verification to support evidence-based practice and reduce the risk of misinformation.

Keywords:

Clinical literacy
Ellis model
Evidence-based practice
Information seeking
behaviour
Risk awareness

How to cite this article:

Addary, H. S., & Purwaningtyas, F. (2026). Information-seeking behaviour of students at the Medan Polytechnic of Health Sciences. *Informatio: Journal of Library and Information Science*, 6(3), 233-250. <https://doi.org/10.24198/inf.v6i3.71629>

INTRODUCTION

Advances in technology and science have created a massive and boundless ecosystem for the dissemination of information, with the result that information now serves as a fundamental tool in supporting various aspects of life, particularly in the academic and professional spheres (Buchanan, 2026). This abundance of information inherently gives rise to a 'knowledge gap' that is, the disparity between the knowledge an individual possesses and the knowledge required to adequately understand a particular issue. This situation encourages individuals to proactively meet their information needs through information-seeking behaviour (ISB), which is defined as the deliberate and patterned search for information undertaken to fulfil specific cognitive needs (Ellis, 1989).

In the context of health, information seeking behaviour is of particular significance because the quality of the information obtained can have direct implications for an individual's safety and quality of life. The significance of health information-seeking behavior extends across various demographics and platforms. Recent studies highlight that information evaluation skills are deeply intertwined with functional health literacy (Nakayama et al., 2022). Distinct seeking patterns have been observed among diverse groups, ranging from vulnerable populations such as dementia caregivers (Kam et al., 2026) and urban women (Ullah et al., 2026), and maternal communities (Maharani et al., 2024), to older adults exhibiting bounded rationality in online environments (Zhang & Cui, 2026). Furthermore, mapping these diverse behaviors is increasingly recognized as essential for informing effective health

communication strategies (Buchanan, 2026), especially as health discourse continuously proliferates on public social media platforms (Yang & Iyer, 2026).

However, the growing demand for health information in the digital age presents a paradox of its own. Easy access to various sources of information is often not accompanied by adequate evaluation and verification skills, thereby encouraging the public to consume health information immediately without cross checking sources. This situation increases the risk of exposure to medical misinformation, which has the potential to cause confusion in health-related decision-making. This phenomenon is reflected in the public's strong tendency to opt for self-medication or non-medical alternative treatments rather than seeking professional help (Febriani, 2019). Consequently, the problem no longer lies in limited access to information, but rather in the quality of the information-seeking behaviour itself, particularly at the verification stage, when individuals fail to evaluate and validate information based on the authority of the source and accountable scientific evidence.

Public information dysfunction necessitates structured mitigation within healthcare educational institutions. Within this sphere, academic transitions create uncertainty that universally dictates student information seeking patterns (Du Toit & Du Preez, 2026; Fadhli et al., 2026). Engaging in structured information literacy mitigates these transition risks (Hicks, 2019), while peer communication crucially shapes how students process health education (Morita & Saitoh, 2026) and construct scientific arguments from disparate online sources (Salminen & Marttunen, 2026). Consequently, information literacy for

vocational healthcare students transcends mere administrative skills; it acts as foundational academic cultural capital for evidence-based practice (Folk, 2019). Because current information seeking habits directly influence future professional compliance, critically evaluating these behaviours is essential to ensure students internalise accuracy standards and prevent distorted clinical interpretations.

Within the institutional framework, the Ministry of Health's Health Polytechnic (Poltekkes) in Medan has a strategic mandate as a vocational education institution responsible for training medical personnel. Pursuant to Government Regulation Number 60 of 1999 concerning Higher Education (Republik Indonesia, 1999) and the Decree of the Minister of Health and Social Welfare Number 298/MENKES-KESOS/SK/IV/2001 (Kementerian Kesehatan dan Kesejahteraan Sosial Republik Indonesia, 2001), Poltekkes is mandated to enhance the effectiveness and efficiency of national health resources. Within this organisational structure, the library is designated as an essential support unit for the fulfilment of the three pillars of higher education. As a manifestation of the optimisation of its academic role, the Poltekkes Medan Library has implemented an innovative 'Drive-Thru Service' to accelerate the circulation of literature and maintain a culture of literacy amidst students' heavy academic workload (Pulungan & Dalimunthe, 2018).

Although information infrastructure and services have been adaptively facilitated, empirical observations at Poltekkes Medan actually indicate the presence of anomalies in information behaviour. Some students experience cognitive disorientation when initiating effective information

searches, as reflected in inconsistencies in keyword selection and the reference selection process. This indication has been validly confirmed by a report from the administrators of the Poltekkes Medan Institutional Repository, which found a high rate of similarity (plagiarism) in students' draft academic papers when assessed using the Turnitin tool. This phenomenon of high plagiarism rates represents a critical operational failure in information-seeking behaviour, specifically at the critical stages of Ellis's Model: 'Extracting' (extraction of material) and 'Verifying' (validation of accuracy and originality). Dysfunction at these stages not only undermines academic integrity but also has the potential to jeopardise students' technical competence in formulating precise and ethical clinical care plans.

Previous studies on information seeking behaviour among health students have been conducted extensively. For instance, Febriani (2019) analysed healthcare seeking behaviour using the Health Belief Model, focusing primarily on psychological perceptions of illness susceptibility rather than the anatomical stages of searching academic literature. While other literature has quantitatively integrated search models among medical specialists (Adhadina, 2018), there remains a distinct lack of qualitative exploration regarding the dynamics and deviations specifically within vocational health education. Furthermore, although general applications of the Ellis model among university students have identified limited access as a main barrier, where searches are initiated through experts (Starting) and emphasise the urgency of valid literature (Differentiating), these studies predominantly measure variables quantitatively. Therefore, this study fills the

theoretical gap by qualitatively exploring these behavioural deviations within a high-pressure vocational environment.

Furthermore, while David Ellis's model, **R10** as extended by Ellis, Cox, and Hall (1993), has been widely applied in regional library contexts (Hutapea et al., 2021) and has previously been modified to accommodate the research phases of specific scholarly communities (Bronstein, 2007), a significant theoretical gap remains. Ellis's classical framework assumes a linear progression, failing to accommodate the high-stakes, risk-aware environment of the healthcare vocational ecosystem. The model assumes that individuals will progress through eight stages in sequence. However, there has been no in-depth exploration of how the structure of this model is distorted, such as through the omission of certain stages or the formation of reverse pathways, as a result of the pressure for academic efficiency. Therefore, the use of the Ellis model in this study is not merely a linear evaluation framework, but a fundamental basis to be explored and reconstructed into a new paradigm that accommodates risk awareness and evidence-based practice.

Based on this rationale, this study aims to critically examine the information-seeking behaviour of students at Poltekkes Medan. The focus of the analysis is not limited to identifying the mere implementation of the search stages, but rather on an in-depth interpretation of how these stages are executed, modified, or even ignored by students in response to the pressure to complete their academic workload. The theoretical framework of David Ellis's model as extended by Ellis, Cox, and Hall (1993), which comprises the stages of starting, chaining, browsing, differentiating, monitoring, extracting,

verifying, and ending was adopted as the theoretical lens. This theoretical integration was applied to analyse the consistency of students' empirical patterns in the field against the ideal conceptual framework, with a view to constructing a new, more holistic paradigm regarding clinical information literacy amongst vocational health students.

RESEARCH METHODS

This study employed a qualitative approach (Sugiyono, 2019) utilizing a case study design to map and analyze in-depth information-seeking behaviour among students at the Medan Health Polytechnic. The case study approach was chosen because it allows for a comprehensive exploration of complex, bounded phenomena within the specific context of Poltekkes Medan's academic environment. The selection of informants was based on specific inclusion criteria designed to capture mature information-seeking habits: Active final-year Diploma III students who were currently drafting their final academic papers (KTI); Students who had completed their clinical or laboratory placements, ensuring practical exposure to medical information needs; and willingness to participate in validation sessions (member-checks). Based on these criteria and the principle of data saturation, seven key informants were selected, effectively representing the diverse academic characteristics of the seven distinct study programmes at Poltekkes Kemenkes Medan.

Data were collected in May 2026 through semi-structured interviews guided by an interview protocol derived from the eight stages of Ellis's model, so that

each stage was explored through at least one open-ended question and a follow-up probe. Each interview lasted an average of 15 to 20 minutes and was conducted face-to-face at the respective faculty buildings of each study program. To ensure data validity, a single member-check session was subsequently conducted with each informant to verify the accuracy of the interview transcripts. Interviews were supported by non-participant observation as a form of methodological triangulation. Verbal data and field notes were analysed using an interactive model comprising data condensation, data display, and conclusion drawing. To ensure the validity and credibility of the findings, a member-check strategy was applied by returning the interview transcripts to the informants so that they could confirm that the recorded data were free from bias or distortion in the researcher’s interpretation.

RESULTS AND DISCUSSION

The patterns of information seeking behaviour amongst final year Diploma III students at Poltekkes Kemenkes Medan can be described in a descriptive, empirical, and in-depth manner. In order to achieve analytical depth and avoid superficial generalisations, the study was conducted on an individual basis with seven

informants, each representing a different study programme. The seven informants were WAH from the Medical Laboratory Technology programme, NS from Dental Health, EC from Environmental Health, PAS from Pharmacy, VAE from Midwifery, PAG from Nursing, and SAD from the Nutrition programme, whose characteristics are summarised in Table 1.

The contradictory dynamics between the need for speed on the one hand and the demands of medical accuracy on the other have given rise to a phenomenon which, in this study, is conceptualised as Risk Awareness Information Behaviour. This phenomenon is characterised by a series of anomalies to the basic theory, including: the presence of pragmatic adaptation in the initial stage, the occurrence of absolute elimination in the monitoring stage, the emergence of dominance in the verifying stage, and the creation of a loop (a repetitive cycle) from verifying back to browsing. This phenomenon is consistent with the concept of Perceived Severity. To analyse the complexity of this phenomenon, this study employs David Ellis’s Information-Seeking Behaviour Model, as extended by Ellis, Cox, and Hall (1993), as its primary analytical framework, as visualised in Figure 1.

Theoretically, Ellis’s model maps information seeking behaviour into

Table 1. Characteristics of the Research Informants

Informant Code	Study Program	Gender	Semester
PAG	Nursing	Female	VIII
VAE	Midwifery	Female	VIII
PAS	Pharmacy	Male	VIII
WAH	Medical Laboratory Technology	Female	VIII
EC	Environmental Health	Male	VIII
SAD	Nutrition	Female	VIII
NS	Dental Health	Female	VIII

Source: Primary research data, 2026

eight interlinked stages. As illustrated in Figure 1, these ideal stages begin with 'Starting' (initiation of the search), followed by Chaining (cross-referencing), Browsing (semi-structured exploration), Differentiating (screening source quality), Monitoring (ongoing literature monitoring), Extracting (extracting specific material), Verifying (validating data accuracy), and concludes with Ending (organising references). This model assumes that the ideal academic or researcher will progress through all eight stages in order to produce comprehensive information outputs. The following discussion therefore examines the empirical realisation of each of these eight stages among the informants, beginning with the point of cognitive initiation.

The starting stage is the point of cognitive initiation at which an information seeker begins to formulate their information needs, identify potential sources, and devise an initial search strategy to bridge the knowledge gap. Based on the results of interviews and empirical observations, a dualism in the

epistemological approaches adopted by students during this initial phase has been identified. The first approach is a pragmatic algorithmic approach, dominated by NS, EC, PAG, and SAD. All four informants consistently regard general purpose search engines, particularly Google, as the absolute starting point for information searches. PAG explicitly stated that searching on Google is considered far quicker and more immediate in providing an initial outline of an answer than having to manually search through a library catalogue. Similarly, SAD stated that they never use physical library facilities or the OPAC (Online Public Access Catalogue) as a first step, but instead immediately engage in free exploration on the internet. This behavioural pattern confirms findings regarding the habits of the digital generation, who instinctively delegate the authority for the initial search to search engine algorithms in order to speed up the discovery of references (Wang et al., 2025).

The second approach is a hybrid authoritative approach, which was tactically

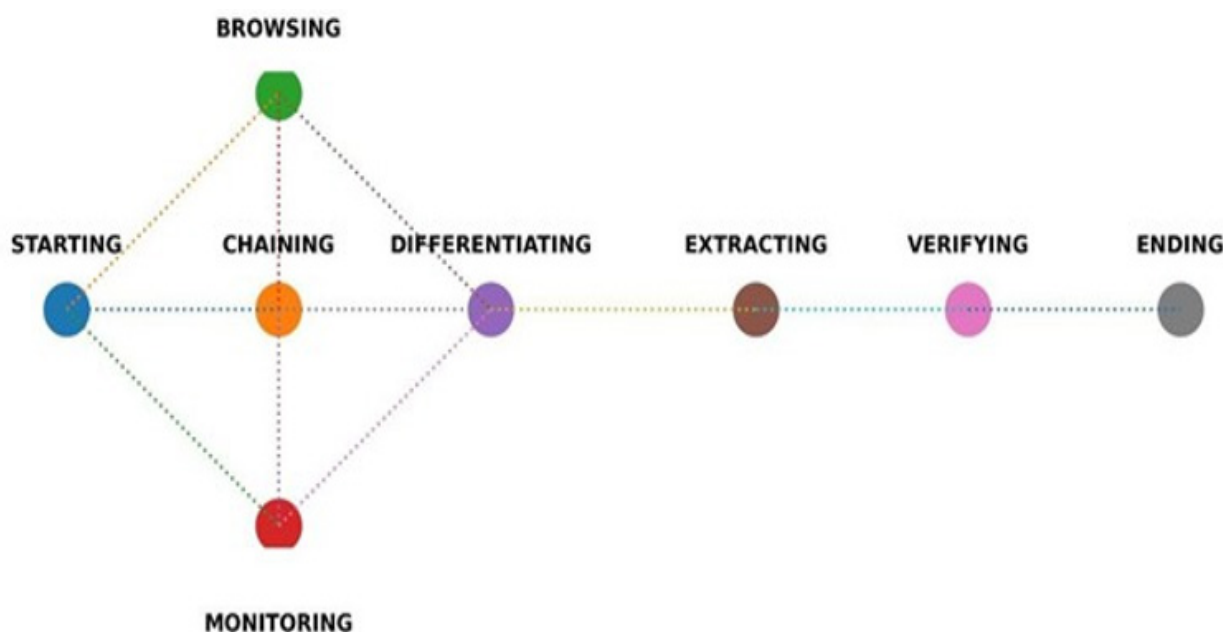


Figure 1. Visualisation of the eight stages of information seeking behaviour

Source: Adapted from Ellis (1989) and Ellis, Cox, and Hall (1993)

implemented by WAH, PAS and VAE. These three students did not simply leave the validation of their topics to search engines. Instead, they combined digital exploration with expert validation (from their supervising lecturers). VAE demonstrated a highly structured 'Starting' strategy: VAE conducted independent preliminary research via Google and printed literature to identify research gaps or novel clinical issues. Having successfully established a strong argumentative foundation regarding a midwifery care issue, VAE then consulted their supervising lecturer on the topic. A similar approach was taken by PAS, who routinely used discussion sessions with the lecturer as a starting point to agree on a research formulation or design that was methodologically sound from the outset. WAH also prioritised direct discussions with the supervising lecturer and made use of relevant papers from previous courses before undertaking a digital search.

Significant disparities in information literacy emerged when formulating search queries. To avoid imprecise results (noise), WAH, EC, PAS, and VAE adopted standard terminology like Medical Subject Headings (MeSH). For instance, VAE systematically dissected nursing care topics into specific MeSH components to ensure accurate retrieval from international databases. Conversely, PAG, SAD, and NS relied on everyday language and experimental keywords, necessitating additional filtering later. Furthermore, during this 'Starting' stage, the institutional role of physical libraries has diminished, as students increasingly prioritize the autonomy of independent digital searches on personal devices (Wang et al., 2025).

Once an initial entry point has been secured, students move into the chaining

stage, at which backward chaining serves as the primary backbone of their search strategy. All informants consistently trace the bibliographies of key journals to locate foundational theories. However, the most prominent empirical finding is the structured exploitation of the institutional repository. With the exception of PAS—who prioritized independent exploration—the majority utilize senior theses as navigational roadmaps. This practice not only accelerates the discovery of localized references, such as provincial health profiles and regulations, but also provides critical 'psychological safety,' ensuring their literature choices align with the academic framework approved by institutional examiners.

On the other hand, the practice of forward chaining (tracking the future work of a specific author) yields inconsistent results and tends to be overlooked. Vocational students do not tend to follow the academic discourse of a particular scientist on a regular basis because their cognitive focus is limited to solving the clinical problems they are currently facing. Nevertheless, the use of state-of-the-art tracking tools such as the 'Cited by' feature on the Google Scholar portal is utilised effectively by SAD and VAE. SAD uses this feature to identify the most recent intervention studies on iron supplementation in adolescent girls that refer to established theoretical foundations.

The chaining process subsequently feeds into the browsing stage, which refers to semi-structured search activities within areas or databases that have been identified as potential repositories of information. The interview findings revealed a complete shift in the browsing behaviour of students at Poltekkes Kemenkes Medan from a print-based ecosystem to an electronic ecosystem

of e-resources. Navigating these digital interfaces demands distinct cognitive approaches, as students often experience digital cognitive load that compels them to adopt pragmatic, heuristic-driven shortcuts rather than exhaustive manual evaluations (Zhang & Cui, 2026). Their focus is entirely centred on the interface screens of online journal databases such as Google Scholar, PubMed, and digital repositories. This is empirically consistent with contemporary literature which asserts that the Ellis model remains highly relevant, albeit requiring contextual modification to digital interfaces where user interactions are driven by search engine mechanisms (Bronstein, 2007). Furthermore, this heavy reliance on specific academic databases accurately reflects the established information seeking patterns and digital literacy adaptation among health science and medical cohorts in fulfilling their academic needs (Martzoukou et al., 2020; Rafi et al., 2019).

When engaging in digital browsing, students' levels of technical literacy maturity showed interesting variations. WAH, EC, PAS, and VAE adopt high-precision search tactics by actively applying Boolean operators (AND, OR, NOT) and using quotation marks. VAE provides a concrete illustration of this strategy by using quotation marks for terms consisting of more than one word, such as "oxytocin massage", to avoid random results, and by combining these keywords with the AND operator for variables of postpartum complications, the OR operator for equivalent synonyms, and the NOT operator to exclude irrelevant topics. This tactic enables instant filtering, meaning that students only need to evaluate the first page of search results. In contrast, the inability to implement Boolean search

techniques, as demonstrated by PAG, forced students to rely on conventional manual scrolling, which significantly consumed their academic time. Ultimately, the high cognitive demands of real-time abstract evaluation drive the majority of students to avoid physical library collections entirely, prioritising the speed and efficiency of digital access.

R16 The literature gathered through browsing is then filtered in the differentiating stage, during which students transition from pragmatic browsing to strict academic conservatism. This filtration relies on three non-negotiable parameters. First, currency: recognising medical science's rapid evolution, students reject literature older than five years, excepting fundamental theories. Second, authoritative credibility: students universally dismiss lay health blogs, relying exclusively on official documents from authorities such as the Ministry of Health and the World Health Organisation. Third, journal accreditation: sources are filtered through recognised indices such as SINTA, PubMed, and Scopus to ensure methodological validity. Furthermore, students conduct micro-level abstract evaluations for clinical relevance, occasionally utilising artificial intelligence tools to accelerate screening.

The literature gathered through browsing is then filtered in the differentiating stage, during which students transition from pragmatic browsing to strict academic conservatism. This filtration relies on three non-negotiable parameters. First, currency: recognising medical science's rapid evolution, students reject literature older than five years, excepting fundamental theories. Second, authoritative credibility: students universally dismiss lay health blogs, relying exclusively on official

documents from authorities such as the Ministry of Health and the World Health Organisation. Third, journal accreditation: sources are filtered through recognised indices such as SINTA, PubMed, and Scopus to ensure methodological validity. Furthermore, students conduct micro-level abstract evaluations for clinical relevance, occasionally utilising artificial intelligence tools to accelerate screening.

A sharp departure from the theoretical model appears at the monitoring stage, which Ellis conceptualises as a series of continuous, proactive, and persistent actions undertaken by an individual to keep abreast of developments in discourse, regulations, and the latest findings within their field of expertise. However, the results of empirical observations at Poltekkes Kemenkes Medan reveal a massive phenomenological anomaly: the monitoring stage has been simultaneously eliminated from students' information behaviour cycle. All informants confirmed an absence of continuous literature monitoring outside of academic requirements. The use of automated tools such as Google Scholar Alerts was strictly transactional; alerts were activated during thesis writing and immediately discarded after the final defence. Rather than adopting a dedicated monitoring routine for lifelong learning, students relied on last-minute scanning of publication dates before drafting reports. Consequently, cognitive engagement during the monitoring phase is driven entirely by curricular compliance rather than a continuous pursuit of scientific truth.

The only aspect of monitoring that is still carried out periodically is the monitoring of government regulatory channels. EC and VAE confirm that they regularly visit the Ministry of Health's

website to keep abreast of new circulars, changes to legislation, or revisions to the Maternal and Child Health handbook. If this is overlooked, the entire structure of their final project reports may be rejected by the examining lecturers due to non-compliance with the applicable legal framework. The elimination of this monitoring stage serves as empirical confirmation that the information behaviour model of pure scientists cannot be applied symmetrically to vocational students without taking into account the variables of time constraints and final objective orientation.

Having bypassed monitoring, students proceed directly to the extracting stage (Ellis, 1989), at which they move beyond passive copying to actively map and reconstruct theoretical concepts. Initial institutional observations mistakenly identified students' early drafting stages as crude verbatim copying. However, the interviews reveal a dynamic, two-step extraction process. Students initially conduct rough extraction, utilising direct source text as placeholders to rapidly construct their thesis framework. Subsequently, they apply advanced reconstruction techniques such as using extraction tables, summarising, and restructuring key points into coherent narratives. This phased approach demonstrates that students possess tactical cognitive intelligence, shifting from mechanical placeholder extraction to actively mapping and synthesising complex medical data.

The verifying stage represents the intellectual culmination of the information seeking cycle within the health vocational education setting. Whilst in the preceding stages students may have displayed a degree of leniency, taken shortcuts, and adopted a pragmatic approach, upon

entering the verification stage, where the accuracy of clinical information is assessed, they simultaneously transform into highly orthodox and uncompromising evaluators. The verifying stage in David Ellis's model of information seeking behaviour represents a crucial phase in which information seekers carry out a critical evaluation of the accuracy, authority, and reliability of the information they have extracted (Ellis, 1989).

In the context of empirical health vocational education, this stage is not merely a mechanism for fact checking, but rather becomes an arena for the application of Evidence-Based Practice (EBP). EBP dictates that every clinical or procedural decision must be based on the integration of the best available research evidence, clinical expertise, and care values. This is where the concept of Risk Awareness Information Behaviour originated. The field of medical science has absolute moral and legal implications. Any error contained in an academic document, such as a typographical error in a drug dosage, an error in the sequence of nursing interventions, or an error in a laboratory diagnostic test, not only results in a reduction in academic marks but also has the potential to trigger malpractice that could endanger patients' lives in real-world practice settings.

All seven students, without exception, confirmed that they rigorously cross-checked medical data whenever confronted with ambiguous or contradictory literature. When WAH, NS, EC, PAS, PAG, and SAD were presented with two accredited journals suggesting different intervention dosages, they instinctively withheld the use of that data. The critical step they took was to raise the issue of this debate in the literature

and benchmark it directly against the highest national medical authority, namely the official regulations and guidelines from the Ministry of Health or the World Health Organisation. VAE described this mechanism clearly:

"If I come across two conflicting sources, the first and most crucial step I take is to regard official government documents, such as the Minister of Health's Decree (Kepmenkes) or the National Guidelines for Medical Services (PNPK), as the ultimate authority. As I studied at a Poltekkes under the Ministry of Health, the national protocols are the highest legal and safety standards that I am obliged to adhere to. (VAE, personal communication, May 9, 2026)".

Students are aware of their institution's hierarchical position; as a state university under the auspices of the Indonesian Ministry of Health, national protocols are legally binding. Furthermore, if written documents were deemed insufficient to resolve clinical uncertainties, VAE, PAS and WAH chose to step outside the ecosystem of textual literature by engaging in interpersonal triangulation: consulting their clinical supervisors, senior midwives or the specialist doctors in charge at the hospital regarding discrepancies in the data. This full dedication during the 'Verifying' stage serves as absolute empirical evidence that vocational students prioritise patient safety far above any form of administrative pragmatism.

The cycle closes at the ending stage, which occurs when students conclude their information seeking journey, driven by two primary variables: theoretical saturation and supervisor intervention. Students actively halt searches when encountering data saturation, specifically when multiple recent journals and official guidelines

present convergent clinical instructions without offering new perspectives, thereby preventing scope creep. Alternatively, the authority of the supervising lecturer acts as an absolute finishing line; once a theoretical framework receives formal approval, further literature addition is deemed redundant. To finalise this synthesis, students consistently employ reference management software such as Mendeley or Zotero to systematically compile citations, effectively organising extracted data into a cohesive, peer-review-ready manuscript. The tactical choices made by each informant across the eight stages described above are summarised comparatively in Table 2.

The data presented in Table 2 reflect an empirical reality that varies considerably across study programmes at Poltekkes Kemenkes Medan. A clear division of behavioural clusters is evident at the starting stage. The first cluster is the independent-digital cluster, represented by NS (Dental Health), PAG (Nursing), and SAD (Nutrition), which rely purely on Google. The second cluster is the guided-specific cluster, represented by WAH (Medical Laboratory Technology), EC (Environmental Health), PAS (Pharmacy), and VAE (Midwifery), which integrate searches using standard medical MeSH

terms, expert guidance, and library OPAC searches.

Curricular characteristics and academic focus significantly influence students' information searching strategies. Laboratory-based disciplines such as Pharmacy and Medical Laboratory Technology strongly prefer controlled vocabularies like Medical Subject Headings to ensure precise chemical nomenclature and minimise data bias. Conversely, clinical nursing students initially adopt natural language to flexibly capture field phenomena before mapping them to formal technical terms. This divergence aligns with the starting phase in Ellis, Cox, and Hall (1993), which emphasises that initial search strategies are dictated by the clarity of users' perceived information needs within their specific practical contexts.

During the Chaining stage, the consistent use of the Institutional Repository ("Repo") by the six informants indicated a high degree of reliance on the writing patterns of previous alumni. An interesting exception was demonstrated by PAS (Pharmacy), who consciously refused to use the research paper repository of their senior peers. Empirically, PAS's action was motivated by a desire to produce original drug formulations and to avoid monotonous

Table 2. Matrix of the implementation of Ellis's eight-stage model among Poltekkes Kemenkes Medan students

Ellis Stage	WAH (MLT)	NS (Dental)	EC (Env. Health)	PAS (Pharmacy)	PAG (Nursing)	SAD (Nutrition)	VAE (Midwifery)
Starting	Expert + MeSH	Google	Google + MeSH	Expert + MeSH	Google	Google	Expert + OPAC
Chaining	Backward / Repo	Backward / Repo	Backward / Repo	Backward	Backward / Repo	Backward / Repo	Backward / Repo
Browsing	Abstract	Abstract	Abstract	Full text	Abstract	Abstract	Abstract
Differentiating	MoH / WHO	5 yrs / credible	Regulation / 10 yrs	Accreditation	5 yrs	Credibility	5-10 yrs / WHO
Monitoring	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped
Extracting	Specific quotes	Paraphrase	Summarising	Paraphrase	Paraphrase	Specific quotes	Care framework
Verifying	Triangulation	Triangulation	Triangulation	Triangulation	Triangulation	Triangulation	Triangulation
Ending	Saturation / Mendeley	Saturation / Mendeley	Regulation / Mendeley	Approval / Mendeley	Approval / Mendeley	Saturation / Mendeley	Saturation / Mendeley

Source: Primary research data, 2026

title replication a decision requiring far more extensive primary literature searches via global databases.

Tactical differences were also evident during the Browsing and Differentiating stages. Only PAS (Pharmacy) read documents in full (full-text) during the screening stage, whilst the other informants merely screened information at the abstract level. This is entirely logical, given that pharmaceutical research involves experimental protocols, dosage calculations and chemical formula compositions that cannot be assessed simply by reading a brief abstract. On the other hand, during the Differentiating stage, VAE (Midwifery) applies temporal filtering (5–10 years) combined with WHO standardisation, as continuity of care in midwifery requires the simultaneous integration of local and global regulations.

Crucially, across all disciplines, the verifying stage reveals a collective adherence to Evidence-Based Practice. Students consistently employ information triangulation, cross-referencing data across multiple authoritative sources, as a critical risk mitigation strategy, conceptualised here as Risk Awareness Information Behaviour. While the initial search stages from starting to browsing are characterised by pragmatic cognitive efficiency, this final verification phase shifts radically into a highly cautious, rigorous validation process (Lathifah & Dewi, 2021).

The phenomenon of behavioural convergence at this triangulation stage can be analysed through three critical dimensions of EBP implementation. The first dimension is the resolution of ambiguity through cross-authority resolution. Healthcare students recognise that individual pieces of medical information, particularly

those obtained through natural language searches on general search engines, are subject to a high degree of epistemological bias. Therefore, triangulation is carried out to compare information from secondary literature with established standards such as Ministry of Health regulations or WHO guidelines, and to triangulate primary sources with guidance from experts or clinical lecturers. This is in line with the fundamental principle of EBP, which rejects the dogmatic acceptance of clinical information without comparative testing (Almaidah, 2019).

The second dimension is clinical risk mitigation. The use of triangulation as a manifestation of evidence-based practice is closely linked to the avoidance of cognitive malpractice. In high-stakes disciplines such as Pharmacy, Midwifery, and Medical Laboratory Technology, misinterpretation of information can have direct implications for the fatality of care interventions or the validity of experiments (Lathifah & Dewi, 2021). Awareness of this risk compels informants to carry out multi-layered verification, which demonstrates that the efficiency sought during the starting stage is not a disregard for the quality of the literature, but rather an energy-conservation strategy to ensure that students possess sufficient analytical capacity when carrying out critical appraisal during the verification stage.

The third dimension is the transition from knowledge to action. EBP requires that information should not merely remain a theoretical narrative, but must be convertible into a measurable care framework or management protocol. The verification stage carried out by the informants acts as a bridging mechanism between abstract literature and clinical

reality. Through triangulation, students carry out a final screening to ensure that the extracted data truly possess taxonomic precision, legal validity, and procedural relevance before being applied in a pre-clinical or laboratory setting (Almaidah, 2019).

Comprehensively, the consistent use of triangulation at the verifying stage confirms that the information seeking behaviour model in a health polytechnic setting is asymmetrical. Students consciously apply maximum flexibility at the start of the search, during starting and browsing, yet apply maximum methodological rigour in the final stage of verifying. This represents maturity in clinical information literacy, in which the principles of evidence-based practice have been internalised not merely as an administrative obligation, but as an instinct for academic and professional protection. To map out how these cognitive and operational transformations shape a non-linear and adaptive information seeking process within a vocational health education setting, the information seeking process flowchart has been empirically reconstructed as shown in Figure 2.

The reconstruction presented in Figure 2 illustrates how students at Poltekkes Kemenkes Medan adapted David Ellis's originally linear framework into a dynamic adaptive cycle, and it reveals two crucial behavioural adaptations. First, a bypass path skips the monitoring stage and proceeds directly to extracting. Unlike the classical Ellis model, vocational students treat searches transactionally, abandoning continuous monitoring due to time constraints once thesis targets are met. Second, a cognitive feedback loop emerges at the verifying stage, functioning as a rigorous internal quality control driven by clinical risk awareness. If data

contradict valid medical protocols, students automatically loop back to browsing in search of more credible sources; conversely, only data aligning with official Ministry of Health regulations proceed to the ending stage for reference compilation.

Taken together, these adaptations indicate that the information seeking behaviour of Poltekkes Kemenkes Medan students reflects a pattern best described as Pragmatic Adaptation. Burdened by an intensive curriculum of laboratory sessions, clinical rotations, and heavy administrative duties, students face chronic time scarcity that forces them to prioritise maximum efficiency (Febriani, 2019). Consequently, physical library innovations such as the Drive-Thru Service receive a lukewarm response; under pragmatic adaptation, physically visiting the library is deemed inefficient when extensive international literature is instantly accessible via personal mobile devices.

This pragmatic adaptation creates a stark behavioural duality. During the starting, chaining, browsing, and extracting stages, students act as opportunistic information consumers. Driven by administrative graduation requirements rather than fundamental knowledge discovery, they rely heavily on Google, scan journal abstracts for quick matches, and exploit institutional repositories to mimic senior theses (Purwaningtyas et al., 2024). Conversely, a radical shift towards scientific conservatism occurs during the differentiating and verifying stages, guided by Risk Awareness Information Behaviour. Recognising the fatal risks of medical errors, students reject unverified shortcuts, apply strict credibility filters, and prioritise gold-standard guidelines from authorities such as the Ministry of Health and the

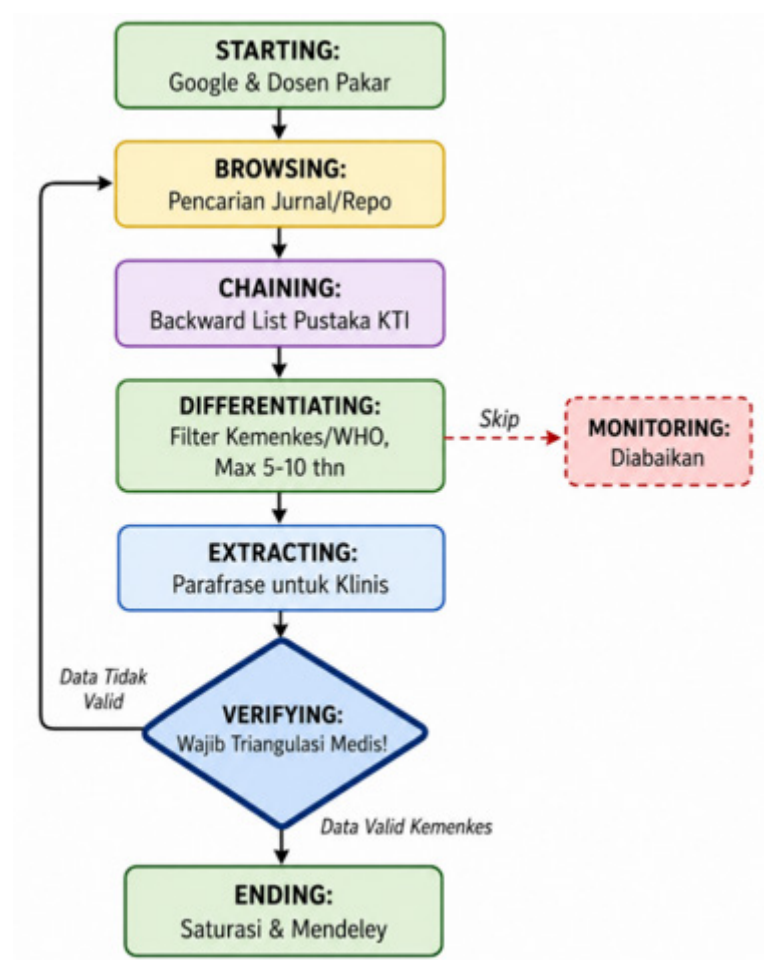


Figure 2. Reconstruction of the information seeking behaviour patterns of students at the Medan Polytechnic of Health Sciences

Source: Primary research data, 2026

World Health Organisation.

The operational transformation evident in the Ellis model highlights a substantial shift in information seeking behaviour patterns specific to Generation Z. The search patterns of the younger generation in the digital age are strongly underpinned by cyber media tools and databases. This unlimited accessibility fosters a culture of instant gratification, in which answers to academic queries are expected to appear in a fraction of a second (Purwaningtyas et al., 2024). The pragmatic adaptation of information seeking strategies mirrors broader digital transitions seen in dynamic student prediction models **R24** (Wang, 2026) and career transitions facilitated by social platforms (Wang et al., 2025). This

reliance on digital exploration algorithms has also been widely documented in everyday non-academic contexts, such as online consumer behaviour (Shah & Paul, 2020) and digital asset mining communities (Syahid et al., 2024). However, as search ecosystems rapidly evolve, future information behaviours will inevitably be shaped by emerging technologies, including generative artificial intelligence, which necessitates a continuous re-evaluation of classical theoretical models such as Ellis’s framework (Wilson, 2026). This is the primary factor driving students to shift rapidly away from physical libraries and instead explore the world of e-resources provided by global databases. Within this information ecosystem,

librarians at health sciences institutions can no longer position themselves merely as custodians of physical bookshelves or as administrative checkers of Turnitin tasked with eradicating a culture of plagiarism. Drawing on recommendations for the integration of digital competencies (Purwaningtyas et al., 2024), librarians must strategically evolve into clinical partners, that is, key facilitators who educate students on multi-layered literature evaluation tactics, design precise search engine navigation through advanced Boolean queries, and expand access to licensed e-resources that directly support their Risk Awareness Information Behaviour processes, thereby ensuring patient safety in the future.

CONCLUSION

This study concludes that vocational health students exhibit a non-linear, adaptive information-seeking pattern that effectively reconstructs David Ellis's traditional model through 'Pragmatic Adaptation.' Constrained by academic pressures, students prioritize cognitive efficiency across the starting, chaining, browsing, and extracting stages while consciously abandoning continuous monitoring. Crucially, this pragmatism shifts to rigorous Risk Awareness Information Behaviour (RAIB) during verification, where students strictly triangulate clinical data against authoritative guidelines to ensure patient safety, creating a dynamic feedback loop back to the browsing stage when encountering invalid data. To bridge the gap between this pragmatic approach and professional competency standards, academic libraries must transform librarians into clinical literacy partners

who train students in advanced e-resource navigation and Boolean queries. A primary limitation of this study is its localized qualitative scope, focusing exclusively on a Diploma III cohort at a single institution, which may restrict generalizability. Consequently, future research should evaluate the impact of targeted clinical information literacy interventions across broader, higher-degree medical cohorts to optimize both the academic efficiency and clinical accuracy of prospective healthcare professionals.

Acknowledgments

The authors would like to thank the Library Science Study Programme, Faculty of Social Sciences, State Islamic University of North Sumatra, for the academic support provided during this research. Special appreciation is also extended to Poltekkes Kemenkes Medan for granting research access. The authors further thank the seven informants, coded WAH, NS, EC, PAS, PAG, SAD, and VAE, who took the time to provide valuable insights during the in-depth interviews.

Author Contributions

Conceptualization, H.S.A.; methodology, H.S.A.; software, H.S.A.; validation, F.P.; formal analysis, H.S.A.; investigation, H.S.A.; resources, H.S.A.; data curation, H.S.A. and F.P.; writing—original draft preparation, H.S.A.; writing—review and editing, F.P.; visualization, H.S.A.; supervision, F.P.; project administration, H.S.A.; funding acquisition, H.S.A. All authors have read and agreed to the published version of the manuscript.

AI Declaration

The authors declare that artificial intelligence (AI) tools, specifically Gemini Pro (Google), Grammarly, and DeepL, were used solely to assist with language editing, translation, grammar correction, and manuscript clarity. These tools were not involved in the study design, data collection,

analysis, interpretation, or generation of scientific conclusions. All AI-assisted content was carefully reviewed and validated by the authors, who take full responsibility for the integrity and accuracy of the work.

Data Availability Statement

The interview transcripts and field notes supporting the findings of this study are not publicly available in order to protect the confidentiality of the informants, but anonymised excerpts may be obtained from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

Funding

This research received no external funding.

REFERENCES

- Adhadina, Z. (2018). *Perilaku penemuan informasi di kalangan mahasiswa Program Pendidikan Dokter Spesialis Fakultas Kedokteran Universitas Airlangga - RSUD Dr. Soetomo Surabaya* [Skripsi]. <http://repository.unair.ac.id/id/eprint/70742>
- Almaidah, D. Y. (2019). *Perilaku penemuan informasi kesehatan di kalangan keluarga pasien penderita skizofrenia di Kota Surabaya* [Airlangga University]. <http://repository.unair.ac.id/id/eprint/88479>
- Buchanan, S. (2026). The role of health information behaviour research for informing health communication: exploring and mapping connections and impact pathways. *Journal of Documentation*, 82(3), 640–656. <https://doi.org/10.1108/JD-08-2025-0237>
- Du Toit, G. E., & Du Preez, M. (2026). Understanding information seeking in transition: How uncertainty influences first-generation students' information seeking behaviour. *Journal of Librarianship and Information Science*. <https://doi.org/10.1177/09610006261434178>
- Ellis, D. (1989). A behavioural approach to information retrieval system design. *Journal of Documentation*, 45(3), 171–212. <https://doi.org/10.1108/eb026843>
- Ellis, D., Cox, D., & Hall, K. (1993). A comparison of the information seeking patterns of researchers in the physical and social sciences. *Journal of Documentation*, 49(4), 356–369. <https://doi.org/10.1108/eb026919>
- Fadhli, R., Chang, S., & Mendoza, A. (2026). Comparing international students' information behaviour research in global north and global south: a systematic review. *Journal of Studies in International Education*, 30(3), 357–379. <https://doi.org/10.1177/10283153251414854>
- Febriani, W. M. (2019). Gambaran perilaku pencarian pengobatan pada mahasiswa Fakultas Kesehatan Masyarakat Universitas Airlangga. *Jurnal Promkes: The Indonesian Journal of Health Promotion and Health Education*, 7(2), 193–203. <https://doi.org/10.20473/jpk.V7.I2.2019.193-203>
- Folk, A. (2019). Reframing information literacy as academic cultural capital: A critical and equity-based foundation for practice, assessment, and scholarship. *College & Research Libraries*, 80(5), 658–673. <https://doi.org/10.5860/crl.80.5.658>
- Hicks, A. (2019). Mitigating risk: Mediating transition through the enactment of information literacy practices. *Journal of Documentation*, 75(5), 1190–1210. <https://doi.org/10.1108/JD-11-2018->

- 0184
- Hutapea, A. F., Ruslan, & Asnawi. (2021). Perilaku pencarian informasi melalui jurnal perpustakaan menggunakan Model Ellis. *Jurnal Pustaka Ilmiah*, 7(1), 38–47. <https://doi.org/10.22373/adabiya.v23i1.8047>
- Julien, H., Gross, M., & Latham, D. (2018). Survey of information literacy instructional practices in U.S. academic libraries. *College & Research Libraries*, 79(2), 179–199. <https://doi.org/10.5860/crl.79.2.179>
- Kam, M. S., Yi, Y. J., & Choi, K.-S. (2026). Self-stigma and health information behaviour among dementia caregivers: Evidence from South Korea. *Journal of Documentation*. Advance online publication. <https://doi.org/10.1108/JD-11-2025-0334>
- Kementerian Kesehatan dan Kesejahteraan Sosial Republik Indonesia. (2001). *Keputusan Menteri Kesehatan dan Kesejahteraan Sosial Republik Indonesia Nomor 298/MENKES-KESOS/SK/IV/2001 tentang Organisasi dan Tata Kerja Politeknik Kesehatan. Menteri Kesehatan dan Kesejahteraan Sosial*. <https://www.poltekkesjakarta3.ac.id/unduh/unduh/96>
- Lathifah, I. C., & Dewi, A. O. P. (2021). Perilaku pencarian informasi ibu hamil pada kehamilan pertama di Kecamatan Tembalang Semarang dalam memenuhi kebutuhan informasi. *Anuva: Jurnal Kajian Budaya, Perpustakaan, dan Informasi*, 5(3), 401–416. <https://doi.org/10.14710/anuva.5.3.401-416>
- Maharani, D., Khadijah, U., & Saepudin, E. (2024). Literasi kesehatan ibu dan anak kalangan ibu PKK masyarakat Kecamatan Payakumbuh Timur. *Informatio: Journal of Library and Information Science*, 4(2), 165–178. <https://doi.org/10.24198/inf.v4i2.50765>
- Martzoukou, K., Fulton, C., Kostagiolas, P., & Lavranos, C. (2020). A study of higher education students' self-perceived digital competences for learning and everyday life online participation. *Journal of Documentation*, 76(6), 1413–1458. <https://doi.org/10.1108/JD-03-2020-0041>
- Morita, Y., & Saitoh, A. (2026). Active learning with peer to peer health communication in school health education and student behavior change: a scoping review. *Journal of School Health*, 96(8). <https://doi.org/10.1111/josh.70188>
- Nakayama, K., Yonekura, Y., Danya, H., & Hagiwara, K. (2022). Associations between health literacy and information-evaluation and decision making skills in Japanese adults. *BMC Public Health*, 22, Article 1389. <https://doi.org/10.1186/s12889-022-13892-5>
- Pulungan, A. F., & Dalimunthe, M. (2018). Efektivitas inovasi layanan drive thru di Perpustakaan Politeknik Kesehatan Medan. *Jurnal Ilmu Informasi, Perpustakaan, dan Kearsipan*, 4(2), 536–541. <https://doi.org/10.37985/jer.v4i2.183>
- Purwaningtyas, F., Dalimunte, M., & Dewi, S. (2024). Exploring adolescents' digital information-seeking patterns and religious behavior. *Jurnal Kajian Informasi & Perpustakaan*, 12(2), 251–278. <https://doi.org/10.24198/jkip.v12i2.58627>
- Rafi, M., JianMing, Z., & Ahmad, K. (2019). Technology integration for students' information and digital

- literacy education in academic libraries. *Information Discovery and Delivery*, 47(4), 203–217. <https://doi.org/10.1108/IDD-07-2019-0049>
- Republik Indonesia. (1999). *Peraturan Pemerintah Republik Indonesia Nomor 60 Tahun 1999 tentang Pendidikan Tinggi*. Sekretariat Negara. <https://peraturan.bpk.go.id/Home/Details/54383>
- Salminen, T. J., & Marttunen, M. (2026). Student argumentation on health issues dealt with in online sources. *Information and Learning Sciences*. Advance online publication. <https://doi.org/10.1108/ILS-06-2025-0086>
- Shah, C. S., & Paul, A. (2020). Information seeking behaviour in online shopping. In S. K. Sharma, Y. K. Dwivedi, B. Metri, & N. P. Rana (Eds.), *Re-imagining diffusion and adoption of information technology and systems* (pp. 439–450). Springer. https://doi.org/10.1007/978-3-030-64849-7_39
- Sugiyono. (2019). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, R&D, dan penelitian pendidikan*. Alfabeta.
- Syahid, F., Damayani, N., & Rizal, E. (2024). Perilaku pencarian informasi miner cryptocurrency di grup Facebook Miner Indonesia. *Informatio: Journal of Library and Information Science*, 4(3), 217–230. <https://doi.org/10.24198/inf.v4i3.57128>
- Ullah, T., Sheikh, A., & Ahmad, S. (2026). Understanding the urban women's information needs and seeking behavior in Khyber Pakhtunkhwa, Pakistan. *Global Knowledge, Memory and Communication*. Advance online publication. <https://doi.org/10.1108/GKMC-05-2025-0335>
- Wang, D. (2026). Research on the dynamic prediction model of student behavior in the information management system of ideological and political education for student groups in colleges and universities. *International Journal of Computer Information Systems and Industrial Management Applications*, 18, 15. <https://doi.org/10.70917/ijcism-2026-0109>
- Wang, X., Xiong, Q., & Liu, C. (2025). Information behaviors on a social platform as a preparation for transition in the graduating student job-seeking context. *Aslib Journal of Information Management*. Advance online publication. <https://doi.org/10.1108/AJIM-04-2025-0186>
- Wilson, T. D. (2026). Modelling the impact of generative artificial intelligence on information behaviour research. *Journal of Documentation*, 82(7), 376–395. <https://doi.org/10.1108/JD-03-2026-0150>
- Yang, X., & Iyer, H. (2026). Nutrition information sharing and audience engagement on X during National Nutrition Month: An information behavior perspective. *Journal of Documentation*. Advance online publication. <https://doi.org/10.1108/JD-04-2026-0197>
- Zhang, Y., & Cui, J. (2026). Satisficing behavior and bounded rationality among older adults engaging in online health information seeking (OHIS). *Journal of Documentation*. Advance online publication. <https://doi.org/10.1108/JD-11-2025-0343>