

Perceptions and Use of PubMed and the MeSH Thesaurus among Postgraduate Medical and Dental Trainees in Health Information Retrieval

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ABSTRACT

The study mainly focused on the usage of PubMed and the MeSH (Medical Subject Headings) thesaurus during the health information retrieval process. The study investigates the level of awareness, utilisation patterns, and potential benefits of use of the Medical Subject Headings (MeSH) Thesaurus in the retrieval of information of postgraduate medical and dental trainees. It also investigated the trainees' perceptions, attitudes, and satisfaction regarding the MeSH thesaurus help tool. Using a descriptive survey design, data was collected from postgraduate trainees enrolled in the PGIM Library Orientation Programme between 01st January 2025 to 30th May 2025. The main data collection instrument was a questionnaire, which was administered through Google Forms.

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A mixed-method approach was implemented using both quantitative and qualitative analyses. Findings revealed a moderate level of familiarity with MeSH yet its usage in literature searches remained low. A significant percentage of trainees were unaware of MeSH guidance, but the majority expressed a willingness to adopt it if adequately supported. Confidence in information retrieval was significantly associated with experience levels. Most of the respondents acknowledged the benefits of MeSH thesaurus, emphasizing enhanced relevance ease of use improved accuracy and time efficiency. The study highlights the importance of applying the MeSH tool in information retrieval and providing structured training programs. Key recommendations are threefold: implement mandatory training workshops; provide guidance on how to make use of MeSH tools (e.g., a thesaurus browser and query builder) during search processes through existing health information retrieval platforms to create a more guided search experience; and enhance curricular focus on database proficiency. The goal of the present study is the optimization of the usage of health information retrieval systems available for postgraduate medical and dental trainees through the PGIM Library.

Keywords: *Medical Subject Headings; MeSH thesaurus; Health information retrieval systems; Information needs; PubMed; Postgraduate Medical and Dental Trainees*

Introduction

Seeking quality medical information to support patient care is fundamental to evidence-based medicine. Health professionals and students always look for the most relevant and reliable information for treating patients safely. Evidence-based medicine suggests looking at articles on specific types of studies, such as randomised controlled trials or systematic reviews. To find the correct and authentic information, health professionals need to have good searching skills that go beyond search engines such as Google or Google Scholar. Learning how to search effectively for medical literature takes time and practice, and it involves understanding different types of databases and search terms and search interfaces. Medical and health-related professionals need to acquire a certain standard of information literacy which includes mastering multiple skills. In this context, librarians play a significant role in medical and health-related libraries. Librarians expect that students learn how to conduct efficient searches to find relevant information without feeling overwhelmed. (Gehanno, 2009 ; Gusenbauer & Haddaway, 2020; Sackett et al., 1996). A health sciences librarian who teaches students how to search for medical literature has to decide how much emphasis has to be paid to teaching different search strategies and techniques to obtain effective results. As pointed out by DeMars and Perruso (2022), most of the published research shows that when working with researchers, the main question was what the best way to search for information is.

By providing controlled vocabularies, synonyms, and closely related concepts, a medical thesaurus enables users to formulate queries that retrieve potentially relevant information not expressed in layperson terms. There are more than 150 medical thesauri in the Unified Medical Language System (UMLS) Metathesaurus. Among them, Medical Subject Headings (MeSH) is

one of the most commonly used systems to facilitate health information retrieval (Yeganova et al., 2009; Dilhani & Ranasinghe, 2018).

The Medical Subject Headings (MeSH) Thesaurus

The Medical Subject Headings (MeSH) thesaurus was first introduced by the National Library of Medicine (NLM) in 1960 as the foundational vocabulary for its pioneering Medical Literature Analysis and Retrieval System (MEDLARS). A key innovation of MeSH was its use of a single, unified list of subject headings for both cataloguing books and indexing journal articles, which streamlined information retrieval (Lipscomb, 2000).

The Medical Subject Headings (MeSH) thesaurus is a controlled vocabulary use for organising, cataloguing, and retrieving biomedical and health-related information (Fikar & Hallas, 2024). It facilitates precise indexing and searching by standardising terminology to represent various concepts consistently. MeSH employs a hierarchical structure to enable broad searches to retrieve more specific articles and allows users to navigate the thesaurus effectively. Continually updated by subject specialists, new concepts are added annually, and existing ones are modified to ensure relevance (<https://www.nlm.nih.gov/>, 2024).

MeSH includes synonyms, related terms, and entry terms to guide users to the most relevant descriptors. In NLM's databases, terms entered by users are automatically linked to MeSH descriptors for efficient information retrieval. Online tools like the MeSH Browser offer access to complete vocabulary, MeSH Entrez databases aid in MEDLINE/PubMed searches, and the UMLS Metathesaurus connects to various controlled vocabularies. This robust system enhances search precision and information access for

researchers in the biomedical field (National Library of Medicine [NLM], 2024).

MeSH was designed to be a dynamic and evolving list, allowing for the inclusion of new terms based on the evolving concepts in the medical field. From an initial list of 4,400 descriptors, it has expanded significantly, containing over 29,000 descriptors and 270,000 supplementary concepts in its modern editions (NLM, 2024). This adaptive approach ensured that MeSH remained current and reflective of the changing landscape of medical literature. (<https://www.nlm.nih.gov/>, 2024).

Background Studies

As per Mu (2014), Munasinghe and Ranasinghe (2023), a major challenge for consumers searching for health information is their unfamiliarity with medical terminology. Even though medical thesauri such as the Medical Subject Headings (MeSH) and related tools (e.g., the MeSH Browser) were created to help consumers find medical term definitions, the lack of awareness and proper techniques in applying these tools prevent the retrieval of relevant results. Using MeSH has been shown to improve the efficiency of searches, that is, retrieving fewer irrelevant citations (Mu, 2014).

Jenuwine and Floyd (2004) compared text word and MeSH searching and found that text word searches were more sensitive (retrieved a greater number of relevant citations) and that MeSH searching was more specific (retrieved fewer irrelevant citations). Text word searching may have been more sensitive because some concepts important to the search used by Jenuwine and Floyd (2004) such as the concept “healthy,” were not represented in the MeSH database. Searches that have high sensitivity and

high specificity are ideal. Haynes et al. (1994) also found that search strategies designed to find methodologically sound studies in adult medicine retrieved a higher proportion of relevant studies when they included MeSH terms and text words. For the text word portion of the search to be effective, variations in spelling (i.e., British, American), synonyms for the search concept (eg, “aquatic”, “pool”), and plurals must be entered into the search query box. Rana et al. (2011) validated a search assessment tool. Appropriate use of MeSH terms was identified as one of the five critical elements in the development of an effective MEDLINE search, further highlighting the need to understand MeSH.

Problem Statement

Efficient retrieval of accurate and relevant health information is vital for medical and dental practice. PubMed, as a prominent biomedical database, and its controlled vocabulary tool, the MeSH Thesaurus, are essential resources for achieving this purpose. However, despite their availability and importance, many postgraduate medical and dental trainees may lack adequate awareness, understanding, and skills to effectively use these tools for information retrieval. Studies conducted in various contexts have shown inconsistent levels of familiarity and proficiency in using PubMed’s advanced features and MeSH terms, leading to suboptimal literature searches and limited utilisation of evidence in clinical decision-making and research (Young, 2010; Hirt, et al, 2020 ; Chevalier, & Dosso, 2025). In the Sri Lankan context, unfortunately, no empirical evidence exists regarding how postgraduate trainees perceive and use PubMed and MeSH in their academic and professional activities. This knowledge gap hinders the development of targeted training programs to strengthen health information literacy among future medical professionals. Therefore, it is important to investigate the

perceptions and use of PubMed and the MeSH Thesaurus among postgraduate medical and dental trainees in order to identify existing challenges, gaps, and opportunities for capacity building in health information retrieval.

Significance of the Study

Health Information Retrieval Systems are vital tools for postgraduate medical and dental trainees to access relevant and up-to-date information. This study aims to collect information required to enhance the usage of these systems and to promote the usage of the MeSH terms during search processes. By providing structured training programs trainees can navigate and search for information more effectively, ultimately improving their access to essential medical and dental knowledge. Encouraging them to incorporate MESH terms during searching would streamline the retrieval process and enhance the learning experience for postgraduate medical and dental trainees. This study addresses a critical gap in postgraduate medical and dental education by examining PubMed proficiency among trainees during a formative period of their professional development. Information search skills are an integral part of medical education and continuing professional development. By documenting the extent of inconsistent familiarity with PubMed's advanced features among postgraduate medical and dental trainees, this study will provide evidence to inform targeted educational interventions and speciality training programs. The findings will enable program directors and medical educators to design competency-based training that addresses specific deficiencies in literature search skills, ultimately enhancing trainees' ability to integrate current evidence into clinical decision-making and research activities. This research contributes to

developing a generation of evidence-informed practitioners capable of delivering optimal patient care.

Main Objective

The main objective is to assess the awareness and proficiency levels in using PubMed and MeSH thesaurus help tool among postgraduate medical and dental trainees, and to identify factors influencing their literature search capabilities.

Specific Objectives

- Identify the type of information sources used by postgraduate medical and dental trainees in Sri Lanka for fulfilling their information needs
- Investigate the awareness and utilisation of MeSH Thesaurus of postgraduate medical and dental trainees in Sri Lanka.
- Assess the familiarity and competency in utilising MeSH Thesaurus for retrieving literature searches among the postgraduate medical and dental trainees in Sri Lanka.
- Understand user preferences for use of MeSH Thesaurus in PubMed of postgraduate medical and dental trainees in Sri Lanka.
- Examine the Impact of Training and Education sessions on information retrieval of postgraduate medical and dental trainees in Sri Lanka.

Research Methodology

This study was carried out as a descriptive study using online survey method. The population consisted of those who enrolled in the Library Orientation Programme from 01st January 2025 to 30th May 2025. The whole population was considered as the sample. The questionnaire was designed as a data collection instrument to collect data from the sample. Google forms were

used as the administration method of the data collection instrument. Ethical clearance was obtained from the Ethical Clearance Committee, Postgraduate Institute of Medicine, University of Colombo under ERC/A/2025/ 074.

Data Analysis

Quantitative data was analysed using descriptive and inferential statistics. SPSS 26th edition was used for the analysis. Qualitative data was analysed using the thematic analysis techniques.

Rate of Response

A Total of 130 PG trainees participated in the library orientation programme conducted by the Postgraduate Institute of Medicine between 01st January 2025 to 30th May 2025. Among them, 86 responded to the questionnaire, making the rate of response 66.15%.

Socio-Demographic Profile of Respondents

The descriptive statistics of the information related to the socio-demographic background of the responders are summarised and presented in Table 1. The percentage of females with 65.1% was higher than that of males with 34.9%. Age group of the respondents varied from below 40 and above 60 years. The study demonstrated that the majority of respondents were from the age group of ≤ 40 years (61.6%). Respondents belonged to 22 different subject specialties. The majority of respondents belonged to the speciality of family medicine, presented 24.4% followed by Human Nutrition (14%) and Community Medicine (10.5%). Experience of the respondents also shows a variation, and most responders had less than 10 years of experience (48.8%). The job location of respondents was scattered in 14 different cities, and the majority was from Colombo which is the trade capital of Sri Lanka that is 67.4 %.

Table 1 indicates the socio-demographic profile of the respondents.

Table 1

Socio- Demographic Profile of the respondents

Indicator	Demographic profile	Frequency N	Percentage %
Gender	Male	30	34.9
	Female	56	65.1
Age	<= 40 yrs.	53	61.6
	> 41 and <= 50 yrs.	20	23.3
	>= 51 and <= 60 yrs.	06	7.0
	>= 61 yrs.	07	8.1
Specialty	Cardiothoracic Surgery	01	1.2
	Community Medicine	09	10.5
	Consultant Anaesthetist	01	1.2
	Dental Surgery	03	3.5
	Dermatology	01	1.2
	Family Medicine	21	24.4
	General Medicine	08	9.3
	Haematology	01	1.2
	Health Sector Disaster Management	07	8.1
	Histopathology	01	1.2
	Human Nutrition	12	14.0
	Medical Administration	06	7.0
	Medical Education	01	1.2
	Medical Virology	02	2.3
	Nephrology and Dialysis	01	1.2
	Obstetrics and Gynaecology	02	2.3
	Orthopaedic Surgery	02	2.3
	Paediatrics	01	1.2
	Public Health	02	2.3
	Radiology	01	1.2
	Rheumatology	01	1.2
	Transfusion Medicine	02	2.3
Experience (yrs.)	< 10 yrs.	42	48.8
	>= 10 and < 20 yrs.	21	24.4
	>= 20 and < 30 yrs.	12	14.0
	>=30 yrs.	11	12.8

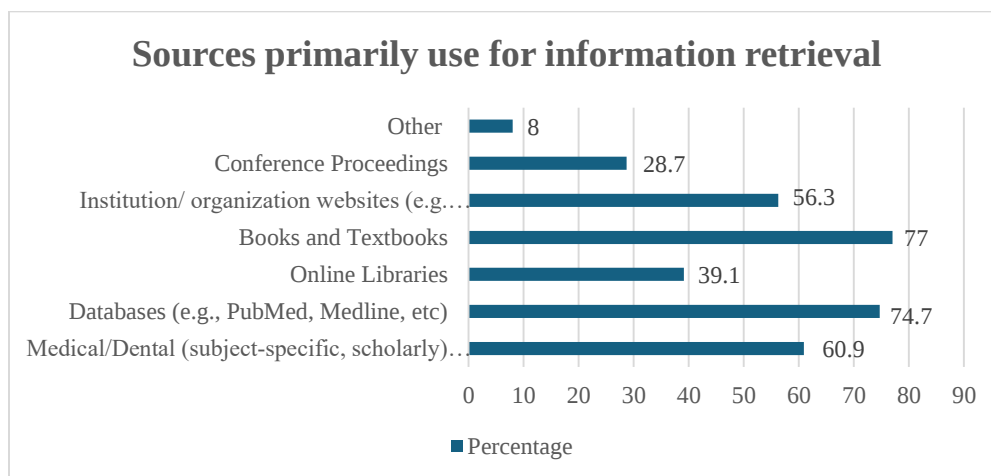
Job Location	Anuradhapura	01	1.2
	Badulla	03	3.5
	Batticaloa	01	1.2
	Colombo	58	67.4
	Galle	04	4.7
	Gampaha	05	5.8
	Jaffna	03	3.5
	Kalutara	01	1.2
	Kandy	04	4.7
	Kegalle	01	1.2
	Kurunegala	01	1.2
	Peradeniya	01	1.2
	Polonnaruwa	01	1.2
	Rathnapura	02	2.3
Total		86	100

Types of information sources used by the respondents

Figure 1 illustrates the variety of information sources use by the respondents for the retrieval of necessary information.

Figure 01

Sources primarily used for information retrieval



As illustrated in Figure 1, it was found that books and textbooks were used (77%) as the major source, followed by databases (74.7%) and scholarly journals (60.9%). Additionally, 56.3 % have indicated that they have used institutional and organizational websites and low percentages were observed for online libraries (39.1%) and conference proceedings (28.7%).

Search Behaviours of Respondents

The study aimed to investigate the search habits, confidence levels, and familiarity with PubMed and the MeSH thesaurus among medical and dental professionals.

Table 2 highlights the findings related to search habits, confidence levels, and familiarity with the MeSH thesaurus among medical and dental professionals. Accordingly, regarding Search Frequency, respondents mainly searched for medical/dental literature occasionally or rarely, with 30.2% have indicated that they had no need to search for literature using databases. Only 17.4% have indicated that they need to search for health literature often and very often. But, when considering about the confidence levels of searching ability, 54.7% were either extremely confident or confident in retrieving relevant medical/dental information. Further, it was observed that nearly half or 51.2% of respondents are familiar with MeSH thesaurus. In contrast to this, only 17.4% have indicated that they were using the MeSH thesaurus very often or often to refine searches.

This information sheds light on the patterns of literature search behavior in relation to gender. The data shows that 38.5% search often, 34.8% search occasionally, and 27.3% search rarely, with no males searching very often. A significant portion (42.3%) indicated never searching for medical/dental literature. On the other hand, all females (100%) search for medical/dental

literature, with 61.5% searching often, 65.2% searching occasionally, and 72.7% searching rarely. A notable percentage (57.7%) indicated never searching for medical/dental literature.

Table 02

Search habits, confidence levels, familiarity and frequency of using PubMed and Mesh thesaurus among respondents

Question	Response Category	Frequency (N)	Percent (%)
Frequency of searching for medical/dental literature	Very often	2	2.3
	Often	13	15.1
	Occasionally	23	26.7
	Rarely	22	25.6
	Never	26	30.2
Confidence in retrieving information using retrieval systems (e.g., PubMed)	Extremely confident	14	16.3
	Confident	33	38.4
	Neutral	35	40.7
	Not confident	4	4.7
Familiarity with MeSH (Medical Subject Headings)	Yes	44	51.2
	No	42	48.8
Frequency of using MeSH thesaurus	Very often	2	2.3
	Often	13	15.1
	Occasionally	23	26.7
	Rarely	22	25.6
	Never	26	30.2
Total	—	86	100

The data reveals varying frequencies of searching for medical/dental literature among genders. Majority rarely (42.3%) or never (34.9%) search for medical/dental literature to support their work or studies. Most frequently search occasionally (65.2%) or rarely (72.7%), with no females indicating never searching. This information highlights differences in information-

seeking behaviors between genders, which can be discussed in the context of research practices and utilization of medical/dental literature to enhance academic or professional endeavors. 35.7% are extremely confident, 45.5% are confident, and a minority are not confident (25.7%). More females exhibit confidence, with 64.3% being extremely confident and 54.5% confident. Fewer females express not being confident (25.7%).

Awareness and Likelihood of Using MeSH

Based on the responses, Table 3 tabulates the awareness and likelihood of using MeSH for searching. As depicted in Table 3, 57% of the respondents were not aware of the possibility of using the MeSH terms in health information retrieval systems such as PubMed. But, it seems that 76.7% are ready to use it if they were made aware of its availability (very likely 27.9% and likely 48.8%).

Table 03

Awareness and likeliness of using MeSH in the searching process

Questions	Responses	Frequency N	Percentage %
Awareness: “Are you aware that MESH terms can be incorporated in the searching processes of existing health information systems (e.g. in PubMed)	Yes	37	43.0
	No	49	57.0
Likelihood of usage: If MeSH terms can be used in a health information retrieval system, how likely are you to use them?	Very likely	24	27.9
	Likely	42	48.8
	Neutral	15	17.4
	Unlikely	4	4.7
	Very unlikely	1	1.2

Impact of Training and Education on MeSH Utilisation

The impact of formal training on MeSH utilisation was examined by investigating the prevalence of prior training and the correlation between training, familiarity, and usage. As indicated in the Table 4 below, slightly more than half of the respondents (58.1%, n=50) had received formal training on the MeSH thesaurus. Despite this, as shown in Table 2, only 17.4% (n=15) reported using MeSH frequently. This suggests that the current training may not be fully effective in translating knowledge into consistent practical application. However, the demand for effective education is unequivocal, with an overwhelming 90.7% (n=78) of trainees expressing interest in attending future workshops to maximise their use of MeSH, highlighting a critical opportunity for improved educational interventions.

Table 04

Training on using the MeSH

Questions	Responses	Frequency	Percent
Training Received: Have you received any formal training or education on how to effectively utilise the MeSH thesaurus during your study programmes	Yes	50	58.1
	No	36	41.9
Interest in training: Would you be interested in attending workshops or training sessions on how to make use of the MeSH thesaurus in health information retrieval systems?	Yes	78	90.7
	No	8	9.3
Total (N)		86	100

Potential Benefits of Using MeSH Thesaurus in Information Retrieval Process

Respondents were asked to indicate the potential benefits of the use of MeSH thesaurus in information retrieval. Table 5 indicates the responses.

Table 05

Potential benefits of using MeSH Thesaurus in the information retrieval process

Benefits	Percentage (%)	Number of Responses
Enhanced relevance of results	72.6	61
Ease of use	60.7	51
Improved search accuracy	60.7	51
Time efficiency	58.3	49
Other benefits	4.8	04

Incorporating the MeSH terms in the search process offers a range of potential benefits. According to the present survey the following benefits were indicated. Enhanced relevance of results emerged as the top priority, with a significant 72.6% (61 responses) of participants recognizing the potential of MeSH integration to enhance the relevance of search results. Regarding ease of use, 60.7% (51 responses) of participants highlighted the importance of improving the user experience by making the system more user-friendly through the use of MeSH. Receiving equal percentage of responses to ‘Improved search accuracy’ indicated its importance as an aspect of enhancing search accuracy, with 60.7% (51 responses) of participants emphasizing the role of MeSH in refining search results. About time efficiency, 58.3% (49 responses) of participants acknowledged the potential time-saving benefits associated with incorporating the MeSH terms in information retrieval processes. Other benefits received a smaller

percentage of respondents (4.8% - 4 responses) providing additional insights into unique advantages beyond the primary categories identified. These findings underscore the significant potential of use of MeSH in health information retrieval to improve search relevance, user experience, search accuracy, and time efficiency.

Experience vs Respondents' Usage Behaviour of MeSH

In order to seek whether there are deviations in usage behaviour of respondents with the experience, responses to items Q7 (Frequency of information retrieval), Q9 (Confidence in information retrieval), Q11 (frequency of using MeSH thesaurus) and Q13 (Likelihood of using MeSH) by Q6 (experience in years) were analysed and tabulated in tables 6 and 7.

Table 06

Cross tabulation of the responses of the items Q7 (Frequency of information retrieval), Q9 (Confidence in information retrieval), Q11 (frequency of using MeSH thesaurus) and Q13 (Likelihood of using MeSH) by Q6 (experience in years).

Item	Response	Q6A (Experience in years)			Total
		< 10 years	> 10 and < 20 years	> 20 years	
Q7 Frequency of information retrieval	Occasionally	07	05	01	13
	Often	08	07	06	21
	Very often	28	09	15	52
	Total	43	21	22	86
Q9 Confidence in information retrieval	Confident	16	9	14	39
	Extremely confident	02	02	04	08
	Neutral	24	09	02	35
	Not confident	01	01	02	04
	Total	43	21	22	86

Q11 How often do you use the MeSH thesaurus to refine your searches or explore related concepts?	Never	11	06	09	26
	Occasionally	12	05	07	24
	Often	7	03	03	13
	Rarely	13	05	03	21
	Very often	0	02	0	02
	Total	43	21	22	86
Q13 If MeSH terms can be used in a health information retrieval system, how likely are you to use it?	Likely	20	14	9	43
	Neutral	11	1	3	15
	Unlikely	3	1	0	4
	Very likely	8	5	10	23
	Very unlikely	1	0	0	1
	Total	43	21	22	86

The result of Chi-square (χ^2) tests that were performed to evaluate the association between the survey responses and the experience levels of postgraduate medical and dental trainees (<10 years, >10 and <20 years, >20 years) is shown in Table 7.

Table 07

Summary of the χ^2 test performed on the items Q7, Q9, Q11 and Q13 by Q6 experience in years.

Item	χ^2 test Value	df	Significance
Q7 Frequency of information retrieval	5.514	4	0.239
Q9 Confidence in information retrieval	14.417	6	0.025
Q11 How often do you use the MeSH thesaurus to refine your searches or explore related concepts?	10.374	10	0.408
Q13 If MeSH terms can be used in a health information retrieval system, how likely are you to use it?	14.449	10	0.153

According to the table, χ^2 and the associated significance between the response to item Q7, and the responders' experience were statistically insignificant (χ^2 Value: 5.514, df. = 4, $p = 0.239$). However, the association between the responses to item Q9 and the experience of participant was statistically significant ($\chi^2 = 14.417$, df = 6, $p = 0.025$). This suggests that confidence levels are influenced by the trainees' experience, with more experienced individuals likely to feel more confident. Further, the associations between the responses to the item Q11 ($\chi^2 = 10.374$, df = 10, $p = 0.408$ and Q13 ($\chi^2 = 14.449$, df = 10, $p = 0.153$) were statistically insignificant.

Assessment of the Need for using MeSH Thesaurus

To assess the need for using MeSH thesaurus, respondents were queried on their awareness of existing guidance and their likelihood of using such a feature if it is available. As presented in Table 3, a significant majority (57.0%, $n=49$) unaware of the possibility of using MeSH in the current systems, indicating a visibility gap. However, when asked about their likelihood of using MeSH, 76.7% ($n=66$) of respondents indicated they would be 'likely' or 'very likely' to use it, demonstrating a clear demand and a latent need for such support. This need was further substantiated by the high percentage of trainees who perceived specific benefits from MeSH, such as enhanced relevance of results (72.6%) and improved ease of use (60.7%).

Thematic analysis

For the three open-ended questions employed, responses were received from all 86 respondents. Accordingly, the following themes were identified.

Table 08

Benefits of MeSH Thesaurus and its potential Enhancements in the information searching process

Theme/Area	Details/Features	Notes or Comments
Beneficial features and functionalities of using MeSH Terms	- Auto-Suggestion - Synonym recognition - Mapping to MeSH Terms - Relevance Ranking - Visualisation Tools	These features improve the search process and enhance the usability of health information retrieval systems.
Perceived benefits of MeSH use	Improves precision, recall, and relevance of search results	Enhances the user's information retrieval experience.
Suggestions and Feedback for enhancing Efficiency	- User Training - Feedback mechanism - Continuous Updates - Collaboration with Experts - User Guides	Implementation of these measures ensures continuous user education and successful results in retrieval of information.

Discussion

The results of this study show critical understandings of the information retrieval behaviors of postgraduate medical and dental trainees in Sri Lanka especially related to PubMed and the MeSH thesaurus guidance. The results indicate that while a substantial portion of postgraduate trainees are familiar with MeSH (51.2%), actual usage remains low (only 17.4% utilize it frequently). This discrepancy suggests that regardless of awareness, practical application is hindered by factors such as insufficient training and familiarity with the MeSH thesaurus (Dilhani & Ranasinghe, 2018). This gap between awareness and practical application is consistent with findings from previous studies highlighting the challenges in applying MeSH into routine search practices. For instance, a study by UCL Library (2023) emphasizes that while PubMed automatically searches for MeSH terms, users often lack the training to utilize the MeSH database effectively for advanced search

strategies. The study also revealed that confidence in information retrieval correlates with experience, as more experienced trainees reported higher confidence levels. Similarly, research by the National Library of Medicine (NLM, 2025) indicates that automated indexing has improved the access to MeSH terms but requires user expertise for optimal application. This emphasizes the need for structured training programmes not only to introduce MeSH but also provide hands-on experience in its application. Similar findings were indicated in previous research that highlights the challenges faced by medical professionals in leveraging controlled vocabularies for effective information retrieval (Pasche et al., 2013; Munasinghe, 2024).

The low frequency of database searches, coupled with the high reliance on books and textbooks, raises questions about the adequacy of current training programs in equipping trainees with the skills needed for advanced information retrieval. This reliance on traditional sources may be influenced by the perceived complexity of database search interfaces and the lack of familiarity with structured tools such as MeSH. Although familiarity with MeSH was moderate, its actual usage remained minimal, pointing out the need for targeted interventions to bridge this gap. The moderate familiarity with MeSH but limited usage indicates that trainees may recognize its importance but require additional training and practice to incorporate it effectively into their workflow. Moreover, the interest in workshops dedicated to MeSH usage shown by a significant number of respondents (90.7%) indicates a clear demand for educational resources aimed at improving information retrieval skills.

The significant association between experience and confidence levels reflects the role of professional maturity in developing information-seeking skills.

Experienced trainees are likely to have developed strategies for navigating information systems through practical exposure. However, the absence of significant associations between experience and other variables, such as MeSH usage, suggests that even experienced trainees may not be fully equipped to utilise specialised tools.

The study also demonstrates that use of MeSH in retrieving health information has the potential to address many of the challenges faced by trainees. Enhanced search relevance, accuracy, and ease of use are particularly crucial in a field where timely access to precise information can directly impact clinical decision-making and patient outcomes. The benefits identified by respondents such as, enhanced relevance (72.6%), ease of use (60.7%), improved search accuracy (60.7%), and time efficiency (58.3%) highlight the importance of use of MeSH in information retrieval. These findings are supported by prior research demonstrating that MeSH improves precision and relevance in search results. For example, a study by Darmoni et al (2012) found that using MeSH Concept indexing in MEDLINE significantly enhanced the precision of retrieved articles compared to default PubMed searches. Similarly, a systematic review of Leblanc et al (2024) revealed that queries incorporating both MeSH and free-text terms retrieved more relevant articles than free-text-only queries.

Furthermore, the willingness of 90.7% of respondents to attend workshops on maximizing MeSH usage indicates a strong demand for educational interventions. Effective training programs should not only cover the theoretical underpinnings of MeSH but also include hands-on sessions to demonstrate its practical application in various clinical scenarios. Such initiatives can enhance the confidence and competence of trainees, fostering a culture of evidence-based practice. Another notable finding is the

willingness of 76.7% of respondents to adopt MeSH-guided systems if support mechanisms are in place. This highlights the importance of user-friendly interfaces and clear guidance to facilitate the integration of MeSH into routine searches.

The implications of these findings extend beyond individual trainees to the broader healthcare system. Improved information retrieval capabilities can enhance the quality of research, clinical decision-making, and patient care. Therefore, use of MeSH in a proper way in the information searching process is a practical necessity for advancing medical education and practice.

The frequency of searching for medical/dental literature to support work or studies varies among individuals, as highlighted in the data presented. The data indicates that females tend to search for medical/dental literature more consistently compared to males. This information can be discussed in the context of information-seeking behaviour, gender differences in research practices, and the implications for accessing and utilizing medical/dental literature in academic or professional settings. Understanding these patterns can help tailor information retrieval systems and resources to better meet the needs of different user groups.

The data indicates varying levels of confidence in retrieving relevant medical/dental information using existing retrieval systems based on gender. This information suggests gender-related differences in confidence levels when utilizing retrieval systems for accessing medical/dental information. These findings can be discussed in the context of user experiences, training needs, and system usability considerations to enhance user confidence and proficiency in information retrieval tasks.

The data from Table 2 reveals varying frequencies in searching for medical/dental literature and confidence levels in information retrieval systems among healthcare professionals. The respondents also displayed mixed familiarity with the MeSH thesaurus, highlighting a balanced ratio between those familiar with it and those who are not. Additionally, there appears to be considerable interest among professionals in utilising MeSH in the health information retrieval process, particularly if accompanied by formal training or educational workshops. These findings underscore the importance of considering user habits, confidence levels, familiarity with indexing tools, and the potential impact of enhanced guidance.

The fourth objective of this study was to examine the impact of MeSH thesaurus training and education. The findings reveal a critical disconnect: while a majority of trainees have had some formal training, this has not translated into high levels of practical usage. This indicates that the *current nature* of training may be insufficient, perhaps focusing on theory over hands-on, repetitive practice. The remarkable interest by respondents (90.7%) in further workshops is a powerful indicator that trainees themselves perceive a gap in their skills and see training as a vital solution. This aligns with adult learning principles, emphasizing the importance of applied, relevant, and participatory learning. Therefore, the 'impact' of future training is potentially very high. Implementing mandatory, structured, and practical workshops, as recommended, could be the key to bridging the observed gap between awareness and usage, ultimately empowering trainees to make use of MeSH for more effective evidence-based practice.

Conclusion

The present study highlights the information-seeking behaviours, confidence levels, and familiarity with PubMed and the MeSH thesaurus among health and medical postgraduate trainees, revealing gender-related differences in search habits, confidence in retrieval systems, and interest in MeSH application. Females demonstrate more consistent search behaviour and higher confidence levels, indicating potential gender variations in information retrieval practices. There is a notable interest in utilising the MeSH thesaurus, especially when guided by training workshops to enhance its effectiveness.

Moreover, the study found that trainees perceive the MeSH as a tool to significantly enhance search experiences, precision, recall, and relevance of results. The prioritisation of benefits emphasises the importance of improved relevance, user experience, search accuracy, and time efficiency through the application of MeSH. This signifies the critical role of the MeSH Thesaurus in optimising healthcare information retrieval.

Additionally, the diverse sources used for information retrieval, including medical/dental databases, books, reports, institutional websites, and conference proceedings, indicate the varied approaches in accessing healthcare information among postgraduate trainees.

In conclusion, the study highlights the value of understanding user behaviours and the imperative of resources like PubMed and the MeSH thesaurus to enhance information retrieval experiences in healthcare. Implementation of targeted training programmes on effective use of MESH tools in searching can further enhance proficiency and efficiency in

accessing medical/dental literature, ultimately advancing healthcare research and practice.

Suggestions and Recommendations

Based on the findings, several recommendations can be drawn in order to enhance the effective and proper usage of PubMed and the MeSH thesaurus. Librarians and information professionals can play a major role in this aspect. To enhance awareness and improve searching skills, can introduce mandatory workshops and training sessions on advanced database searching and the effective use of PubMed and the MeSH Thesaurus. Further, developing online tutorials and user guides tailored to postgraduate trainees, emphasizing the practical applications of MeSH in clinical and academic contexts, is important.

By addressing these recommendations, institutions can empower postgraduate trainees to leverage the full potential of the MeSH Thesaurus in PubMed searching, ultimately enhancing the quality of health information retrieval and improving clinical and academic outcomes.

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