

Artificial intelligence use, perceptions, and educational needs among medical undergraduates at a Sri Lankan medical faculty: A cross-sectional survey

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Abstract

Background

Artificial intelligence (AI) is rapidly transforming medicine, yet medical curricula, particularly in low- and middle-income countries, have not systematically integrated AI competencies. Understanding medical students' AI use, competence, and perceptions is essential for evidence-based curriculum development.

Objective

To investigate AI tool usage, self-rated AI competence, and attitudes towards AI in medical education, physician roles, and patient care among medical undergraduates at the Faculty of Medicine, Sabaragamuwa University of Sri Lanka (SUSL), and to compare findings across year groups and gender.

Methods

A cross-sectional online survey was conducted among Years 1–5 medical undergraduates at SUSL in May 2025. The questionnaire, adapted from previously published international surveys, assessed demographics, AI tool usage, self-rated competence, and 12 Likert-scale attitudinal items covering curriculum integration, physician roles, and patient care. Descriptive statistics, Kruskal–Wallis H-tests, Mann–Whitney U-tests, and chi-square tests were used for analysis.

Results

A total of 369 responses were analysed. AI adoption was almost universal (99.2%; 366/369). ChatGPT was the most frequently used tool (98.1%), followed by Google Gemini (34.9%), DeepSeek (20.2%), and Microsoft Copilot (6.2%). The main uses of AI were subject reference (89.3%), general information retrieval (72.9%), assignment assistance (50.8%), and writing improvement (39.6%). ChatGPT showed the highest self-rated competence, with 92.4% reporting good or higher competence. Among AI-supported medical applications, Medscape was used by 77.9% of respondents, followed by UpToDate (37.4%) and WebMD/WebMD Symptom Checker (15.4%). Most students agreed that AI could enhance learning in preclinical (85.1%), paraclinical (77.8%), and clinical (68.6%) subjects. Significant differences across year groups were observed for attitudes towards curriculum integration (Kruskal–Wallis $H = 29.27, p < 0.001$) and AI replacing physician tasks ($H = 13.23, p = 0.010$), with preclinical students expressing more favourable attitudes.

Conclusions

Medical undergraduates demonstrated near-universal AI adoption despite limited formal training. Preclinical students were more receptive to AI integration than clinical students. These findings support the integration of structured, ethically grounded AI education into undergraduate medical curricula to promote the safe, effective, and responsible use of AI in future clinical practice.

Introduction

The emergence of large language models (LLMs) and artificial intelligence (AI)-powered clinical decision support tools is transforming the landscape of modern medicine. From diagnostic imaging analysis and drug discovery to clinical documentation and patient communication, AI applications are permeating virtually every dimension of healthcare delivery.^{1,2} Landmark studies have demonstrated the capacity of AI systems to match or surpass human performance in domains as diverse as dermatology, radiology, and ophthalmology.^{3,4} The World Health Organization, the World Medical Association, and the National Academy of Medicine have each called for urgent action to ensure that health systems, and the professionals who staff them, are prepared for this transformation.^{5,6,7}

Undergraduate medical education is particularly important in this context. The students currently enrolled in medical programmes worldwide will constitute the physician workforce of the 2030s and 2040s, an era in which AI will be deeply embedded in clinical practice. Yet evidence from multiple countries suggests that formal AI education in medical curricula remains sparse, inconsistent, and poorly aligned with the actual needs of future practitioners.^{8,9,10} Students are consequently adopting AI tools independently, often outside any formal curricular guidance, raising concerns about uncritical use, academic integrity, and ethical blind spots.^{11,12}

As a lower-middle-income country with a strong tradition of free state-funded medical education, Sri Lanka has eleven medical faculties producing approximately 2,000 new doctors per year.¹³ The country's healthcare system is increasingly adopting digital health technologies. However, published evidence on AI literacy, usage patterns, and educational readiness among Sri Lankan medical undergraduates remains limited.

Understanding students' AI use, competencies, and perceptions is a necessary first step toward evidence-based curriculum reform. International surveys from Germany, Turkey, the United States, and other high-income settings have documented high rates of AI tool adoption and broadly positive attitudes toward AI integration, but notable gaps in formal training and ethical understanding.^{8,14,15,16} Whether these findings generalise to South Asian medical education contexts, where resource constraints, pedagogic traditions, and clinical environments differ substantially, is unknown. Evidence on current AI use and educational needs is essential for informing curriculum development and ensuring that future graduates.

The present study addresses this gap by investigating AI use, self-rated competence, and perceptions among medical undergraduates at the Faculty of Medicine, Sabaragamuwa University of Sri Lanka

(SUSL). It also explores differences across year groups spanning the transition from preclinical to clinical training, with particular attention to AI use, attitudes towards AI in medical education, physician roles, and patient care.

Methods

Study Design and Setting

A cross-sectional online survey was conducted in May 2025 among undergraduate medical students at the Faculty of Medicine, SUSL, Ratnapura. The survey targeted all 620 registered medical undergraduates.

Study Instrument

Data were collected using a self-administered structured questionnaire developed by the investigators based on previously published surveys assessing AI use and perceptions among medical students.^{8,14} The questionnaire was adapted to the Sri Lankan undergraduate medical education context and updated to reflect AI applications commonly used by medical students at the time of the study.

The questionnaire comprised 10 items organised into six domains: demographic characteristics, AI application use, purposes of AI use, self-rated competence in AI applications, perceptions of AI in medical education and medical practice, and an optional open-ended feedback question. The demographic section included items on year of study and gender. The AI use section assessed the use of general AI tools (e.g., ChatGPT, Google Gemini, and Microsoft Copilot) and medical applications with AI-supported features, as well as the purposes for which these applications were used in academic activities.

Self-rated competence in using AI applications was assessed using a six-point Likert-type scale ranging from “Rarely or Never Used” to “Excellent”. Attitudes towards AI were assessed using 12 five-point Likert-scale statements (Strongly Disagree to Strongly Agree) covering AI in medical education, physician roles, and patient care. These statements explored perceptions regarding curriculum integration of AI, its role in enhancing learning across different disciplines, ethical considerations, future physician roles, doctor-patient relationships, and the impact of AI on healthcare quality. An optional open-ended question was included to obtain additional qualitative feedback from participants.

The draft questionnaire underwent expert review for content validity by a panel of medical educators and academics with expertise in medical education and AI in healthcare. The panel evaluated the questionnaire for relevance, clarity, comprehensiveness, and alignment with the study objectives. Minor revisions were made to improve clarity, reduce ambiguity, and enhance contextual relevance.

Face validity was assessed through pilot testing among 10 undergraduate medical students who were not included in the final study sample. Feedback obtained during pilot testing was used to refine the wording, structure, and flow of the questionnaire to improve readability and comprehension.

Data Collection

Data were collected using an online self-administered questionnaire created using Google Forms. The questionnaire link was distributed electronically to undergraduate medical students through official and student communication platforms, including email and social media groups. Participants completed the questionnaire voluntarily using their personal electronic devices.

Prior to participation, an information page was provided at the beginning of the Google Form explaining the purpose of the study, the voluntary nature of participation, and the confidentiality of the information collected. Informed consent was obtained electronically from all participants before they proceeded to the questionnaire. Participants were informed that they could withdraw from the study at any stage before submission of the questionnaire without any consequences.

No personally identifiable information such as names, contact numbers, or student registration numbers was collected, ensuring anonymity of responses. Access to the collected data was restricted to the investigators and the data were stored in password-protected electronic files. The study was conducted in accordance with ethical principles for research involving human participants, and ethical clearance was obtained from the relevant Ethics Review Committee of Faculty of Medicine, SUSL prior to commencement of the study (ERC/FOM-SUSL/ A 03-10-24).

Statistical Analysis

Data were exported to Microsoft Excel and analysed using Python version 3.12 (pandas, SciPy). Descriptive statistics: frequencies, proportions, and medians, were calculated for all variables. Likert responses were numerically coded (Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1). For competence ratings, 'Good', 'Very Good', and 'Excellent' were collectively categorised as 'Good or above'. Non-parametric Kruskal-Wallis H-tests were used to compare Likert scores across year groups given the ordinal nature of the data. Mann-Whitney U-tests were applied for pre-clinical (Years 1-2) versus clinical (Years 4-5) pairwise comparisons. Chi-square tests were used to examine gender differences in categorical outcomes. A p-value of < 0.05 was considered statistically significant. Year 3 data ($n = 18$) were included in overall descriptive analyses but interpreted cautiously in subgroup comparisons given the small sample size.

Results

Sample Characteristics

Of the 620 eligible medical students, 373 completed the questionnaire (response rate 60.2%). Four incomplete questionnaires were excluded, leaving 369 responses (59.5%) for analysis. The distribution across year groups was: Year 1, n = 90 (24.1%); Year 2, n = 82 (22.0%); Year 3, n = 18 (4.8%); Year 4, n = 133 (35.7%); and Year 5, n = 46 (12.3%) (Table 1). The sample was predominantly female (270/369, 72.4%), with 94 males (25.2%) and five (1.3%) preferring not to disclose their gender (Table 1). Almost all participants reported using AI tools and applications (99.2%, n = 366), while only a small minority indicated that they did not use AI tools or any AI-supported medical application (0.8%, n = 3).

Table 1. Demographic characteristics of study participants (n= 369).

Characteristic	Category	n (%)
Year of Study	Year 1	90 (24.1)
	Year 2	82 (22.0)
	Year 3	18 (4.8)
	Year 4	133 (35.7)
	Year 5	46 (12.3)
Gender	Female	270 (72.4)
	Male	94 (25.2)
	Prefer not to say	5 (1.3)
Use of AI tools and applications	Yes	366 (99.2)
	No	3 (0.8)

AI Tool Usage

Of the 369 students, 366 (99.2%) reported having used at least one AI application for academic purposes. Among the general AI tools they used, ChatGPT was the most frequently used by 359/366 (98.1%) respondents, followed by Google Gemini (34.9%, n = 128), DeepSeek (20.2%, n = 74), and Microsoft Copilot (6.2%, n = 23). A small number of students also reported using Perplexity, Grok, and other emerging platforms (2.2%, n = 8). The co-use of multiple tools was common: 80 (21.8%) students used both ChatGPT and Gemini, 35 (9.5%) used ChatGPT and DeepSeek concurrently, and 21 (5.7%) used ChatGPT, Gemini, and DeepSeek together.

Among the 358 respondents who reported using AI-supported medical applications, Medscape was the most commonly used application (77.9%, n = 279), followed by UpToDate (37.4%, n = 134) and WebMD or WebMD Symptom Checker (15.4%, n = 55) (Table 2).

Table 2. Frequency and purposes of general AI tool use and use of AI-supported features within medical applications used (n = 366)

Category	AI Tool / AI-Supported Medical Application / Purpose	n (%)
General AI Tools	ChatGPT	359 (98.1)
	Google Gemini	128 (34.9)
	DeepSeek	74 (20.2)
	Microsoft Copilot	23 (6.2)
	Other (Perplexity, Grok, etc.)	8 (2.2)
AI-supported medical applications	Medscape	279 (77.9)
	UpToDate	134 (37.4)
	WebMD / WebMD Symptom Checker	55 (15.4)
Purpose of Use	Subject matter reference	327 (89.3)
	General information lookup	267 (72.9)
	Assignment assistance	186 (50.8)
	Improving writing skills	145 (39.6)

Purposes of AI Use

The primary purpose for which students used AI tools and AI-supported features in medical applications was subject-matter reference relevant to their studies (89.3%, n = 327). This was followed by general information lookup (72.9%, n = 267), assistance with completing assignments (50.8%, n = 186), and improvement of writing skills (39.6%, n = 145). The combined use of multiple purposes was common; notably, 87 (23.8%) students reported using AI for all four listed purposes, and 68 (18.6%) used AI exclusively for subject-matter reference.

Self-Rated AI Competence

Self-rated competence was highest for ChatGPT, where 92.4% of respondents (n = 341/369) rated themselves as Good or above (21.7% Excellent, 32.0% Very Good, 38.8% Good). In contrast, self-rated competence was substantially lower for other platforms: Google Gemini (44.5% Good or above), DeepSeek (36.3% Good or above), and Microsoft Copilot (24.6% Good or above) (Table 3).

Table 3. Self-rated competence in AI applications (n = 369).

AI Platform	Excellent (%)	Very Good (%)	Good (%)	Fair (%)	Poor (%)	Rarely/Never (%)
ChatGPT	21.7	32.0	38.8	6.8	0.5	0.3
Google Gemini	8.1	13.6	22.8	10.0	3.8	41.7
Microsoft Copilot	2.4	5.7	16.5	10.3	6.8	58.3
DeepSeek	3.0	8.9	24.4	11.1	5.4	47.2

Attitudinal Findings

AI in Medical Education

A strong majority of students held positive views regarding the integration of AI into the medical curriculum. Overall, 67.5% (n = 249/369) agreed or strongly agreed that AI should be incorporated into the medical curriculum. Students expressed the highest level of agreement regarding the potential of AI to enhance pre-clinical learning (85.1% agreed/strongly agreed), followed by para-clinical (77.8%) and clinical subjects (68.6%). A notable proportion of students (63.4%) also agreed that AI in medicine would introduce new ethical challenges, highlighting important implications for curriculum design.

AI and the Physician Role

Students expressed mixed views regarding AI's impact on the physician role, 40.9% agreed that AI could replace tasks traditionally performed by physicians, and 34.7% agreed that AI may reduce the need for certain medical roles. At the same time, 58.3% agreed that AI would help them become better physicians.

AI and Patient Care

Exactly half of respondents (50.4%) agreed or strongly agreed that AI would improve the quality of patient care. Concerns were also evident, with 39.9% agreeing or strongly agreeing that AI would weaken

the doctor–patient relationship, and 57.4% agreeing or strongly agreeing that AI would introduce new ethical challenges in medical practice (Table 4).

Table 4. Attitudinal responses to AI in medical education, physician roles, and patient care (n = 369)

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Agree/ Strongly Agree (%)
AI in Medical Education						
AI should be part of the medical curriculum	18.7	48.8	29.8	2.2	0.5	67.5
AI can enhance learning in pre-clinical subjects	25.2	59.9	13.3	1.6	0.0	85.1
AI can enhance learning in para-clinical subjects	19.8	58.0	20.3	1.6	0.3	77.8
AI can enhance learning in clinical subjects	16.5	52.0	25.5	5.1	0.8	68.6
AI in medicine will bring new ethical challenges	15.2	48.2	31.4	4.9	0.3	63.4
AI and the Physician Role						
AI could replace tasks performed by physicians	5.7	35.2	35.5	17.6	6.0	40.9
AI will assist or enhance physicians' roles	8.4	46.3	30.4	10.6	4.3	54.7
AI may reduce the need for certain medical roles	3.5	31.2	37.7	22.8	4.9	34.7
AI will help me become a better physician	9.2	49.1	29.8	8.4	3.5	58.3
AI and Patient Care						
AI will improve the quality of patient care	8.4	42.0	39.0	8.1	2.4	50.4
AI will weaken the doctor-patient relationship	9.8	30.1	39.3	17.6	3.3	39.8

AI will bring new ethical challenges in practice	12.7	44.7	37.1	4.6	0.8	57.5
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Comparison by Year of Study

Statistically significant differences in attitudes toward AI were observed across year groups. Agreement with including AI in the medical curriculum was highest among Year 1 (85.6%) and Year 2 (75.6%) students, declining to 51.9% in Year 4 and 61.4% in Year 5. A Kruskal-Wallis test confirmed that these differences were highly significant ($H = 29.27$, $df = 4$, $p < 0.001$). Similarly, beliefs that AI could replace tasks traditionally performed by physicians differed significantly across year groups ($H = 13.23$, $df = 4$, $p = 0.010$), with Year 1 and Year 2 students more likely to agree with this view.

To further characterise this pattern, pre-clinical (Years 1-2, $n = 172$) and clinical (Years 4-5, $n = 179$) students were compared using Mann–Whitney U-tests. Pre-clinical students demonstrated significantly more favourable attitudes toward AI curricular integration (mean score 4.02 vs. 3.62, $p < 0.001$), AI enhancing pre-clinical learning (4.18 vs. 3.98, $p = 0.003$), AI replacing physician tasks (3.37 vs. 3.00, $p < 0.001$), AI enhancing physicians' roles (3.58 vs. 3.34, $p = 0.038$), AI helping them become better physicians (3.62 vs. 3.40, $p = 0.023$), and AI improving patient care (3.58 vs. 3.38, $p = 0.016$). No significant differences were observed regarding perceptions of AI-related ethical challenges, the risk of weakening the doctor–patient relationship, or AI enhancing para-clinical or clinical learning.

DeepSeek usage also varied across year groups, with Year 3 (33.3%) and Year 1 (26.7%) reporting higher usage than Year 2 (6.1%).

Gender Comparisons

No statistically significant gender differences were observed in attitudes toward including AI in the medical curriculum ($\chi^2 = 3.55$, $df = 4$, $p = 0.470$). Attitudes toward AI integration in medicine did not differ significantly by gender within this study population.

Discussion

Principal Findings

This study documents near-universal adoption of AI tools among medical undergraduates at SUSL, with 99.2% reporting use of at least one AI application for academic purposes. This represents a very high AI adoption rate compared with previous surveys among medical students and likely reflects the broad social penetration of ChatGPT, which was used by 98.1% of AI users, alongside the relatively unrestricted internet access available to Sri Lankan university students.^{17,18} The finding stands in contrast to the 60–

80% rates reported from Germany and Turkey in 2022–2023, suggesting that the pace of AI adoption has accelerated dramatically in just two to three years.^{8,14}

The dominance of ChatGPT is consistent with its unprecedented user growth since launch in November 2022, reaching 100 million active users within two months—a milestone no previous consumer application had achieved.¹⁸ However, the emergence of DeepSeek (used by 20.2% of this sample), a Chinese-developed open-source model released in late 2024, suggests that the AI tool landscape is rapidly diversifying and that surveys conducted even six months apart may yield substantially different platform rankings. This highlights the importance of regularly updating educational research in this rapidly evolving field.

The primary uses of AI included subject-matter reference (89.1%) and general information lookup (72.8%)—mirroring findings from international surveys and suggesting that students are primarily deploying these tools as enhanced search engines rather than as active learning facilitators.^{8,14,15} The approximately 50.7% who reported using AI for assignment assistance raises concerns about academic integrity that merit institutional policy attention.^{11,19} Notably, writing improvement was reported by 39.5%, suggesting some degree of awareness that AI can serve as a formative writing coach—a use that, if structured appropriately, could be pedagogically beneficial.²⁰

Self-Rated Competence and Medical Applications

The self-rated ChatGPT competence data (92.4% Good or above) should be interpreted with caution. The high level of self-rated competence should not be interpreted as evidence of AI literacy or critical appraisal skills; students may be proficient at generating responses without being equipped to evaluate their accuracy, currency, or clinical appropriateness. Research from multiple settings has documented that students who use AI tools confidently can nonetheless fall prey to AI-generated inaccuracies, particularly for complex clinical queries.^{21,22} The lower competence ratings for Gemini, DeepSeek, and Copilot likely reflect their more recent adoption and lower frequency of use compared with ChatGPT.

The high Medscape adoption (77.9%) is noteworthy because Medscape is a professionally curated medical information resource rather than a generative AI tool per se, though it increasingly incorporates AI features. That more than three-quarters of students use Medscape suggests that the boundary between 'AI-powered medical apps and traditional electronic clinical references is becoming blurred in students' perceptions. UpToDate adoption (37.4%) is lower, possibly reflecting access costs, as full UpToDate subscriptions are not universally available to SUSL students.

Attitudes and Their Implications for Curriculum Design

The attitudinal data reveal a pattern of qualified enthusiasm: students broadly support AI integration into medical education and anticipate AI's beneficial roles, but they simultaneously expressed considerable uncertainty about AI's effects on physician identity, patient care quality, and professional ethics. This ambivalence mirrors findings from Germany, the United States, and Turkey.^{14,15}

Three specific findings deserve particular attention. First, the strong agreement that AI can enhance pre-clinical learning (85.1%) compared with lower agreement for clinical learning (68.6%) aligns with the intuition that AI's utility as an information retrieval and synthesis tool maps more naturally onto the fact-intensive pre-clinical curriculum than onto the judgment-intensive, relationship-centred clinical environment. Curriculum designers should recognise that 'AI in medical education' is not a monolithic concept: different pedagogic strategies will be needed for pre-clinical versus clinical integration.^{9,23}

Second, the decline in enthusiasm for AI curricular integration from Year 1 (85.6%) to Year 4 (51.9%) is one of the most important and potentially generalisable findings of this study. A Kruskal-Wallis test confirmed this was not attributable to chance ($H = 29.27$, $df = 4$, $p < 0.001$). The decline in enthusiasm for AI integration across the transition to clinical training may reflect greater awareness of the limitations of AI in real-world patient care, increasing professional responsibility, or the influence of traditional clinical teaching environments.^{24,25} As this study was cross-sectional, these explanations remain speculative and should be explored in future longitudinal and qualitative studies.

Third, the finding that 63.4% of students anticipated that 'AI in medicine will bring new ethical challenges' and 57.5% anticipated 'new ethical challenges in medical practice' indicates a pre-existing awareness of AI ethics among this population. However, awareness is not equivalent to competence. International consensus frameworks, including those from the WHO and UNESCO, emphasise that AI ethics education must move beyond awareness to structured engagement with concepts such as algorithmic bias, data privacy, informed consent for AI-assisted care, and the limits of AI decision-making.^{5,26}

This recommendation is consistent with recent evidence indicating that, despite growing demand for AI literacy among medical students, there remains no consensus on AI competencies or standardized approaches to curriculum integration in undergraduate medical education.²⁷ Such training should begin in the preclinical years and continue longitudinally, focusing not only on technical proficiency but also on critical appraisal of AI-generated information, ethical and responsible AI use, algorithmic bias, data governance, and the appropriate application of AI in patient care. Clinical teaching should incorporate case-based learning to help students understand both the capabilities and limitations of AI in real-world practice.

Contextual Considerations for Sri Lanka

Sri Lanka's medical education system operates within a public-sector, resource-constrained context that creates specific AI integration challenges and opportunities. On the challenge side, equitable access to high-quality AI tools (some of which require subscriptions), reliable broadband connectivity, and faculty capacity for AI pedagogy cannot be assumed across all eleven medical faculties. On the opportunity side, the free state university system provides a centralised pathway for curriculum reform.

Although Sri Lanka has recently introduced an AI Policy Framework for State Universities, comprehensive guidance for AI use in medical education and healthcare is still evolving. In this context, the finding that 50.8% of students used AI for assignment assistance suggests that student adoption of

AI is advancing more rapidly than institutional guidance, highlighting the need for clear policies that support ethical and appropriate AI use in medical education.²⁸

At the institutional level, medical faculties should develop clear guidance on the appropriate use of AI in learning and assessment, supported by faculty development initiatives to enable educators to integrate AI effectively into teaching and assessment. Collaborative national guidance would also help promote consistent and ethical AI implementation across Sri Lankan medical schools.

Limitations

This study has several limitations. First, it was conducted at a single medical faculty, which may limit the generalisability of the findings to other Sri Lankan medical schools with different educational environments and student populations. Second, the study relied on self-reported AI use, competence, and perceptions, which are subject to recall and social desirability biases and may not reflect actual competence or patterns of use. Third, the relatively small number of Year 3 participants limited the precision of year-specific comparisons, although this cohort was retained in the descriptive analyses. Fourth, the cross-sectional design precludes conclusions about causal relationships or changes in AI use and perceptions over time. Finally, the rapidly evolving nature of AI means that patterns of AI adoption and the popularity of individual platforms may change quickly, limiting the long-term generalisability of some findings.

Conclusions

These findings provide an evidence base to inform curriculum development and institutional policy on AI in undergraduate medical education in Sri Lanka. Future multi-centre and longitudinal studies are needed to evaluate how AI use evolves over time and to assess the impact of structured AI education on students' competence and clinical preparedness. Integrating structured AI education into undergraduate medical curricula may help ensure that future graduates use AI safely, ethically, and effectively in clinical practice.

Abbreviations

AI – Artificial Intelligence

ERC – Ethics Review Committee

LLMs – Large Language Models

MBBS – Bachelor of Medicine, Bachelor of Surgery

NAM – National Academy of Medicine

SUSL – Sabaragamuwa University of Sri Lanka

UGC – University Grants Commission

WHO – World Health Organization

WMA – World Medical Association

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Ethics Review Committee, Faculty of Medicine, Sabaragamuwa University of Sri Lanka (Reference: ERC/FOM-SUSL/A 03-10-24). Electronic informed consent was obtained from all participants before completion of the questionnaire.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Perera PDVM. and Mendis SNJK contributed to the conception and design of the study. Andadola AMSU and Walallawita WKMMM collected the data and performed the statistical analysis. Perera PDVM supervised the study. All authors contributed to data interpretation, manuscript preparation, critically revised the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

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