PMAC PRINCE MAHIDOL AWARD CONFERENCE 2025

Harnessing Technologies in an Age of AI to Build A Healthier World

Artificial Intelligence Utilization in Cancer Screening Program across ASEAN: A Scoping Review

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INTRODUCTION

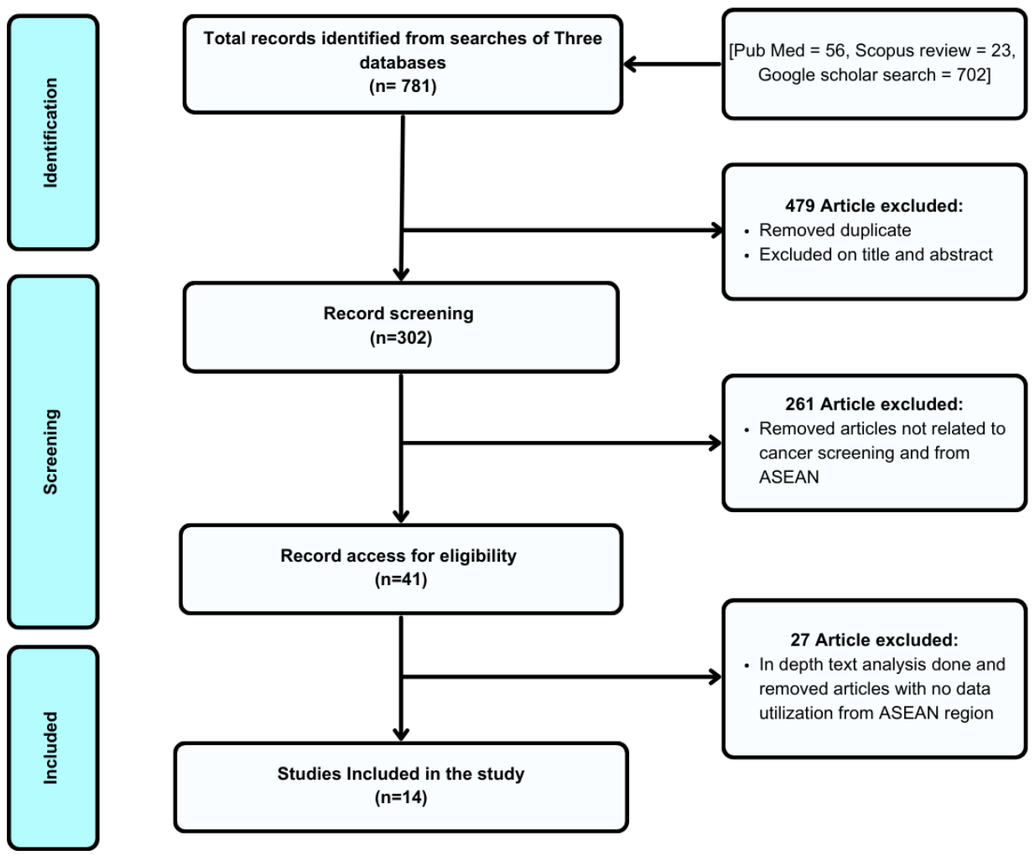
- Cancer remains a significant health challenge in the ASEAN region, highlighting the need for effective screening programs.
- However, approaches, target demographics, and intervals vary across ASEAN member states, necessitating a comprehensive understanding of these variations to assess program effectiveness.
- Additionally, while artificial intelligence (AI) holds promise as a tool for cancer screening, its utilization in the ASEAN region is unexplored.

OBJECTIVE

- To identify and evaluate different cancer screening programs across ASEAN and to assess the integration and impact of AI in these programs.

METHODS

- A scoping review was conducted using PRISMA-ScR guidelines to provide a comprehensive overview of cancer screening programs and AI usage across ASEAN.
- Data were collected from government health ministries, official guidelines, literature databases, and relevant documents.
- The use of AI in cancer screening reviews involved searches through PubMed, Scopus, and Google Scholar with the inclusion criteria of only included studies that utilized data from the ASEAN region from January 2019 to May 2024.



CONCLUSION

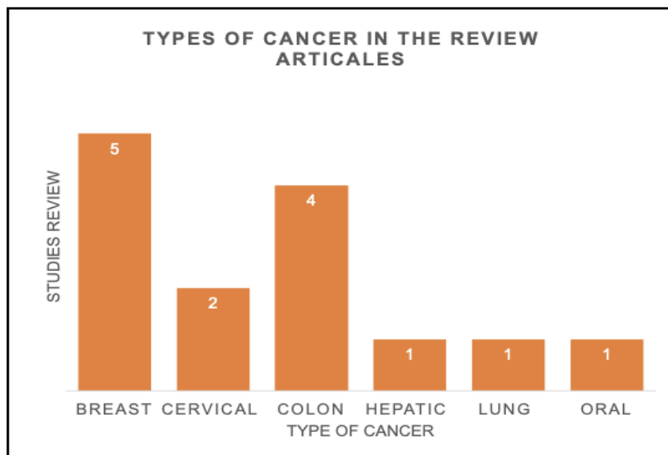
- Cancer screening programs in the ASEAN region require more organized approaches targeting appropriate age groups at regular intervals to meet the WHO's 2030 screening targets.
- Efforts to integrate AI in Singapore, Malaysia, Vietnam, Thailand, and Indonesia show promise in optimizing screening processes, reducing costs, and improving early detection.
- AI technology integration enhances cancer identification accuracy during screening, improving early detection and cancer management across the ASEAN region.

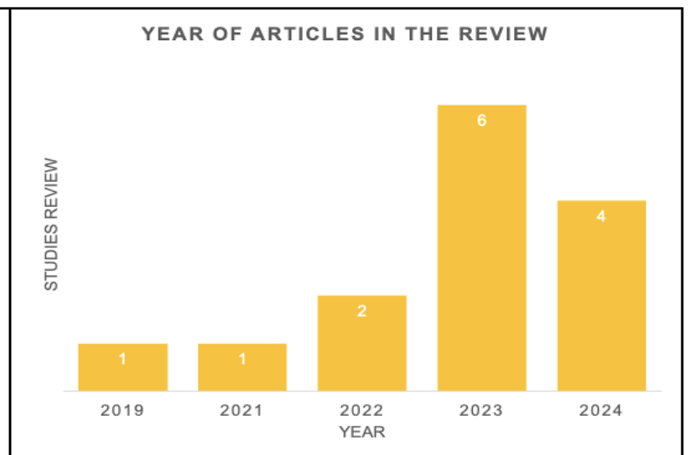
REFERENCES

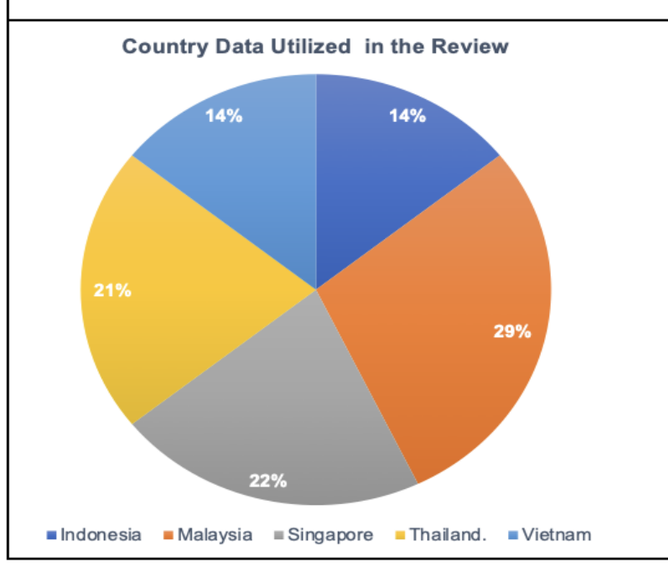
- *Email : 23h8750@ubd.edu.bn*

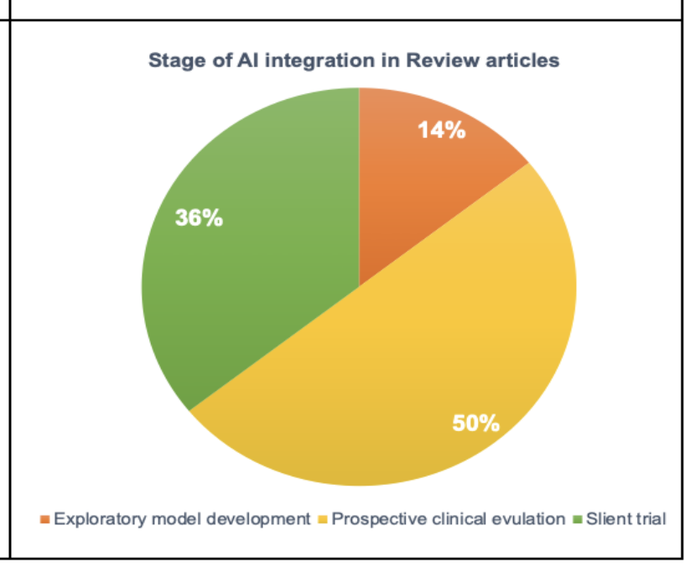
RESULTS

- **Distribution of the reviewed studies focusing on the utilization of AI technology in the ASEAN region until May 2024**









- **SWOT analysis of the utilization of AI technology in the cancer screening program in the ASEAN region**

INTERNAL FACTORS	
STRENGTHS +	**WEAKNESSES –**
• AI improves patient management by reducing unnecessary interventions and providing accurate diagnostic information. • AI paired with skilled specialists outperforms individual alone with recommended guidelines. • AI-assisted chest radiography enhances outreach to low-risk populations who are not screened and raises public screening uptake. • AI integrated systems serve as a "second radiologist," assisting in interpreting X-ray images of breast cancer for prompt diagnosis and advancing research on decision-support systems for mammography. • In breast clinics, over-the-counter screening models for breast cancer enhance patient flow and reduce waiting times for appointments and investigations. • AI algorithms in smartphone applications identify and classify precancerous lesions of cervical cancer in real-time, eliminating time-consuming lab analysis. • AI-based classification models help general practitioners in remote areas who use telemedicine for oral cancer screening.	• Inconsistent and mixed views among patients and clinicians regarding AI adoption necessitate stakeholder education. • Variability in the reproducibility of AI-assisted screening due to different image acquisition protocols. • Reliance on retrospective analysis; prospective studies are needed to validate AI's efficacy and cost-effectiveness. • Algorithmic bias in commercial AI software trained on specific regional datasets. • Use of AI in resource-limited settings with non-expert operators may increase false positives and unnecessary investigations. • Limited data for developing AI models.
EXTERNAL FACTORS	
OPPORTUNITIES +	**THREATS –**
• AI in cancer screening enables early detection and intervention for underprivileged and remote populations. • AI-integrated smartphone applications can reach remote areas and underserved populations, enhancing early detection and intervention. • There is a need for more research on AI's tangible impact in clinical practice, particularly in areas like recall for screening and personalized cancer screening.	• Diverse guidance throughout the ASEAN region regarding AI governance in healthcare and ethical issues like accountability, transparency, privacy, and diagnostic bias. • Difference in economic status and infrastructure development.