JAMSA
Journal of Asian Medical Students' Association

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Abstract Book

Asian Medical Students' Conference (AMSC) 2025

Urban Health

Thailand, 20-26 July 2025

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Editorial Page

The Journal of Asian Medical Students' Association (JAMSA) (ISSN: 2226- 3403) is an international, online open-access, peer-reviewed, student-led biomedical research journal of the Asian Medical Students' Association (AMSA) International. Established in 2011, JAMSA published its first issue in the year 2012. It is currently indexed in Ulrichsweb, Google Scholar, Index Copernicus and Gale Cengage Learning.

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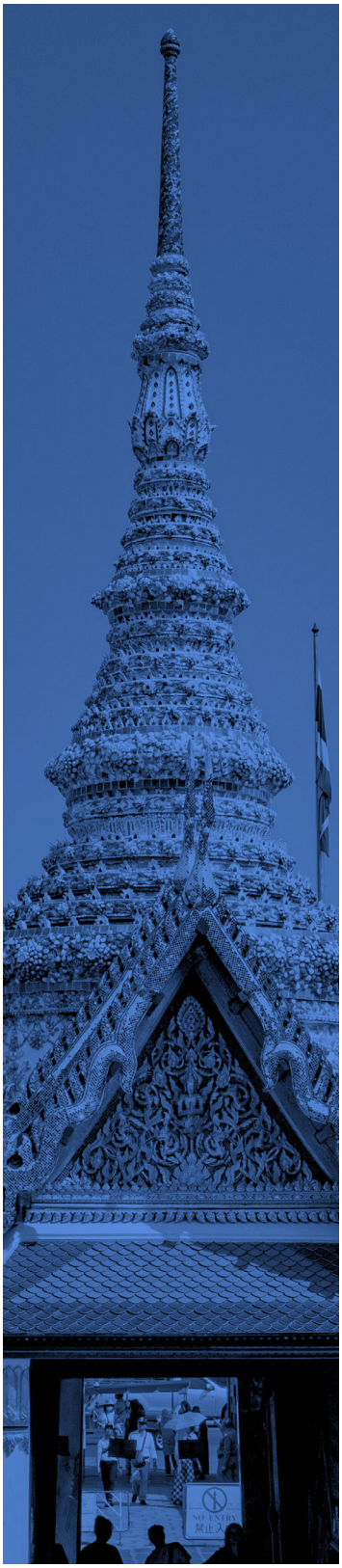
About AMSC 2025



The Asian Medical Students' Conference (AMSC) 2025 was held in Thailand, bringing together medical students from across the Asia-Pacific region and beyond. As one of the flagship events of the Asian Medical Students' Association (AMSA) International, AMSC serves as a platform for academic exchange, cultural understanding, and collaboration among AMSA chapters. The conference aims to empower future healthcare professionals through discussions, workshops, and networking opportunities that extend beyond formal medical education.

AMSC 2025: Thailand centred on the theme of Urban Health, highlighting subthemes including environmental medicine, lifestyle medicine, addiction among urban populations, and the mental health of urban dwellers. These themes explored how urban environments influence health outcomes and encouraged practical, interdisciplinary solutions.

Participants engaged in a wide range of activities, including plenary sessions, skill-based workshops, community outreach programmes, and research presentations. These sessions are designed to enhance knowledge, encourage critical thinking, and promote active involvement in addressing health issues at local, national, and global levels.

Guided by the philosophies of Knowledge, Action, and Friendship, AMSC 2025: Thailand continues to inspire participants to become proactive agents of change. The conference equips future medical practitioners with the skills, perspectives, and networks necessary to contribute meaningfully to the advancement of global health and the creation of more sustainable, inclusive, and resilient urban communities.

Foreword Chief Editor of JAMSA

Stephen Dario Syofyan

Chief Editor
of JAMSA 2025/2026

Dear Esteemed Readers,

It is with great pride and honor that I present this abstract book for the Asian Medical Students' Conference (AMSC) 2025, held in Thailand under the auspices of the Asian Medical Students' Association (AMSA) International. As Chief Editor of the Journal of Asian Medical Students' Association (JAMSA), I have had the privilege of witnessing the remarkable dedication, intellectual curiosity, and collaborative spirit of medical students across the Asia-Pacific region and beyond.

This year's theme, "Urban Health," reflects one of the most pressing and rapidly evolving challenges in modern healthcare. With subthemes encompassing environmental medicine, lifestyle medicine, addiction in urban populations, and mental health, AMSC 2025 underscores the complex and multifaceted ways in which urbanization shapes health outcomes. These topics are not only timely but demand innovative, interdisciplinary approaches to ensure sustainable and equitable healthcare solutions.

The abstracts compiled in this book represent the collective efforts of some of the brightest young minds in medicine. They explore critical issues arising from urban living, from environmental exposures to behavioral health patterns, while also proposing practical and forward-thinking solutions. This body of work stands as a testament to the commitment of future healthcare professionals to address emerging global health challenges with both scientific rigor and social responsibility.

Urbanization continues to redefine the landscape of public health. Increasing population density, environmental degradation, and lifestyle transitions contribute to a growing burden of both communicable and non-communicable diseases. In this context, the research presented herein highlights the urgent need for integrated strategies that bridge clinical medicine, public health, and policy-making.

I would like to extend my sincere appreciation to all authors, reviewers, and the organizing committee whose dedication and hard work made this publication possible. Your contributions not only enrich academic discourse but also pave the way for meaningful impact in communities worldwide.

To all participants of AMSC 2025, I encourage you to take full advantage of this platform to learn, to collaborate, and to build lasting connections. May this conference inspire you to become proactive leaders and innovators in shaping a healthier, more resilient urban future.

With my best wishes for a successful and impactful conference.

Viva AMSA!

Foreword Head of Conference AMSC 2025

Siravich Bunparit

Head of Conference
AMSC 2025

Greetings, People of Tomorrow!

It is a great honour and pleasure to share this message with all AMSA members as the Head of Conference of the 46th Asian Medical Students' Conference (AMSC 2025), hosted in Thailand. Serving in this role has been one of the most meaningful experiences of my student life. After more than ten years since Thailand last hosted this event, AMSA Thailand was proud to welcome the AMSA family once again in 2025, here in Bangkok, the heart of Thailand.

AMSC 2025 was presented under the theme Urban Health, focusing on four important sub-themes: Environmental Medicine, Lifestyle Medicine, Addictions among Urban Populations, and Mental Health of Urban Dwellers. Through academic sessions, competitions, and discussions, we hoped to inspire delegates to think beyond textbooks and explore how medicine can improve communities and everyday life. We also hoped to create meaningful international dialogue on the growing health challenges faced by cities around the world.

The journey to AMSC 2025 began long before the event itself. Before this, I had never held a position or responsibility as significant as this one, which made the experience both highly challenging and ambitious. Together with my team, we worked tirelessly and began planning early, dedicating more than one year of preparation to deliver the best possible conference, valuable knowledge, and memorable experiences for every delegate. Organising an international conference came with many challenges, but it also taught us valuable lessons in leadership, teamwork, resilience, and problem-solving.

More than anything, AMSC is about connection. It brings together medical students from different countries to learn from one another, share cultures, and build lasting friendships. Watching delegates laugh, collaborate, and create memories together was one of the most rewarding parts of hosting this conference. We felt truly happy and grateful to hear many kind words and positive feedback during and after the event, and knowing that delegates enjoyed their time at AMSC 2025 and in Thailand meant so much to all of us. At the same time, on behalf of the Conference Organising Committee, I would like to sincerely apologise for any mistakes or shortcomings that occurred during the conference. Although we always tried our best to solve problems as quickly as possible, we understand that some imperfections remained. We deeply appreciate your understanding, and we will carry these lessons forward to improve even more in future opportunities.

I sincerely thank every Conference Organising Committee member, AMSA International, AMSA chapters, sponsors, speakers, and delegates for making AMSC 2025 a success. This achievement belonged to all of us. To all current and future AMSA members, continue to lead with passion, serve with compassion, and embrace every opportunity to grow. If you have the chance to join AMSC one day, I strongly encourage you to do so, as it is truly a life-changing experience.

AMSC 2025 will always remain close to my heart. Thank you for being part of this unforgettable journey.

Viva AMSA!

Public Health Campaign Video

Public Health Campaign Video

A Silent Struggle

Teresa Wulan Karenina[1], Daniel Ramos Basana Pasaribu[1], Fernando Sugiharto[1], Gisela Kayla Wangsa[1], Avelino Konstantine Trilasto[1]
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Video Description

Urban life never slows down, with its constant hustle and endless pressure to succeed. Students, as part of it, resonate the same feelings, drowning in workloads and expectations. It fuels anxiety, which over time, sinks into depression. Yet, amidst sorrow, people stay silent. Therefore, it's known as "A Silent Struggle"..

Public Health Campaign Video

JAMSA Journal of Asian Medical Students' Association

Do You Believe in Ghosts?

Inas Natha Janitra[1], Lauradew Charleneva Ardent Cinta Pitoy[1], Ocratya Gregorius[1], Qonita Sari Bustomi[1], Steven Jonathan Immanuel P. Girsang[1]
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Video Description

The relentless urban rush breeds invisible lives trapped in a monotonous loop. Lost in the blur, lonely souls yearn for rebirth and real connection, seeking LIGHT. To emerge, find personal direction and savor the present. Ultimately, building healthy bonds and reshaping life leads to a better, more fulfilling existence.

ABSTRACT BOOK AMSC 2025

Scientific Paper

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

A Systematic Review on the Effects of Alcohol Outlet Density on Alcohol-Related Harm in Urban Populations

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Introduction
Alcohol-related harm, including disease, violence, injury, and motor vehicle crashes, is a critical public health issue in urban settings. The density of alcohol outlets is increasingly recognised as a modifiable environmental factor that may contribute to harmful outcomes by increasing alcohol accessibility among urban populations.

Objective
The objective of this review is to systematically evaluate the association between alcohol outlet density in urban environments and alcohol-related harms, such as violence, injury, mental health outcomes, and substance use disorders, among others.

Method
A systematic review was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, OVID, Cochrane, and Embase databases were searched, yielding 267 relevant articles written in English published between 2000 to present. Screening was then conducted on the Covidence platform using a PICO (Population, Intervention, Comparison, Outcome) framework inclusion-exclusion criteria. 30 studies were included for synthesis and data were extracted on population characteristics, alcohol outlet type (on-/off-premise), alcohol-related harm outcomes, statistical analyses and significance of associations. Risk of bias was assessed using the ROBINS-E tool.

Result
Almost all studies (97%, n = 29) reported at least one positive association between increased alcohol outlet density and at least one form of alcohol-related harm. Among the most studied outcomes were violence or crime (n=13), injuries and accidents (n=6), and substance use disorder (n=5). Some studies found significant spatial or demographic modifiers, including age, gender, and neighbourhood deprivation.

Conclusion
Alcohol outlet density is a significant contributor to a range of alcohol-related harms in urban populations. Both on- and off-premise outlets pose distinct health-related risks. These findings support the development of urban public health strategies that consider environmental alcohol access as a modifiable risk factor that needs to be addressed.

Keyword
alcohol outlet density, alcohol-related harm, urban health

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Climate Change and Childhood Stunting

Khaliun Soyolbayar[1], Gunbolor Khishig-Undral[1], Buyanbat Adiyakhuu[2], Kherlen Amgalan[1], Delgersaikhan Enkhbaatar[3], Erdenechimeg Jantsandorj[4], Nasantogtokh Erdenebileg[5]

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Introduction
An estimated one billion children worldwide live in high-risk areas identified by the climate risk index, with about 200 million children under five suffering from severe malnutrition and 148 million experiencing stunted growth. Mongolia, with a high climate risk index, is particularly vulnerable, highlighting the need to study the impact of climate-related factors on child health. In urbanizing areas like Ulaanbaatar, the effects of climate risk on malnutrition are becoming increasingly evident.

Objective
This study aims to assess the prevalence and trends of malnutrition among children under five and to evaluate the impact of climate risk, with a focus on urbanization and densely populated regions.

Method
The study used data from international databases, including the climate risk index, mean annual temperature, air quality, soil pollution, and precipitation rate. Data on child malnutrition were sourced from the 2000-2019 IHME database and the Mongolian National Statistics Office. Malnutrition was classified by wasting, stunting, and overweight prevalence, and trends were analyzed using the ARIMA model to forecast changes for 2020-2030. Regional differences were examined using a panel model, and the impact of climate change on malnutrition in specific regions was assessed.

Result
The climate risk index in Mongolia is rising, with increasing temperature fluctuations predicted. Between 2000-2019, the prevalence of wasting and stunting in children under five declined, with projected annual decreases of 0.5% and 1.8%, respectively. However, overweight and obesity rates are rising, with Ulaanbaatar showing significantly higher rates.

Conclusion
Climate change impacts children's nutrition and malnutrition, contributing to rising childhood overweight and obesity. This trend is further aggravated by urbanization, emphasizing the need for improved monitoring and regulation of children's diets, addressing nutrition comprehensively in light of urbanization, population density, and environmental factors.

Keyword
children, malnutrition, climate change, urbanization, overweight

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Comparing the Efficacy and Safety of Different Varenicline Dosing Strategies for First-Line Cigarette Smoking Cessation: A Network Meta-Analysis

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Introduction
Tobacco use causes more than eight million deaths annually, requiring effective cessation strategies. Varenicline is a highly effective smoking cessation pharmacotherapy, but optimal dosing strategies remain debated.

Objective
This network meta-analysis compares the efficacy and safety of alternative varenicline regimens (e.g., standard, extended duration, flexible dosing) to guide personalised treatment.

Method
Literature search was conducted across seven databases up to February 17, 2025. Quality appraisal was performed with the Cochrane Risk of Bias Tool 2. A bayesian network meta-analysis using the "BUGSnet" package in R using a random-effects model with relative risk (RR) and 95% credible intervals (CrI) was conducted. A sensitivity analysis excluded studies in comorbid populations, those with a high risk of bias, and those without counselling to obtain more coherent and generalisable estimates for healthy adult smokers.

Result
Twenty-nine randomised controlled trials (RCTs) were included. All varenicline dosing strategies were effective at the end of their respective treatment periods. However, 12 weeks of 1 mg twice-daily (BID) was most certain to be effective for smokers with comorbidity (RR: 1.79; 95% CrI: 1.49 – 2.11) at 52 weeks follow-up. In the sensitivity analysis with comorbidity excluded, 52 weeks of 1 mg BID for healthy adult smokers maintained statistically significant efficacy at 52 weeks follow-up and ranked as the most effective dose (RR: 4.93; 95% CrI: 1.91-10.97). There were no statistically significant differences in safety between the varenicline doses.

Conclusion
The most effective and safe varenicline monotherapy dosing strategy was 52 weeks of 1 mg BID for healthy adult smokers and 12 weeks of 1 mg BID for smokers with comorbidity. Further RCTs are needed to strengthen the evidence for the 52-week of 1mg BID regimen, and RCTs conducted in comorbid populations to strengthen generalisability and support potential updates to current clinical guidelines.

Keyword
addiction, cessation, smoking, varenicline, treatment

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

E-Cigarette and Vape use-Associated Lung Injury: A Systematic Review of a global Respiratory Crisis (2016-2024)

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Introduction
E-cigarette or Vaping Product Use-Associated Lung Injury (EVALI) is a rising global concern, particularly among adolescents and young adults. First recognised after a spike in cases in the United States, it has since been reported worldwide, raising alarms over the safety of vaping products and their potential for severe lung toxicity. Individuals aged 16 to 28 are disproportionately affected, often presenting with acute respiratory symptoms requiring hospitalisation or intensive care. Despite growing awareness, the pathophysiology, imaging, and laboratory features of EVALI remain inconsistently reported.

Objective
This systematic review aims to synthesise current evidence on EVALI, focusing on pathophysiological patterns, clinical presentation, imaging characteristics, and laboratory findings from 2016 to 2024.

Method
A systematic review was conducted in accordance with PRISMA guidelines. Literature searches were performed across five databases: PubMed, Cochrane Library, Embase, Scopus, and Google Scholar, covering publications from January 2016 to March 2024. The search strategy included terms related to vaping, EVALI, lung injury, radiological findings, and pathophysiology. Eligible studies included observational studies, case series, and case-controlled studies involving individuals aged 16 to 60 diagnosed with EVALI or vaping-associated pulmonary injury. Titles and abstracts were screened independently by two reviewers, with full texts assessed using predefined criteria. Risk of bias was evaluated using the Newcastle-Ottawa Scale.

Result
A total of 23 studies were included, comprising 6 case series, 12 literature reviews, and 5 observational studies. Most patients were male and aged 16 to 28. Common symptoms included dyspnoea, cough, fever, and gastrointestinal issues. Radiological findings frequently showed bilateral ground-glass opacities and diffuse alveolar damage. Laboratory results often revealed elevated CRP and ESR, with occasional leucocytosis and hypoxaemia. Pathophysiology involved direct alveolar injury, lipid-laden macrophages, and immune-mediated responses.

Conclusion
EVALI remains a serious and evolving threat. This review highlights consistent clinical, radiological, and laboratory features, underscoring the need for early recognition and further research.

Keyword
E-Cigarette Associated Lung Injury, EVALI, Vaping, E-cigarettes, Lung Injury

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Evaluating the Impact of the Most Popular Diets on Glycemic Control in Type 2 Diabetes Mellitus: A Network Meta-Analysis

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Introduction
Type 2 diabetes mellitus (T2DM) is a metabolic disorder characterised by insulin resistance, progressive beta-cell dysfunction, and hyperglycaemia, affecting more than half a billion individuals globally. Recent research suggests that dietary modifications can effectively regulate blood glucose levels in individuals with T2DM.

Objective
This study aims to evaluate the effectiveness of the most popular nutritional approaches on glycaemic control in T2DM.

Method
A systematic search was conducted on six databases (PubMed, Scopus, Web of Science, Taylor and Francis, EBSCO, and Cochrane) until March 2025. Eligible randomised controlled trials (RCTs) involving adults with T2DM and reporting outcomes on glycated haemoglobin (HbA1c) or fasting plasma glucose (FPG) were included. Network meta-analysis was conducted using a fixed effect model to pool mean difference (MD) and standard deviation (SD) with corresponding 95% confidence intervals (CI) using MetaInsight.

Result
A total of 24 RCTs encompassing seven dietary patterns (intermittent fasting, Dietary Approaches to Stop Hypertension (DASH), conventional, low-carbohydrate, mediterranean, vegan, and ketogenic diet) were included. Findings of direct comparison revealed the ketogenic diet's significant effectiveness in reducing HbA1c (%) compared to Mediterranean (MD = -0.90, 95% CI = -1.50 to -0.30) and conventional diet (MD = -0.59, 95% CI = -0.83 to −0.36). DASH diet also presented a substantial improvement in FPG (mg/dL) compared to conventional diet (MD = -27.50, 95% CI = -31.39 to -23.61). SUCRA ranking analysis indicated that the ketogenic diet ranked highest in reducing HbA1c, whereas the DASH diet was most effective in lowering FPG compared to other dietary interventions.

Conclusion
Among the evaluated dietary patterns, the ketogenic diet exhibited superiority in long-term glycaemic control. In contrast, the DASH diet showed greater potential for short-term glycaemic improvement. These findings support the tailored use of specific dietary strategies in managing T2DM based on individualised glycaemic targets.

Keyword
DASH diet, dietary interventions, glycaemic control, ketogenic diet, type 2 diabetes mellitus

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Impact of Predictors on the Outcome of Mindfulness-Based Interventions: An Individual Participant Data Review

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Introduction
The ever-urbanising landscape is correlated with worsening depression and mental health status.

Objective
This study explores the impact of different predictors on the outcome of mindfulness-based interventions (MBIs) in improving psychological symptoms.

Method
This study analyzed combined data from six RCTs on MBIs for chronic pain, insomnia, menopause, anxiety, caregiver stress, and pregnancy. Well-being outcomes were assessed using the Center for Epidemiologic Studies Depression Scale (CES-D), Five Facet Mindfulness Questionnaire (FFMQ), and SF-12 Physical and Mental Component Summary (PCS & MCS). ANCOVA models with standardized β coefficients assessed predictors (age, sex, religion, marital and employment status) of outcome scale changes, adjusting for baseline scores.

Result
Only statistically significant variables were included. Among adults aged 21-65 with psychological symptoms (n = 1,195), ANCOVA revealed key predictors of treatment outcomes. For depression (CES-D), being married provided the greatest reduction of depressive symptoms (β = -0.089, 95% CI: -0.168 to -0.009, $p < 0.05$). For SF-12, males demonstrated greater improvements in PCS (β = 0.182, 95% CI: 0.111-0.253, $p < 0.001$). Being married (β = 0.099, 95% CI: 0.029 to 0.169, $p < 0.01$) promoted MCS, whereas increasing age (β = -0.111, 95% CI: -0.191 to -0.030, $p < 0.01$) correlated with poorer mental health status. For mindfulness (FFMQ), religious affiliation demonstrated higher levels of mindfulness (β = 0.082, 95% CI: 0.022-0.141, $p < 0.01$), while older age showed the greatest reduction (β = -0.078, 95% CI: -0.147 to -0.008, $p < 0.05$).

Conclusion
Marriage was associated with reduced depressive symptoms and better mental health status, while males predicted greater physical health improvement. Older age was linked to poorer mental health and lower mindfulness, whereas religious affiliation correlated with higher mindfulness. These findings identify key predictors of MBI response, enabling personalized treatments based on patient subgroups.

Keyword
mindfulness-based interventions, mental health, well-being

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Measuring Exposures and Assessing Health Effects of PM10 and PM2.5 in Ardabil City in Iran

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Introduction
PM2.5 and PM10 are two air pollutants as the perils lurking within our midst.

Objective
We focused on analyzing their ambient concentrations in Ardabil to determine compliance with regulatory limits and to evaluate the associated health risks, including cancerous and non- cancerous effects, due exposure to these pollutants.

Method
Hourly real-time air quality data from January 2023 – October 2024 was acquired from Ardabil Environmental Protection Agency. Beta attenuation monitoring (BAM) technique which allows for the detection of PM10 and PM2.5 is used for detection of that particles in Ardabil air quality monitoring stations.

Result
The daily average concentration of PM2.5 and PM10 exceeded the WHO daily standards (PM2.5= 15 μg/m^3, PM10= 45 μg/m^3). Comparison of PM2.5 monthly average concentration in different months shows the highest PM2.5 values in November and December in both years. The results show PM2.5 annual average concentration (2023) in present study (18.35 ± 4.13) was more than 2024 annual average concentration (16.55 ± 4.13). Considering the WHO standard for particulate matter annual average concentration (PM2.5 = 5 μg/m^3, PM10= 15 μg/m^3), the annual average concentration of PM2.5 and PM10 are multiplied (2-3 times) more than the standard. The mean of hazard quotient (HQ) for PM2.5 (3.31) and PM10 (1.14) were > 1, which indicates an unacceptably high risk for human health. Also, the mean of Excess Lifetime Cancer Risk (ELCRs) for PM2.5 in 2023 and 2024 varied from 2.21×10^{-6} to 67.9×10^{-6} and from 2.35×10^{-6} to 67.15×10^{-6}, respectively, which exceeds the limit value set by the USEPA and the WHO.

Conclusion
The results indicate that ambient air may pose a significant risk for exposure to PM10 and PM2.5, potentially elevating the risk of respiratory and cardiovascular diseases among exposed individuals. Consequently, effective control policies are recommended to protect public health in this metropolitan area.

Keyword
air pollutants; particulate matter; health effects; ardabil

Scientific Paper

JAMSA Journal of Asian Medical Students' Association

Neurotoxic Smog: A Systematic Review and Meta-Analysis of Long-Term Ambient Air Pollution Exposure's Impact on MRI Biomarkers of Brain Structure

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Introduction
Air pollution is a major global health threat, linked to millions of deaths and a rising burden of cognitive decline. Long-term exposure to PM2.5 is associated with increased risk of Alzheimer's disease, vascular dementia, and stroke, highlighting the need to identify which brain regions are most affected.

Objective
This study aims to investigate the impact of chronic smog exposure on specific brain structures by analyzing MRI-detectable markers of neurodegeneration.

Method
This meta-analysis assessed the association between long-term ambient air pollution exposure and structural brain changes, specifically focusing on neuroimaging markers. A literature search was conducted across databases like Pubmed, Google Scholars, DOAJ until March 11, 2025, using keywords such as 'neuroimaging,' 'white matter,' 'ambient air pollution,' and 'brain volume changes.' Cross-sectional studies were included. Study quality was evaluated using the ROBINS-I tool, and statistical analysis was conducted using R. The study protocol was registered on PROSPERO (CRD420251030714).

Result
Out of 173 screened studies, 9 were eligible for inclusion. The pooled analysis of air pollution and white matter hyperintensity (WMH) revealed a significant association, with an odds ratio (OR) of 1.40 (95%CI: 1.27–1.54), indicating a strong link between air pollution and WMH. No significant heterogeneity was observed (p = 0.55). Subgroup analysis showed that PM2.5 exposure significantly increased WMH (OR = 1.39, 95%CI: 1.21–1.61). For brain volume, the analysis demonstrated a significant reduction associated with air pollution (OR = 0.8659, 95%CI: 0.8300–0.9033). The regression test for funnel plot asymmetry showed no significant bias (z = 0.9684, p = 0.3329). Air pollution was positively correlated with WMH (r = 0.62) and negatively with cognitive function (r = −0.95).

Conclusion
Chronic air pollution exposure is strongly linked to white matter damage, brain atrophy, and cognitive decline, underscoring its role in accelerating neurodegeneration and the urgent need for targeted public health interventions.

Keyword
Air Pollution, PM2.5, Magnetic Resonance Imaging (MRI), White Matter Hyperintensities (WMH), Cognitive Decline, Neurodegeneration

Scientific Poster

Scientific Poster

JAMSA Journal of Asian Medical Students' Association

A Study of the Relationship Between Attention Deficit-Hyperactivity Disorders and Screen Usage in Children Aged 6–11

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Introduction
Urbanization has led to lifestyle and educational changes in children, increasing psychological stress and screen use—both linked to a higher risk of Attention Deficit Hyperactivity Disorder (ADHD). Globally, 3–5% of those under 19 and 2–16% of school-aged children are diagnosed with ADHD, with boys twice as likely as girls.

Objective
This study compares the relationship between screen use and ADHD symptoms in urban and rural areas and explores gender as a potential risk factor.

Method
A cross-sectional study was conducted among 6–11-year-old primary school children in Ulaanbaatar, Orkhon, and Dornogovi using randomized sampling. ADHD symptoms were assessed via the SNAP-IV questionnaire through parent-reported surveys. Data were analyzed in SPSS (v26) using Pearson's Chi-square test, with significance set at $p<0.05$.

Result
Children aged 6–11 participated in this study. Among the participants (n=510), 49% (n=250) were female and 51% (n=260) were male. The average age of participants was 8 years (SD = 1.39). ADHD symptoms were observed in 14.3% (n=73) of the participants: 3.9% (n=20) showed Inattentive, 5.7% (n=29) showed Hyperactive/Impulsive, and 4.7% (n=24) exhibited combined type, with males being predominant. The average daily screen time usage was 2.99 hours (SD=1.6). A significant correlation was found between smartphone usage and inattentive symptoms (p=0.001), as well as hyperactive symptoms (p=0.002). A negative correlation was observed between screen time and rural areas.

Conclusion
The findings suggest that Hyperactive/Impulsive are more prevalent among males, potentially due to biological and social factors. Increased screen time usage in urban areas is associated with higher levels of Inattentive and Hyperactive/Impulsive. These results underscore the need for screen time regulation and further research into the influence of living urban environments and technology use on ADHD development.

Keyword
attention deficit hyperactivity disorder, ADHD, screen time, urbanization, children

Scientific Poster

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E-cigarette smoking and depressive disorders: A systematic review of clinical studies

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Introduction

The increased use of electronic cigarette (e-cigarette) denotes an important area of urban health, particularly among adolescents and young adults, prompting concerns about its impact on mental health, including the development and exacerbation of depression.

Objective

The objective was to qualitatively synthesize results from clinical observational studies on the association between e cigarette use and depression, elucidate prevailing themes.

Method

A systematic search of PubMed, Scopus, and EMBASE databases was performed from inception to January 2025. The following search terms and MeSH phrases were utilized, "e cigarette," "vaping,""depression," and clinical study type was selected . We included all observational clinical studies of any type which reported association of e-cigarette use and depressive disorders. Moreover, two reviewers separately carried out study selection, data extraction, as well as quality assessment using the Newcastle–Ottawa Scale and adhered to PRISMA guidelines.

Result

In adult or adolescent subpopulations, studies showed e cigarette users may experience higher clinical depressive presentations and clinical depression. It is suggested that even when adjusting for socioeconomic factors, effect of e-cigarette smoking could be persisted. Qualitative themes from adolescent surveys revealed that some youths vape to self medicate negative mood states but experience raised irritability and low mood during nicotine withdrawal. Internalisation of mental problems sometimes were found to occur before starting e cigarette indicating a self medication motivation in individuals with raised depressive symptoms. Risk of bias assessment suggested frequent reliance on self reported depression measures, lack of control for multiple substance use, cross-sectional nature of study designs, and variability in depression assessment scales.

Conclusion

Our study suggests indicates a rather consistent co occurrence of electronic cigarette usage and depression among studies, with concepts of self medication and mood dysregulation emerging among adolescents. However, the directionality and causality of this relationship remain unclear due to methodological heterogeneity warranting rigorous, standardized large-scale prospective to look into temporal and associations.

Keyword

urban health, e-cigarettes, mental health, psychiatry

Scientific Poster

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Impacts of Air Pollutant Exposure on the Risk of Out-of-Hospital Cardiac Arrest: A Systematic Review and Recommendations for Urban Population

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Introduction
The relationship between air pollutant exposure and the risk of out of hospital cardiac arrests (OHCAs) has been explored by many studies. Urban populations are particularly susceptible to air pollution whilst OHCAs poses a significant burden on the mortality and morbidity worldwide.

Objective
This review aims to evaluate the impact of air pollution exposure on OHCA risk and offer sustainable recommendations on mitigating OHCA related incidences in urban and rapidly urbanising environments.

Method
Using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guideline, we identified 136 articles from 2020 to present from PubMed, Scopus, and Web of Science databases on Covidence. After screening in accordance with a predefined PICO (population, intervention, comparison, outcome) protocol, 24 studies were extracted for analysis. Data extraction identified information on setting, population, pollutant type(s) (based on 6 air pollutants named as concerning by the World Health Organisation : PM2.5, PM10, NO^2, SO^2, O^3, and CO), lag exposure time, number of OHCAs and statistical analysis (e.g., odd ratio, relative risk). Risk of bias was assessed using the ROBIS tool. Meta-analysis was not possible due to study heterogeneity therefore, a systematic review was conducted.

Result
Comparing the exposures of the 6 air pollutants to the risk of developing OHCA across various urban populations worldwide, a statistical significance was demonstrated in PM2.5, especially in short term exposure. Inconsistent findings were seen in other pollutants which showed context-dependent effects, with some significance in multivariate analysis alongside other factors such as vulnerable subgroups and highly industrialised areas.

Conclusion
Given the findings, we recommend a multidisciplinary approach to address the urgent need for improvement in air quality standards. Suggestions include global health policies and urban planning to reduce ambient pollutant exposure and in return reduce the healthcare burden of OHCAs in urban populations.

Keyword
out-of-hospital cardiac arrest, air pollution, urban health

Scientific Poster

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Knowledge, Attitude, and Practices of Sugar and Sugar-Containing Products: A Cross-Sectional Study Among Middle School Students

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Introduction
Urbanisation, while improving living standards globally, has also contributed to unhealthy dietary patterns that increase the risk of non-communicable diseases (NCDs). In Mongolia, middle school students begin making independent food choices, often selecting sugar-rich products with low nutritional value. Excessive sugar intake at this stage can negatively impact long-term health.

Objective
This study aimed to assess students' knowledge, attitudes, and practices (KAP) regarding sugar consumption and explore associations with urban, suburban, and rural residency.

Method
A total of 561 students from grades 6 to 9 in six public schools across urban, suburban, and rural areas in Mongolia participated. A 23-item self-administered questionnaire was used to collect data on sugar-related KAP and sociodemographic factors. Statistical analysis was performed using T-test, Pearson correlation and Chi-square test methods in SPSS 24.0 software and statistical significance were evaluated at $p<0.05$.

Result
The study included 561 students aged 12 to 15, with 357 (63.6%) females and 204 (36.4%) males. Based on BMI, 51.2% (n=287) were underweight, 44.6% (n=250) had normal weight, 4.1% (n=23) were overweight, and 0.2% (n=1) were obese. Regarding sugar practices, 47.8% (n=268) had low, 49.6% (n=278) had moderate, and 2.7% (n=15) had high levels. A high level of knowledge was observed in 79.5% (n=446). Urban residency was significantly associated with increased sugar intake ($p<0.05$), while rural residency showed a significant positive association with healthier BMI scores ($p<0.05$).

Conclusion
Urban residency was associated with a good level of attitude and high level of knowledge but poor lifestyle choice towards sugar, highlighting the influence of urban environments on dietary behavior. The interventions associated with increasing knowledge and awareness towards the consequences of sugar intake should be carried out.

Keyword
Urbanisation, Sugar, Knowledge Attitude-Practice (KAP), Middle School, Student, Mongolia

Scientific Poster

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Shaping Cities, Shaping Health: Unravelling the Urban Built Environment's Role in Multimorbidity – A Systematic Review & Meta-Analysis

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Introduction
Multimorbidity has become a critical public health challenge in urban areas, affecting nearly 2.5 billion people, with the built environment playing a key role by shaping both living conditions and environmental exposures. While previous studies have examined either single health outcomes related to the built environment or multimorbidity with other exposures, none has comprehensively investigated the built environment's role as a primary exposure to multimorbidity.

Objective
Therefore, this study aims to assess the impact of urban built environment on multimorbidity, providing not only stronger evidence to support healthier urban development and public health strategies but also valuable insights for the public to mitigate health risks and improve quality of life.

Method
Following PRISMA guidelines, we conducted a meta-analysis from multiple databases, with independent screening, selection, and extraction by authors. Risk of bias was assessed using the ROBINS-E tool. Subgroup analyses were performed using Review Manager 5.4.1, with statistical significance determined at p-value < 0.05.

Result
Our findings revealed significant overall association between urban built environments and multimorbidity (OR = 1.30, 95% CI [1.17, 1.44], p < 0.00001), demonstrating that cumulative environmental exposures collectively elevate disease risk. Nearest roads emerged as the most consistent risk factor (OR = 1.17, 95% CI [1.03, 1.33], p = 0.01). In contrast, one of the individual factors such as air pollution (OR = 1.09, 95% CI [0.97, 1.22], p = 0.15) showed insignificant associations. High heterogeneity across subgroups (I^2 > 75%) underscores the context-dependant nature of these relationships, suggesting that built environment effects vary by urban design and population characteristics.

Conclusion
This study shows that urban design affects multimorbidity, with living near roads being the most harmful. Additionally, it validates the exposome concept, revealing how multiple environmental exposures interact to shape health outcomes. Further research is needed to better understand these connections and create effective solutions.

Keyword
multimorbidity, built environment, urban health, multiple chronic disease, subgroup meta-analysis.

Scientific Poster

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The Effect of Lighting and Diet on Macrophage Activation in Liver

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Introduction
Modern lifestyles characterized by high-fat diets and disrupted circadian rhythms contribute to liver inflammation and metabolic disorders such as non-alcoholic steatohepatitis (NASH). The progression of NASH can lead to fibrosis, cirrhosis, and hepatocellular carcinoma. Emerging evidence implicates the circadian clock protein Bmal1 in regulating lipid synthesis and macrophage polarization, thereby linking environmental factors to liver pathology. Shifts in macrophage phenotype—from anti-inflammatory (M2) to pro-inflammatory (M1)—may exacerbate NASH progression.

Objective
This study examined the effects of diet and circadian rhythm on NASH progression in an animal model by assessing liver tissue morphology. It aimed to clarify the relationship between Bmal1 expression and macrophage activity, particularly its association with macrophage M1 and M2 biomarkers.

Method
In this study, we established a NASH animal model using C57BL/6 mice, divided into four groups: CL (sham-control light), BL (blue LED light), WD (Western diet with control light), and WDBL (Western diet with blue light). Interventions were administered for four weeks. Liver tissue was analyzed using hematoxylin and eosin (HE) staining, with NASH severity evaluated via the NAS scoring system, while Masson's trichrome staining was employed to assess fibrosis and evaluated with the Brunt Scoring System. Immunohistochemistry was performed to quantify Bmal1 expression and macrophage markers—iNOS (M1) and CD163 (M2). Statistical analyses were used to compare differences among groups.

Result
HE staining revealed that mice subjected to WD and/or BL exhibited a significant increase in fat vacuole accumulation and higher NAS scores compared with controls. Mild fibrosis, detected by Masson's trichrome staining, was apparent exclusively in the WDBL group. Immunohistochemical analysis demonstrated a significant upregulation of Bmal1 and the pro-inflammatory marker iNOS in both the WD and BL groups, whereas the anti-inflammatory marker CD163 was correspondingly reduced. These findings indicate that both a high-fat diet and circadian disruption promote a shift towards a pro-inflammatory macrophage phenotype in the liver.

Conclusion
The results suggest that lipid accumulation, driven by a Western diet and circadian rhythm disruption, aggravates liver steatosis, ballooning, and inflammation. Upregulation of Bmal1 and iNOS under these conditions, alongside decreased CD163 expression, implies that Bmal1 may modulate macrophage polarization to favor an M1-dominant state, thereby contributing to NASH progression. Future studies in human NASH samples will be necessary to validate these mechanisms and assess the potential of Bmal1 as a therapeutic target.

Keyword
western diet, circadian rhythm, NASH, macrophage, inflammation

Scientific Poster

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Urban Eyes at Risk: A Scoping Review of Acanthamoeba Keratitis among Malaysian Contact Lens Wearers and Associated Health Impact Strategies

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Introduction
Acanthamoeba, a free-living amoeba found across diverse ecosystems, can cause Acanthamoeba keratitis (AK), a severe, sight-threatening corneal infection predominantly affecting contact lens users. In Malaysia, urbanisation has increased the use of contact lenses due to cosmetic preferences and better access to optometric services. This has contributed to a rise in AK cases, though the true burden remains unclear due to insufficient national surveillance.

Objective
This review examines AK prevalence, risk factors, and management strategies among Malaysian contact lens users, with the novelty of integrating urban health and environmental factors to guide public health strategies.

Method
A literature search was conducted across PubMed, Scopus, and Google Scholar from 2020 to 2025, using the keywords "Acanthamoeba keratitis," "contact lens," and "Malaysia." A qualitative synthesis of 60 out of 261 studies with all study designs was performed, with descriptive statistics used to assess positivity rates over time and across demographic groups, including historical data.

Result
The first AK case in Malaysia was reported in 1995. Data from 2010–2012 indicated a positivity rate of 15.6%, which rose to 22.6% between 2013 and 2015, with a significant increase among urban females aged 19–35. Risk factors include poor contact lens hygiene, improper lens wear, ineffective disinfectants, and urban environmental factors like contaminated water and poor sanitation. Advances in diagnostics, particularly polymerase chain reaction (PCR) assays, have significantly improved sensitivity and differentiation from herpes simplex keratitis. Treatment generally involves chlorhexidine and propamidine, though toxicity and resistance remain challenges.

Conclusion
AK is an increasing, underreported threat in Malaysia, exacerbated by urbanisation, poor contact lens practices, and limited treatment options. Public health strategies should focus on enhancing surveillance, enforcing disinfectant regulations, and promoting hygiene education. Integrating urban health and environmental factors into AK management, alongside exploring novel therapies such as drug repurposing and nanotechnology, is essential for improving outcomes.

Keyword
acanthamoeba keratitis, contact lens wearers, contact lens hygiene, urban environment, optometric services

Scientific Poster

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Urbanisation, Overwork, and Occupational Death: A Scoping Review of Karoshi Syndrome and Japan's Policy Response

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Introduction
Karoshi syndrome, often known as "death by overwork", became a public health concern in Japan during the 1980s. Since then, Japan has pioneered efforts to address Karoshi by implementing legislative and institutional measures. Karoshi has since become a global issue, with an estimated 750,000 deaths attributed to it worldwide. At the same time, rapid urbanization has introduced new environmental stressors that could exacerbate work-related stress and increase cardiovascular risk.

Objective
This scoping review aims to investigate the link between urbanization and Karoshi syndrome and assess Japan's policy responses as potential global prevention models.

Method
Following the PRISMA-ScR guidelines, Embase and MEDLINE were searched. Based on the inclusion criteria, a total of 55 studies were included.

Result
The most frequently reported occupational risk factors for Karoshi included long working hours, high job strain, and smoking. The most frequently reported urbanization-related contributors associated with cardiovascular diseases were air pollution, traffic-related exposure, noise and light pollution, population density, and poor housing conditions. While no study has yet confirmed a direct link between urbanization and Karoshi syndrome, these findings indicate that urban environments might increase work-related stress and cardiovascular risk. The Karoshi Prevention Act (2014) and the 2015 Basic Principles for Preventing Overwork-Related Deaths were Japan's most frequently cited national initiatives. These measures formalized Karoshi as a preventable occupational condition and introduced systems for monitoring, compensation, and raising public awareness. Additionally, Japan introduced new criteria for recognizing Karoshi cases, resulting in a 2.81-fold increase in official recognition and compensation.

Conclusion
Urbanization may contribute to the risk of Karoshi by exposing individuals to various environmental and psychosocial stressors. Coordinated policy initiatives and preventive strategies are vital for reducing these effects globally.

Keyword
Karoshi, Overwork, Occupational Stress, Urbanisation, Environmental Exposure, Health Policy, Japan

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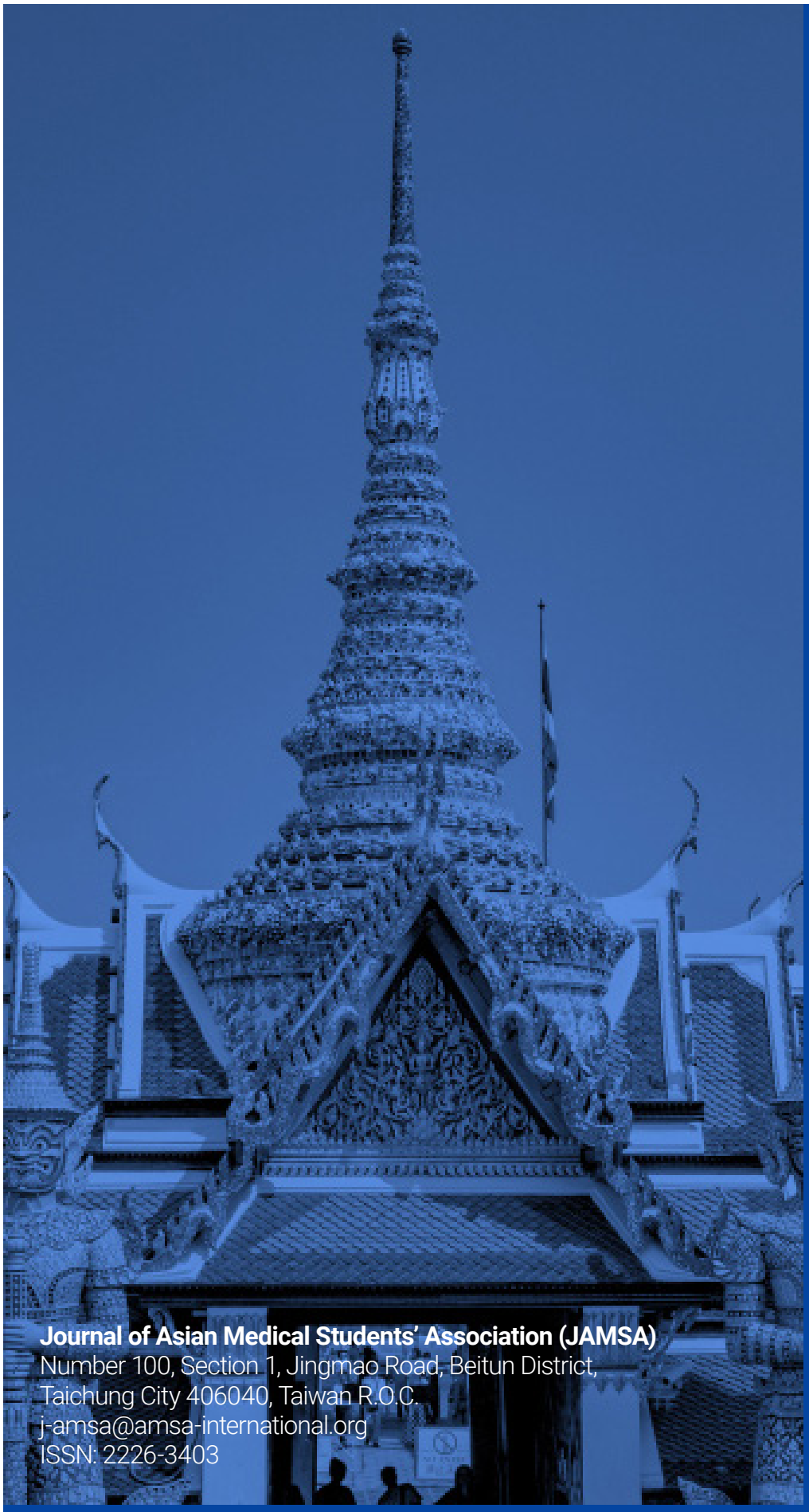

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