

Preterm Birth Research in Southeast Asia and its Association with Socioeconomic Determinants and Burden of Disease: A Bibliometric Analysis

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ABSTRACT

Objective. The aim of this study was to assess research productivity on preterm birth (PTB) in Southeast Asian (SEA) countries and its correlation with socioeconomic characteristics and burden of disease.

Methods. A systematic review of preterm birth publications by SEA authors indexed in Scopus, PubMed, ClinicalTrials.gov, and Cochrane was done. Case reports, cohorts, control trials, reviews and cost analysis studies done by SEA researches involving pathophysiology, diagnosis, management, and complications of preterm birth was included in the study while published letters to editors were excluded. The correlation of bibliometric indices, namely Scopus citations, and PlumX metrics indices (citations, usage, captures, mentions, and social media), with socioeconomic status and burden of preterm birth in SEA countries were analyzed by computing for the correlation coefficient (r) and p -value at an alpha of 0.05.

Results. Thailand had the highest number of publications and the highest count across all bibliometric indices among all countries in SEA. The percent gross domestic product (GDP) per capita allotted for research and development (R & D) had direct correlation with publications and captures while crude birth rates had indirect correlation with publications, citations, and captures. Neonatal mortality had indirect correlation with publications and captures.

Conclusion. Support for research and development is essential to increase research productivity in SEA, which in turn may help in finding solutions to decrease the rate of preterm birth in the region.

Keywords: *bibliometric analysis, preterm birth, prematurity, gross domestic product, Southeast Asia*

INTRODUCTION

Preterm birth (PTB), neonates born less than 37 weeks age of gestation, is one of the leading causes of neonatal morbidity and mortality worldwide.¹ Rate of neonatal mortality declines as the age of gestation on delivery becomes close to 37 weeks, with as high as 90% survival rate in more than 30 weeks age of gestation and 50% among 23-24 weeks in developed countries.¹⁻³ Around 11% of all deliveries globally are delivered preterm.¹ The estimated rate of PTB increased since year 2000 in low-income to middle-income countries.⁴ Research and development (R & D) have a crucial role in decreasing the rate of PTB through discovering means to prevent and manage the condition.⁴

Among the common indices used in assessing research productivity are impact factors of journals, H-index, and metrics measured by different providers such as PlumX.^{5,6} Impact factor is computed by applying a formula that uses the number of citations of publications of a journal in the previous two years.⁷ H-index measures the research productivity in



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terms of most cited papers and number of citations.⁸ PlumX metrics is a provider that categorizes impact of publications into citations, usage, captures, mentions, and social media.⁶ Combination of the different indices measured was suggested to provide a good assessment of impact of research.⁶

A bibliometric analysis of publications on PTB showed an increase in research publications globally through time in congruent with growing awareness of the health problem.⁹ Research productivity as evaluated by the different bibliometric indices are thought to increase in countries with higher gross domestic product (GDP), especially in the developed countries, wherein higher percentage of the GDP is also allotted for R & D.¹⁰ It is hypothesized that the higher GDP per capita of the country and percentage for R & D, the higher the funding for research and development, thus translating to higher research productivity.

Up to date, there are limited studies done on the analysis of research productivity and bibliometric analysis of researches on PTB in SEA and its association with the socioeconomic factors such as GDP per capita of the countries in the region. This study aimed to describe the research productivity on PTB in the SEA region and its association with the countries' socioeconomic characteristics and burden of PTB, and in turn measure the impact of published researches on preterm birth in SEA. The specific objectives of the paper were to describe the characteristics of the publications on preterm birth, identify the research output in terms of preterm birth, identify the bibliometric indices of the researches, identify the burden of preterm birth and socioeconomic determinants in SEA in relation to research and development, and determine the association of the bibliometric indices and burden of disease and socioeconomic determinants.

MATERIALS AND METHODS

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) in conducting the systematic review.¹¹

Bibliographic Search

Studies on PTB included were randomized control trials, retrospective cohorts, prospective cohorts, cross-sectional studies, case control studies, case reports, case series, cost-effective analysis, literature reviews, animal studies or in vitro studies. Publications with full article availability were included in the review. At least one author of each publication must be affiliated with an institution from any of the SEA countries.

Publications were searched in the databases of Scopus, PubMed, ClinicalTrials.gov, and Cochrane. The search period was started on April 30, 2021 using the terms [preterm birth OR prematurity] and [Southeast Asia OR Brunei OR Cambodia OR Indonesia OR Laos OR Lao People's Democratic Republic (PDR) OR Malaysia OR Myanmar OR Philippines OR Singapore OR Thailand OR Timor Leste OR East Timor OR Vietnam].

Journal Selection

The authors independently reviewed the journals for selection and analysis. Disagreements were settled through discussion. The risk of bias was not assessed since there were no tools yet to assess bias for bibliometric analysis. The criteria for inclusion of a paper for this review was that the paper should be about epidemiology, risk factors, diagnostics, physiology, management, complications or prevention of preterm birth, should be either randomized control trials, retrospective cohorts, prospective cohorts, cross-sectional studies, case control studies, case reports, case series, cost-effective analysis, literature reviews, animal studies or in vitro studies, and at least one author should be affiliated with any Southeast Asian-based institution. The articles excluded were those not about preterm birth, with authors who were not affiliated with any Southeast Asian-based institution or papers that were responses to articles or letters to the editors. Papers with no available English translation and full text were also excluded. Authors of said articles were emailed for copies of English full text, if there were any, to obtain the full text and English version for the non-English articles.

Publications included were from 1973 to April 30, 2021. Duplicates were removed after consolidation of the publications from the different databases. Articles included underwent qualitative and quantitative analysis. Publications were grouped depending on the specific topic on PTB: epidemiology, risk factors, diagnostics, physiology, management, complications, or prevention.

Bibliometric Indices

Bibliometric indices were collected, namely: total number of publications, journal impact factors, Scopus citations, and PlumX metrics, to quantitatively assess the research productivity of the countries. Impact factors were collected from the Web of Science Journal Citations Report.¹² Socioeconomic characteristics, namely population, GDP per capita, and percent GDP for R & D, and burden of PTB, namely birth rates, births attended by skilled staff, life expectancy, neonatal mortality rates, and death rates, were obtained from the World Bank Database for each SEA country.¹³ The estimated PTB rates were obtained from the study of Chawanpaiboon on global estimates of PTB.⁴

The frequency and percentage of the bibliometric indices were computed. The correlation between the bibliometric indices and socioeconomic characteristics were analyzed using Pearson's correlation by computing for the correlation coefficient (r) and p -value at an alpha of 0.05. Correlation analysis was also done for bibliometric indices and burden of disease. STATA 16.1 was used to conduct the Pearson's correlation analysis.

Ethical Approval

The conducted research is not related to either human or animal use.

RESULTS

Number of Papers

Using the search terms, there were 3,695 articles searched from Scopus (n=1,036), PubMed (n=2,414), ClinicalTrial.gov (n=90), and Cochrane (n=155) (Figure 1). After screening and removal of duplicates, a total of 1,436 articles were assessed for eligibility. Articles excluded in the analysis were 633 publications. These either have no authors affiliated to at least any SEA institution (n=135), not about PTB (n=281), no full article availability (n=47), not completed trial (n=99) or was a letter or a correspondence (n=71).

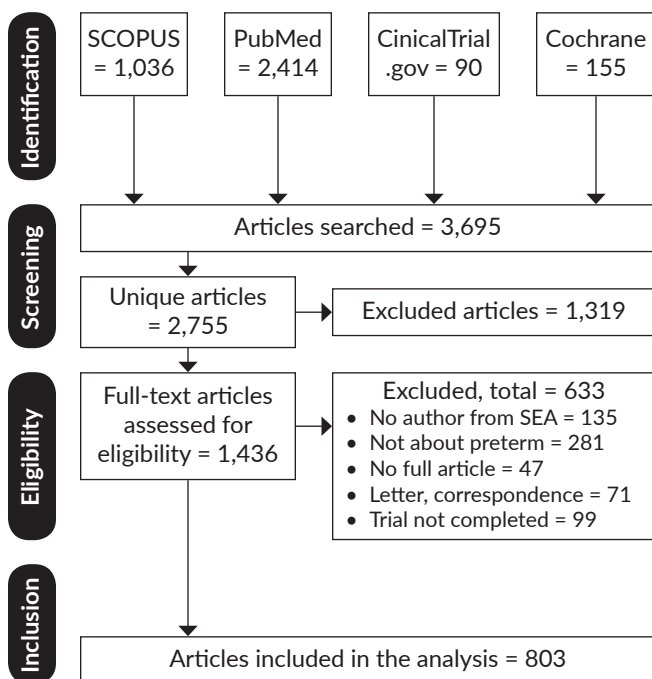


Figure 1. Systematic review flow in adherence with PRISMA.

Impact Factor

A total of 803 publications were qualified for data analysis and were included. These publications were reported in 293 journals. The Journal of the Medical Association of Thailand, with impact factor of 0.15, was the journal with most publications (83, 10.3 %). The journal with the highest impact factor where a SEA author was able to publish an article on mortality risk of preterm infants was the Lancet with an impact factor of 60.392. Four journals had discontinued impact factor and five journals had no available impact factor.

Research Topics

The most common topic studied was complications of PTB (334, 41.6%) which includes studies on retinopathy of prematurity, respiratory distress syndrome and necrotizing enterocolitis, intracranial hemorrhage, and cerebral palsy. This is followed by risk factors (204, 25.4 %), management (81, 10.1 %), epidemiology (61, 7.6 %), prevention (50, 6.2 %), diagnostics (46, 5.7 %), and physiology (27, 3.4 %). Generally, the trend of research productivity in terms of number of publications on PTB throughout time was exponentially increasing during the last two decades. However, papers on complications, epidemiology, risk factors, and management were produced at a higher rate compared with papers on prevention, physiology, and diagnostics (Figure 2).

Most of the publications were prospective cohort studies (215, 26.8 %), followed by retrospective cohort studies (214, 26.7 %), clinical trials (101, 12.6 %), cross-sectional studies (94, 11.7 %), literature reviews (79, 9.8 %), case studies and series (54, 6.7 %), case control studies (35, 4.4 %), in vitro studies (5, 0.6 %), animal studies (4, 0.5 %), and cost-effective analysis studies (2, 0.2 %).

Bibliometric Indices

All countries were able to have at least one publication with Timor Leste having the least number of publications

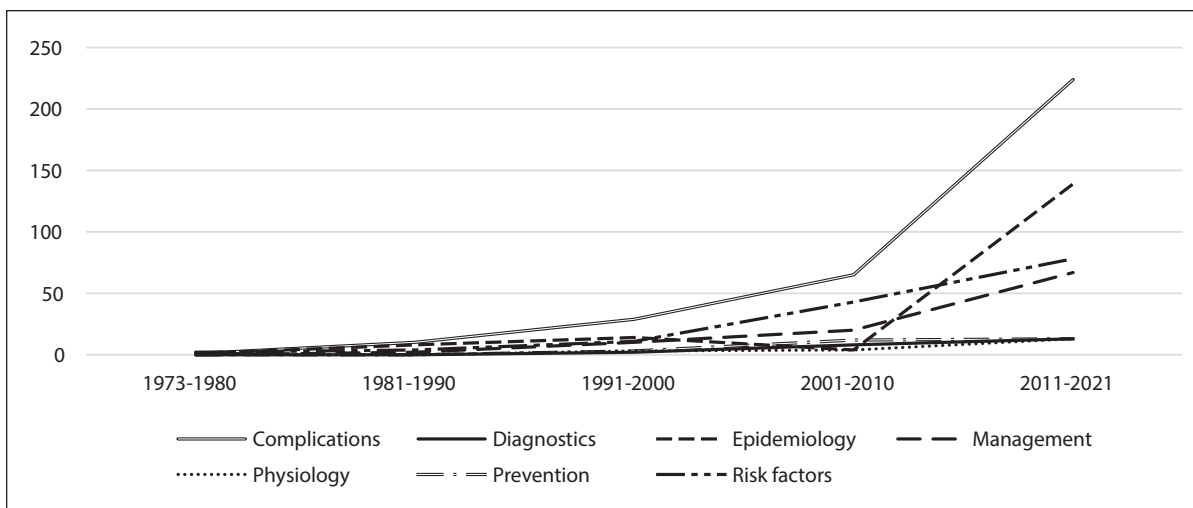


Figure 2. Topics of publications through the years.

Table 1. Bibliometric Indexes per Country n (%)

Country	Publications n=803	Scopus citation n=5,638	PlumX metrics				
			Citation n=5,311	Usage n=98,810	Captures n=27,446	Mentions n=44	Social media n=1,867
Brunei	3 (0.4)	10 (0.2)	5 (0.1)	0 (0)	9 (0.0)	0 (0)	0 (0)
Cambodia	3 (0.4)	15 (0.3)	9 (0.2)	248 (0.3)	265 (1.0)	0 (0)	2 (0.1)
Indonesia	86 (10.7)	645 (11.4)	637 (12.0)	8,599 (8.7)	3,861 (14.1)	7 (15.9)	366 (19.6)
Lao PDR	7 (0.9)	62 (1.1)	55 (1.0)	5,470 (5.5)	381 (1.4)	1 (2.3)	156 (8.4)
Malaysia	149 (18.6)	626 (11.1)	379 (7.1)	19,827 (20.1)	5,783 (21.1)	5 (11.4)	52 (2.8)
Myanmar	2 (0.2)	45 (0.8)	28 (0.5)	25 (0.0)	126 (0.5)	0 (0)	1 (0.1)
Philippines	31 (3.9)	285 (5.1)	284 (5.3)	4,612 (4.7)	1,525 (5.6)	1 (2.3)	227 (12.2)
Singapore	193 (24.0)	920 (16.3)	795 (15.0)	8,425 (8.5)	3,847 (14.0)	4 (9.1)	60 (3.2)
Thailand	289 (36.0)	2,476 (43.9)	2,559 (48.2)	28,299 (28.6)	9,483 (34.6)	26 (59.1)	738 (39.5)
Timor Leste	1 (0.1)	8 (0.1)	11 (0.2)	217 (0.2)	56 (0.2)	0 (0)	0 (0)
Vietnam	39 (4.9)	546 (9.7)	549 (10.3)	23,088 (23.4)	2,110 (7.7)	0 (0)	265 (14.2)

Table 2. Socioeconomic Determinants in Southeast Asia per Country⁴

Country	Population (n)	GDP per capita (US dollars)	R&D expenditure (% of GDP)
Brunei	437,479	31,086.80	0.28
Cambodia	16,718,965	1,643.10	0.12
Indonesia	273,523,615	4,135.60	0.23
Lao PDR	7,275,560	2,534.90	0.04
Malaysia	32,365,999	11,414.20	1.44
Myanmar	54,409,800	1,407.80	0.03
Philippines	109,581,078	3,485.10	0.16
Singapore	5,850,342	65,233.30	1.94
Thailand	69,799,978	7,806.70	1.00
Timor Leste	1,318,445	1,560.50	-
Vietnam	97,338,579	2,715.30	0.53

with 1 (Table 1). Across all of the bibliometric indices collected: number of publications (289, 36.0%), Scopus citation (2,476, 43.9%), PlumX metrics citation (2,559, 48.2%), usage (28,299, 28.6%), captures (9,483, 34.6%), mentions (26, 59.1%), and social media (738, 39.5%), Thailand contributed the highest proportion compared with the other SEA countries. Singapore had the second most number of publications followed by Malaysia.

Socioeconomic Characteristics and Burden of Disease

Indonesia had the largest population at more than 200 million followed by Philippines with Brunei having the smallest population size with less than half a million as of May 15, 2021 (Table 2). Singapore had the highest GDP per capita and percent allocation of GDP to R & D. Singapore, Malaysia and Thailand are the top 3 countries with the highest percent contribution of GDP to R & D at more than or equal to 1%.

Crude birth rate was highest in Timor Leste followed by Lao PDR (Table 3).¹³ All births in Brunei, Malaysia, and Singapore were attended by skilled staff. Singapore had the longest life expectancy at birth at 83 years. Myanmar and Lao PDR had the highest neonatal mortality rates both at 22 per 1,000 live births. Highest death rates were found in Myanmar and Thailand both at 8 per 1,000 people. Philippines had the highest rate of PTB at 13.3 per 100 live births in 2014 followed by Thailand at 12.7 per 100 live births.⁴ Vietnam had the lowest PTB rate at 6.5 per 100 live births.⁴

Research productivity vis-à-vis socioeconomic characteristics and burden of disease

The total number of publications in SEA countries ($r = 0.780$, $p = 0.008$) and PlumX captures ($r = 0.641$, $p = 0.046$) had direct correlation with percent GDP per capita allotted for research and development (Table 4). Population size and GDP per capita had no statistical correlation with the collected bibliometric indices.

Crude birth rates had indirect correlation with most of the bibliometric indices: total publications ($r = -0.706$, $p = 0.015$), Scopus citations ($r = -0.652$, $p = 0.030$), total PlumX citations ($r = -0.622$, $p = 0.041$), and captures ($r = -0.611$, $p = 0.046$) (Table 5). Life expectancy from birth had direct correlation with total publications ($r = 0.719$, $p = 0.013$) while neonatal mortality had indirect correlation with both total publications ($r = -0.723$, $p = 0.012$) and captures ($r = -0.651$, $p = 0.030$). PTB rate, death rate, and percent birth attended by skilled staff had no statistical correlation with the collected bibliometric indices.

DISCUSSION

Impact Factor

Impact factor has been used to evaluate the relevance of journals because of its simple calculation and universal method; thus, impact factor was one of the assessment tools

Table 3. Burden of Preterm Birth in Southeast Asia^{4,13}

Country	Birth rate, crude (per 1,000 people) ⁴	Birth attended by skilled staff (% of total) ⁴	Life expectancy at birth (year) ⁴	Mortality rate, neonatal (per 1,000 live births) ⁴	Death rate, crude (per 1,000 people) ⁴	Preterm birth per 100 live births 2014 ¹³
Brunei	14	100	76	6	5	10.4
Cambodia	22	89	70	15	6	10.4
Indonesia	18	95	72	12	7	10.4
Lao PDR	23	64	68	22	6	10.4
Malaysia	17	100	76	5	5	10.4
Myanmar	17	60	67	22	8	10.4
Philippines	20	84	71	13	6	13.3
Singapore	9	100	83	1	5	10.4
Thailand	10	99	77	5	8	12.7
Timor Leste	29	57	69	20	6	10.4
Vietnam	16	94	75	11	6	6.5

used in this study.⁷ The Journal Citation Reports is a database that monitors and reports the impact factors of journals, noting only around 2% of journals have impact factor of 10 or higher.^{7,12} Only 1.9% of all publications included in this study were published in journals with impact factor of 10 or more. The higher impact factor reflects higher relevance rate of the journal; however, one common misapplication of the impact factor is the evaluation of quality of individual articles or achievements of authors.^{6,7} One disadvantage of using impact factor especially in Asian regions is the bias of

impact factor in the English language since journals written in English are those that are evaluated and given impact factors.⁷ This gives a disadvantage for Asian journals and articles using non-English language. Furthermore, impact factors are noted to have biases for open access articles and to promote self-citation.⁷ Kaldas et al. recommended other alternative methods to evaluate relevance of journals and articles such as Eigenfactor score and CiteScore while Gasparyan et al. recommended combined metric schemes to evaluate relevance and impact.^{6,7}

Table 4. Correlation Analysis between Selected Country's Socioeconomic Characteristics and Bibliometric Indices of Research Productivity in South East Asia

Country characteristic	Bibliometric Index	Correlation coefficient (r)	p-value ^a
Population size	Total publications	0.105	0.758
	Scopus citations	0.205	0.546
	Total citations	0.223	0.511
	Usage	0.221	0.514
	Captures	0.265	0.431
	Mentions	0.219	0.518
	Social media	0.504	0.114
Gross Domestic Product per capita (US dollars)	Total publications	0.395	0.230
	Scopus citations	0.168	0.621
	Total citations	0.119	0.727
	Usage	-0.035	0.920
	Captures	0.148	0.664
	Mentions	0.016	0.963
	Social media	-0.200	0.556
% Gross Domestic Product per capita for research and development	Total publications	0.780	0.008 [†]
	Scopus citations	0.540	0.107
	Total citations	0.453	0.189
	Usage	0.513	0.129
	Captures	0.641	0.046 [†]
	Mentions	0.364	0.301
	Social media	0.086	0.812

^a Pearson's correlation analysis at an alpha of 0.05
[†] significant at alpha of 0.05

Table 5. Correlation Analysis between Selected Country's Burden of Disease and Bibliometric Indices of Research Productivity in South East Asia

Country characteristic	Bibliometric Index	Correlation coefficient (r)	p-value ^a
Crude birth rate (per 1,000 people)	Total publications	-0.706	0.015 [†]
	Scopus citations	-0.652	0.030 [†]
	Total citations	-0.622	0.041 [†]
	Usage	-0.514	0.106
	Captures	-0.611	0.046 [†]
	Mentions	-0.519	0.102
	Social media	-0.404	0.218
Birth attended by skilled staff (% of total)	Total publications	0.584	0.059
	Scopus citations	0.507	0.111
	Total citations	0.464	0.151
	Usage	0.533	0.092
	Captures	0.589	0.056
	Mentions	0.395	0.229
	Social media	0.345	0.299
Life expectancy from birth (in years)	Total publications	0.719	0.013 [†]
	Scopus citations	0.567	0.069
	Total citations	0.512	0.108
	Usage	0.508	0.111
	Captures	0.586	0.058
	Mentions	0.383	0.245
	Social media	0.226	0.503
Mortality rate, neonatal (per 1,000 live births)	Total publications	-0.723	0.012 [†]
	Scopus citations	-0.586	0.058
	Total citations	-0.528	0.095
	Usage	-0.527	0.096
	Captures	-0.651	0.030 [†]
	Mentions	-0.446	0.169
	Social media	-0.282	0.401
Crude death rate (per 1,000 people)	Total publications	0.169	0.619
	Scopus citations	0.396	0.228
	Total citations	0.456	0.159
	Usage	0.163	0.610
	Captures	0.259	0.442
	Mentions	0.506	0.112
	Social media	0.569	0.068
Preterm birth prevalence (per 100 live births)	Total publications	0.308	0.356
	Scopus citations	0.303	0.366
	Total citations	0.312	0.351
	Usage	-0.135	0.693
	Captures	0.288	0.391
	Mentions	0.441	0.175
	Social media	0.287	0.393

^a Pearson's correlation analysis at an alpha of 0.05

[†] significant at alpha of 0.05

Bibliometric Analysis

Almetrics and PlumX metrics are among the different providers that tally the relevance of articles based on citations, downloads, bookmarks, views, saves, and social media. Ortega grouped the different components of the providers and noted three different components and trends: citation and saves, social media, and usage.¹⁴ Ortega also noted the similarity of trends of citations and social media referencing, wherein

high cited articles or journals with higher impact factors are noted to have more influence and visibility in social media.¹⁴ This was generally observed as well in the results of this study wherein the general ranking of the countries in terms of the number of PlumX social media references follows the trend of Scopus citations except for Singapore with only 3.2% of all social media references compared with its Scopus citation percentage at 16.3% of all citations in the region.

The number of publications and bibliometric indices were also affected by whether the local journals were indexed in the common databases used in literature reviews such as in bibliometric study. In the Philippines, only 4% of all Philippine scientific and academic journals are indexed in Scopus or Thompson Reuters.¹⁵ This was also noted in a bibliometric analysis by Maula et al. of publications on Dengue in Indonesia and Southeast Asia, thus, creating a centralized portal was recommended in their study to augment this. Local databases can be used to more accurately gather number of publications, however this can be very tedious to do and these databases are usually not accessed by the common bibliometric index providers.¹⁶

Different factors were noted to have an effect on the publication of articles on high impact factor journals and higher score for different indices, among these are the study topic or category, study methodology, and research grants. General category articles are more referenced by social media and are more cited while social sciences have higher usage with health sciences having the lowest scores.¹⁴ Badenhorst et al. analyzed the association of research methodology and availability of grants with the odds of publishing in journals with high impact factor.¹⁰ There was an increased odds by 3.4 times for publication among those awarded with grants.¹⁰ Also, random controlled trials and basic sciences had higher chances of getting grants, thus have a higher probability of publication in journals with high impact factors.¹⁰ Literature reviews, the methodology of the article on preterm birth with highest impact factor based on this study's search, had higher acceptability rate in high impact factor journals compared with cohort studies.⁶ Only 12.6% of all articles in this study were clinical trials. This can also be a factor for the higher rate of publication in journals with low impact factor.

Socioeconomic Determinants and Burden of Disease

The world is estimated to have over 7 billion in population in 2021.¹⁷ Indonesia, also the most populated in SEA, is the only SEA country in the top 10 countries with the highest population in the world in 2020.¹⁷ Most of the SEA countries are low-middle-income countries (Cambodia, Timor Leste, Lao PDR, Myanmar, Philippines, and Vietnam) according to the World Bank database.¹³ Low- and middle-income countries were observed to have higher incidence of PTB.¹⁸ It is estimated that around 15 million babies are born preterm worldwide leading to around a million deaths among children below 5 years old.¹⁸ In 2010, SEA region had the highest PTB rate at 13.6% compared with other regions of the world and with the worldwide prevalence rate of 11.4%.¹⁹ Indonesia and Philippines were ranked among the top countries worldwide with high PTB and small for gestational age rates.¹⁹ There was note of general decrease in the rate in the succeeding years, but Philippines still has a relatively higher rate of 13.3% in 2014.⁴ Finding a solution to PTB through research and development can decrease preventable deaths of

newborns and children aged 5 and below which is essential in achieving the United Nations Sustainable Development Goal 3 by 2030.¹⁸

Due to the high burden of PTB worldwide, it is expected that there is also an increase in R & D to help address this. Generally, the publications on PTB increased in SEA. However, there was a more significant increase in publications on complications, risk factors, epidemiology, and management. PTB is one of the most common topics of articles published in obstetrics and gynecology according to a bibliometric analysis by Brandt.²⁰ In another bibliometric analysis of publications in Brazil on PTB, studies focused more on the causes of prematurity.²¹ There was a note of annual significant increase of publications by 443% reflecting the global need to produce more research, especially clinical research, to reduce PTB according to a study by Visser et al.⁹ To decrease the burden of PTB worldwide, studies on prevention of preterm birth should be part of the focus of researches.

Research Gaps

As far as the literature review done by the authors, there are currently no studies published on bibliometric analysis on PTB and correlation with socioeconomic characteristics and burden of disease in the SEA region. However, there are studies on bibliometric studies on neurologic conditions. Similar with studies of Espiritu, Apor, and Mondia on neurologic diseases, Thailand and Singapore had the highest number of publications and percent GDP for R & D was significantly correlated to publications and bibliometric indices.²²⁻²⁴ This study also supports the theory that certain socioeconomic factors, specifically percent GDP for R & D, is correlated with the number of publications and PlumX captures. Similar with the conclusion of the study of Farrokhyar et al., funding affects the research productivity wherein availability and access to funds for research results to a higher odds of publication.²⁵ Compared with global data in terms of public health research, there are no SEA countries at the top 25 countries worldwide in terms of number of publications and H-index.¹⁰ However, Mahidol University in Thailand was noted to be one of the top universities contributing to publications.¹⁰ Badenhorst et al. also evaluated the ratio of number of publications and GDP of the countries worldwide which showed that despite the limited resources, Lao PDR and Cambodia were noted to be among the top productive countries based from publication and GDP ratio.¹⁰ Given the significant correlation of research productivity in terms of publications and certain bibliometric indices with percent GDP for R & D, ways must be implemented to provide higher percent GDP for R & D especially in regions with higher burden of PTB. SEA countries must also efficiently use the funds available and prioritize producing higher impact researches on prevention and management.

The burden of PTB was postulated to have a correlation in terms of the research productivity of the countries.

The reason that the rate of PTB was not correlated with publications or any bibliometric indices computed could be due to the relatively close rates of PTB across the SEA countries. However, neonatal mortality rate was correlated with total publications in this study. PTB was observed to be one of the leading causes of neonatal mortality and seen as a preventable cause of neonatal death.²⁶ Franck et al. recommended in their study to include the population of those with high risk of PTB who have less access and contribution to research be involved in deciding on research priorities in terms of PTB to provide a more significant impact on the ones more affected.²⁷ Given the limited resources of most of the countries in SEA, funding for research and development must be used efficiently to create stronger impact to decrease the burden of PTB in the region.

Future Directions

In future studies, the use of local databases in the SEA region can be an option to assess the total number of publications in the region, however this can be a tedious work due to number of databases that must be searched. Other bibliometric indices can also be used in future studies to evaluate the impact of the studies such as the H-index or CiteScore. The different indices can also be compared to ascertain correlation.

CONCLUSION

As far as the review of literature of the authors, this paper is the first to report on the research productivity of SEA countries and its association with socioeconomic characteristics and burden of PTB. This paper supported the initial theory that percent GDP for R&D is associated with bibliometric indices, specifically for total publications and PlumX captures. The authors suggest to find ways to provide more funding for researches, especially on management and prevention of PTB, and for efficient use of these funds to provide higher impact studies to help in decreasing the PTB in the country and other SEA countries.

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Statement of Authorship

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Author Disclosure

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