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The Effect of Governance, Public Participation, and Public Health Expenditure on Public Health Outcome in Thailand

Natthachai Chinatthaporn [1*], Prapon Sahapattana [1]

[1] Graduate School of Public Administration, National Institute of Development Administration , Thailand

* Corresponding Author: Email: chnatthachai@gmail.com , © Authors

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Abstract

The objective of this study is to examine the effect of governance, public participation, and public health expenditure on public health outcomes in Thailand. Additionally, the study aims to offer policy suggestions for enhancing public health outcome in Thailand. The study was conducted using a quantitative methodology, making use of an extensive database that covered the period from 2009 to 2020. The key findings suggested that the participation of the public plays a significant role in enhancing health outcomes. The active participation of community members plays a crucial role in enhancing health outcomes throughout the various provinces of Thailand. Furthermore, enhancing health outcomes depends on effective governance. The impact of government effectiveness, corruption control, and accountability on public health outcomes is considerable. Public health outcomes are explained by governance, as determined by provincial tax collection and government action complaints regarding corruption. The determinant of public health expenditures has been found to have a statistically significant impact on public health outcomes, albeit with a relatively modest effect size. The findings for policy recommendations for improving public health outcomes in Thailand provinces indicated that policymakers should consider the promotion of community participation and the improvement of governance, with a particular emphasis on government effectiveness, accountability, and corruption control dimensions, as additional measures to improve public health outcomes.

Introduction:

Background and Significance of the Study

The endogenous growth theory places great emphasis on the importance of continuous investment in human capital as a driving force for enhancing productivity and fostering economic growth. This theory suggests that economic growth is generated endogenously within a system as a direct consequence of internal mechanisms. The theory posits that the increase of a nation's human capital can result in economic growth through the facilitation of technological advancements and the optimization of production methods (Romer, 1994; Rahman et al., 2018).

The significance of good health in relation to economic growth lies in the indirect impact that healthy workers have on economic production within the production system. Given that labor is a crucial input that influences all other factors of production, any increase in labor productivity has a significant impact on the remaining factors of production. Prior studies have indicated that individuals with good health tend to exhibit a higher propensity to invest in educational pursuits. According to Rahman et al. (2018),

the paper suggests that individuals possess a greater amount of human capital and possess the capacity to engage in innovation and the assimilation of novel technologies. The hyperlink provided is anticipated to yield advancements in technology and the workforce, which constitutes a significant element of growth theory (Bloom & Canning, 2000, 2003; Bloom et al., 2004).

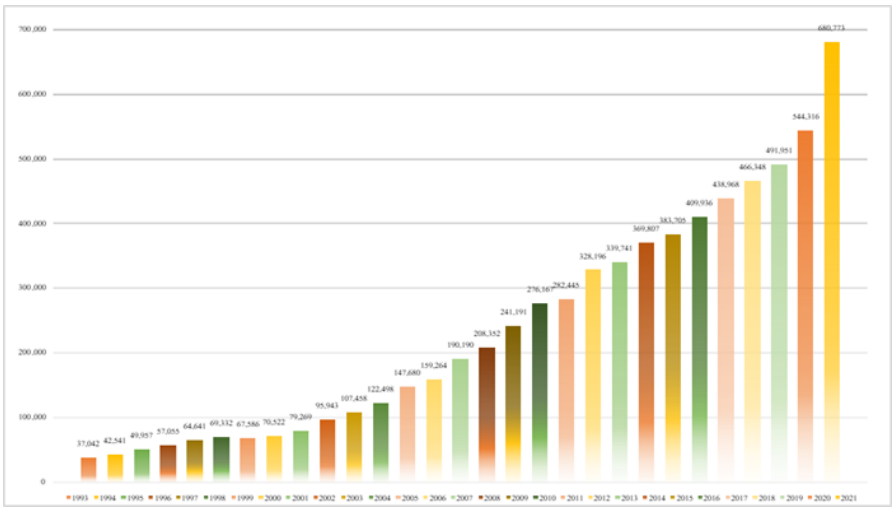
In addition, the promotion of health and well-being constitutes one of the seventeen global goals outlined in the 2030 Agenda for Sustainable Development. Sustainable Development Goal 3 endeavors to promote universal health and well-being, with a notable commitment to eradicating the epidemics of AIDS, tuberculosis, malaria, and other communicable diseases by the year 2030. Furthermore, it aims to achieve comprehensive health coverage on a global scale, guaranteeing equitable access to secure and efficacious pharmaceuticals and immunizations for all individuals. The endorsement of vaccine research and development, along with the expansion of affordable medication availability, are indispensable elements of this undertaking (the United Nations, 2022). As a result, encouraging health and well-being is crucial for reaching sustainable development goals as well as for economic growth.

Investing in public health is an essential policy measure that promotes the welfare of individuals and contributes to the economic progress of a nation. Especially in developing nations, national health expenditure investments are a critical determinant of economic growth. According to Noy and Sprague-Jones (2016), this program offers social security benefits and enhances the availability of healthcare services, with a particular focus on individuals with lower socioeconomic status. Modern nations prioritize the equitable allocation of resources in order to mitigate the prevalence of poverty and illness, with a particular emphasis on addressing these issues within rural communities. Hence, the allocation of public funds towards education and healthcare initiatives enhances individuals' overall well-being and concurrently contributes to the economic advancement of a nation. Public health policies play a crucial role in empowering individuals from economically disadvantaged backgrounds and addressing various forms of exclusion, such as those based on gender, geographic location, and other factors associated with poverty.

It is generally acknowledged that public health expenditure in Thailand is an exceptionally efficient approach to tackling issues of poverty and inequality. The Thai government has exhibited a notable commitment to augmenting the availability and usability of healthcare services for its populace. Since 1988, the government has been dedicated to the implementation of a publicly financed health card program with the objective of granting low-income families access to medical care. Moreover, in the midst of the 1997 financial crisis, the Thai government implemented a nationwide health insurance program that provides coverage to all Thai citizens. Following Thaksin Shinawatra's 2001 election, the Thai government implemented a nationwide health insurance program that ensures protection for all Thai citizens (Buracom, 2011). Based on the data illustrated in Figure 1, public health expenditures in Thailand have exhibited a consistent upward trajectory since 1993. Since 1993, the total value of the baht has increased steadily, from 37,042 million baht to 680,773 million baht by 2021.

Figure 1

Thailand's Public health spending (Million Baht) in year 1993 - 2021

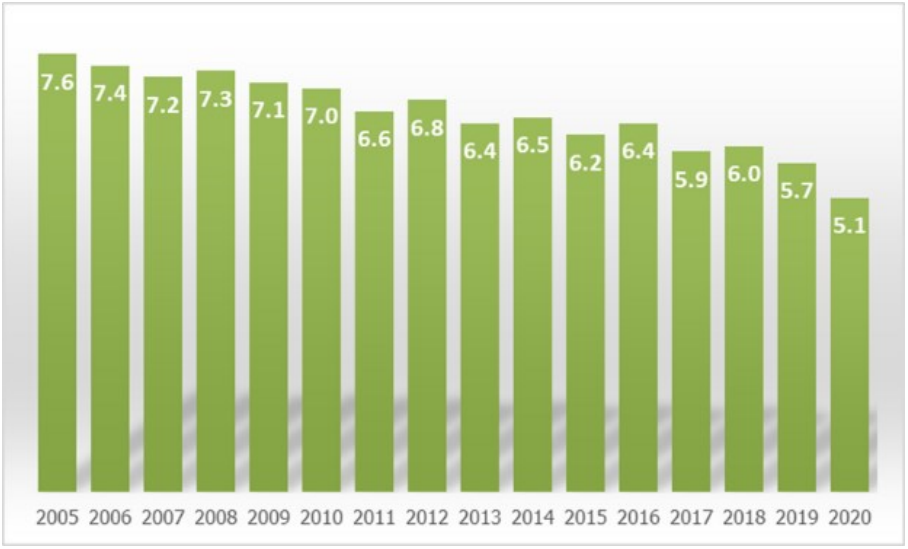


Note: The data for Thailand's Public health spending are from *Data on Social Indicator*, by The Office of the National Economic and Social Development Board, 2022, (https://www.nesdc.go.th/ewt_dl_link.php?nid=3511&filename=PageSocial)

Since 2005, the infant mortality rate (per 1000 individuals) in Thailand has exhibited a consistent downward trend with regard to the country's public health situation. As shown in Figure 1, this rate has declined from 7.6 percent in 2005 to 5.1 percent in 2020. It is apparent from an initial analysis of the mortality rate that Thailand's public health is progressing in a favorable direction. Conversely, from 2009 to 2020, there is an expectation that the maternal mortality rate (per 100,000 individuals) will decline. Since 2012, as shown in Figure 2, the rate of maternal mortality has increased.

Figure 2

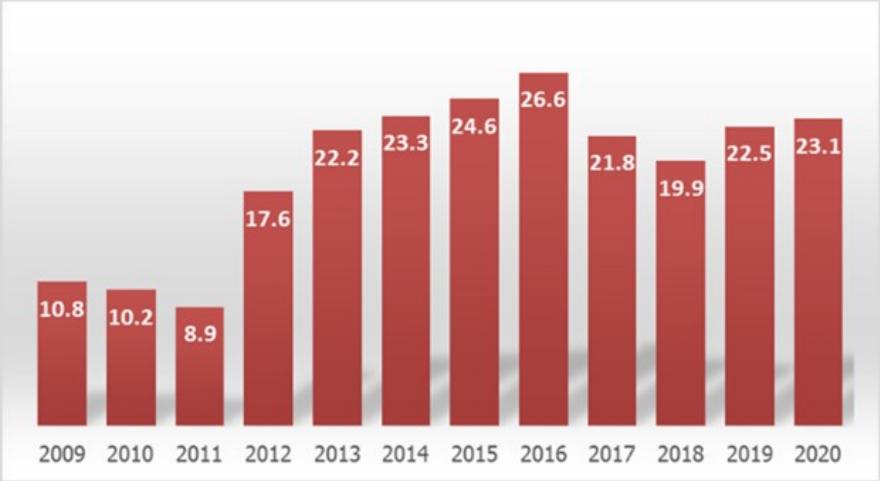
Infant mortality rate (per 1000 people) in year 2005 – 2020



Note: The data for Infant mortality rate are from *Public Health Statistics A.D.2020*, by Ministry of Public Health Thailand, 2021, (https://bps.moph.go.th/new_bps/sites/default/files/2563_0.pdf)

Figure 3

Maternal mortality rate (per 100,000 people) in year 2009 – 2020

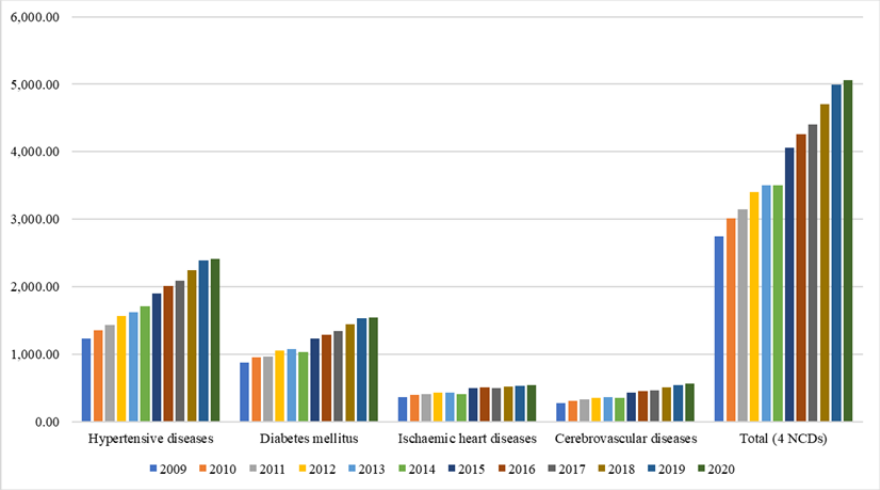


Note: The data for Maternal mortality rate are from *Public Health Statistics A.D.2020*, by Ministry of Public Health Thailand, 2021, (https://bps.moph.go.th/new_bps/sites/default/files/2563_0.pdf)

The morbidity rate of noncommunicable diseases (NCDs) is frequently utilized by scholars as a method to measure health outcomes. The morbidity rate associated with non-communicable diseases, such as hypertensive diseases, diabetes mellitus, ischemic heart diseases, and cerebrovascular diseases, exhibits a discernible pattern of deterioration in Thailand. The anticipated trajectory of morbidity rates associated with non-communicable diseases is predicted to exhibit a rise from 2009 to 2020, as depicted in Figure 4. Hypertensive diseases exhibit the highest rate of morbidity when compared to other notable non-communicable diseases.

Figure 4

Morbidity rate from NCDs causes in Thailand, 2009 – 2020



Note: The data for Morbidity rate from NCDs causes in Thailand are from *NCDs status report diabetes, high blood pressure and related risk factors 2019*, by Ministry of Public Health Thailand, 2021, (http://www.thaincd.com/2016/mission/documents.php?tid=32&gid=1-020)

Many scholars have previously directed their attention towards examining the determinants of public health outcomes. Their objective is to provide recommendations for enhancing the efficacy of public health management and improving overall health outcomes. Many scholars attempt to investigate the determinants of public health outcomes based on a variety of research assumptions and theoretical frameworks, including factors such as public health spending, governance, economics, and demographics. Many studies have investigated the impact of public health expenditure on health outcomes, including the research conducted by Arthur and Oaikhenan (2017), Anyanwu and Erhijakpor (2009), and Gupta and Verhoeven (2001). In the realm of scholarly research, Pritchett (1996), Campos and Pradhan (1996), and Rajkumar and Swaroop (2008) have undertaken studies aimed at examining the effect of governance factors on development outcomes, with a specific focus on health outcomes. Furthermore, a research study was conducted by Sloan and Tedin (1987) as well as Bollyky et al. (2019) with the aim of examining the impact of democracy on public health indicators. The study conducted by Rifkin (2009) examined the relationship between community engagement and enhanced health outcomes.

Moreover, upon reviewing the existing body of literature pertaining to the impact of various factors on public health outcomes, it was observed that a significant proportion of the studies have primarily focused on conducting extensive investigations at the national level. Nevertheless, it is important to highlight that there is a lack of prior scholarly investigations that have been conducted to collect quantitative data at the provincial level with the aim of examining the effect of governance, public participation, and public health expenditure on public health outcomes, particularly within the specific context of Thailand. Thus, by employing provincial-level data to examine the effect of public health expenditure, public participation, and governance on public health outcomes in Thailand, this study has the capacity to contribute to the advancement of knowledge in the domains of development administration, governance, and development, while also yielding valuable policy recommendations.

Objectives of the Study

There are two objectives of the study. Firstly, the objective of this study is to examine the effect of governance, public participation, and public health expenditure on public health outcomes in Thailand. Additionally, the objective of this study is to provide policy recommendations for enhancing public health outcomes in Thailand.

Scope of the Study

This study primarily examines the various factors that affect public health outcomes, specifically focusing on governance, public health expenditure, and public participation, as well as economic and demographic factors. The focus of public health outcomes in the provinces of Thailand pertains to the morbidity rate of non-communicable diseases, namely hypertensive diseases, diabetes mellitus, ischemic heart diseases, and cerebrovascular diseases. This study focuses on conducting an in-depth study at the provincial level, where provinces are considered the unit of analysis. All provinces, except for Bueng Kan, are encompassed within the scope of this study. The present study was carried out in various provinces of Thailand, utilizing a comprehensive database covering the period from 2009 to 2020. The selection of this particular timeframe can be attributed to the adoption of the Universal Health Coverage (UHC) Policy in 2002. This policy facilitated the establishment of three dimensions of universal health coverage in Thailand, aligning with the UHC Cube principle and the fundamental concept of universal health coverage.

Literature Review:

In the literature review, this part aims to discuss the previous researches on the effect of governance, public participation, and public health expenditure on public health outcomes in Thailand. A review of empirical studies is also necessary in order to develop a strong conceptual framework for the study. In this paper, the literature on determinants of public health outcomes, including public health expenditure factors, governance factors, democratic and public participation factors, as well as economic and demographic factors, will be discussed.

When it comes to the study examining the effect of public health expenditure on public health outcomes, traditional studies focus on how government expenditure impacts economic growth and improves social development indicators, influenced by the notions of the School of Keynesian economics. Theoretically, public health expenditure may be seen as a crucial mechanism for facilitating the attainment of improved health outcomes. The rationale for this is that public health expenditure is a necessary requirement for the successful and efficient functioning of the health system. The significance of health spending lies in its provision of resources and economic incentives for the functioning of health systems. It serves as a crucial factor in determining the performance of the health sector in terms of equality, efficiency, and health outcomes.

In general, increased health spending should result in improved health outcomes; nevertheless, the findings of previous studies on the impact of government spending on public health outcomes remain inconclusive. Many studies have investigated the effect of public health spending on public health outcomes. For example, Barenberg et al. (2015) found that increasing public health spending resulted in a significant reduction in infant mortality in a panel of Indian states. Accordingly, Bokhari et al. (2007) pointed to a significant decrease in mortality rates (infant and maternal mortality) in developing countries as a result of increased government spending. Similar to Deluna and Peralta (2014), an increase in average public spending in the Philippines lowers infant and under-five mortality rates. The impacts of health spending on health outcomes are occasionally demonstrated to be significant for a health indicator, such as infant mortality, but not for maternal fatalities as a measure of health outcome (Rana et al., 2018; Kim & Wang, 2019). In contrast, Kumar et al. (2013) discovered no association between public health expenditure and infant mortality at the country and state levels in India.

Nevertheless, in the aftermath of the global economic crisis, the World Bank suggests the notion of "governance" as a game changer. This leads to the recent studies focusing on governance factors that can affect health outcomes. According to the World Bank, governance is defined as a country's ability to achieve three development goals: lowering the threat of violence, creating prosperity, and ensuring that this wealth is shared (World Bank, 1991). The theoretical logic of governance and health outcomes will be explained in greater detail. At the conceptual level, the impact of governance on health outcomes is mediated by both direct and indirect mechanisms. Governance has been found to have an indirect impact on economic growth or national income (Anyanwu, 2014), which in turn influences the disposable income of families (Hu & Mendoza, 2013). Hence, it is plausible that family wealth has a role in determining the availability of enhanced water and sanitation facilities, enough nutrition, suitable housing, female education, and other household-level variables that might potentially affect the accessibility of high - quality healthcare services in a broader sense, as well as health outcomes specifically (Rajkumar & Swaroop, 2008).

Many scholars attempt to investigate the effect of governance on public health outcomes. For example, Gupta et al. (2002) discovered that governance has a significant impact on health outcomes, especially when it comes to the indicator of corruption. The findings in this regard point to the critical role of governance in attaining health benefits. Similarly, Rajkumar and Swaroop (2008) demonstrate that the effectiveness of public health spending on social outcomes is influenced by governance quality. Their findings imply that public investment has little impact on schooling and child mortality rates in nations with poor governance. In countries with good governance, however, public spending has a major impact on education and child mortality rates. Additionally, Yaqub et al. (2012) examined the effect of public health expenditure on infant and under-five mortality and life expectancy. The findings show that when the governance indicators are considered, public health spending has a negative effect on infant mortality and under-five mortality. Moreover, Farag et al. (2013) discovered that higher government effectiveness leads to improved health outcomes. Similar to Ahmad and Hasan (2016), they discovered that governance variables,

particularly corruption and government stability, are primary factors in health outcomes in Malaysia, in addition to income and public health expenditure. It is obvious that excellent governance correlates with good health status. To put it another way, governance is a critical factor in improving health status or outcomes.

In a recent decade, the demands for democracy, as well as the notion of New Public Management (NPM), have influenced the study of public administration. Since it allows both the private and public sectors to work together to manage public affairs, with a focus on promoting cooperation in the form of public-private partnerships and improving network management in the public policy process, as well as government official inspection, for this reason, recent studies on factors influencing public health outcomes have emphasized the importance of democracy and public participation. Many researchers are curious about the impact of democracy and public participation on public health outcomes.

According to the concept of social capital, Putnam (2000) emphasizes the importance of civic participation in improving government. In reviewing this concept, it is possible to assert that political participation, particularly community engagement, contributes to government officials acting properly. This will result in desirable outcomes, such as improved public health. Many researchers are interested in investigating the effect of the political condition on development outcomes, particularly the level of democracy. Previous research has revealed that democratic governments have a positive impact on healthcare policy because they are more likely to spend money on healthcare. Safaei (2006) discovered that democracy has an indirect positive effect on public health. Meanwhile, Ruger (2005) also revealed that there is a significant relationship between political institutions and public health outcomes.

When it comes to public participation, it is widely acknowledged as a critical element in improving and maintaining interventions that promote health outcomes. Until now, community participation has been viewed primarily as an intervention to improve population health rather than a process to design and support health programs to sustain these outcomes. Additionally, participation is crucial not only in the context of health care delivery and utilization. Supporters also emphasize participation as a critical aspect in the larger context of the importance of social determinants of health and health as a human right (World Health Organization [WHO], 2020). Many researchers attempt to examine the effect of public participation on public health outcomes. For example, Marston et al. (2013) discovered that community participation had a mostly positive impact on maternal and newborn health as part of a package of interventions. In search of evidence of a direct link between participation and improved health outcomes related to disease control and improvements in maternal and child care, a systematic analysis of Chagas disease control suggests that participation improves disease control, but further evidence is needed (Abad-Franch et al., 2011). Similarly, Bath and Wakerman (2015) examine evidence on the effect of community participation in primary health care on health outcomes. The findings reveal a limited but considerable body of evidence indicating community participation is linked to better health outcomes. However, there is a lack of research on the effect of public participation on health outcomes. Thus, it is required to conduct empirical study in this field.

In addition, many studies have been done in the past on the effect of economic and demographic conditions on development outcomes. For example, infant and child mortality may be affected both directly and indirectly by national income (Hojman, 1996). Exiting research by Ketenci and Murthy (2018) found that GDP per capita and educational attainment were found to be determinants affecting life expectancy. Concerning population growth, the study by Arthur and Oaikhenan (2017) discovered that urban population growth rates worsen health outcomes by increasing mortality rates and reducing life expectancy at birth. Meanwhile, Ketenci and Murthy (2018) found that educational attainment is the most important factor in health outcomes. Also, Cornia et al. (2008) contend that, given an average GDP per capita, a more equal income distribution can improve health status by guaranteeing that most households have access to basic resources. Thus, in this study, economic and demographic factors are included as determinants of public health outcomes.

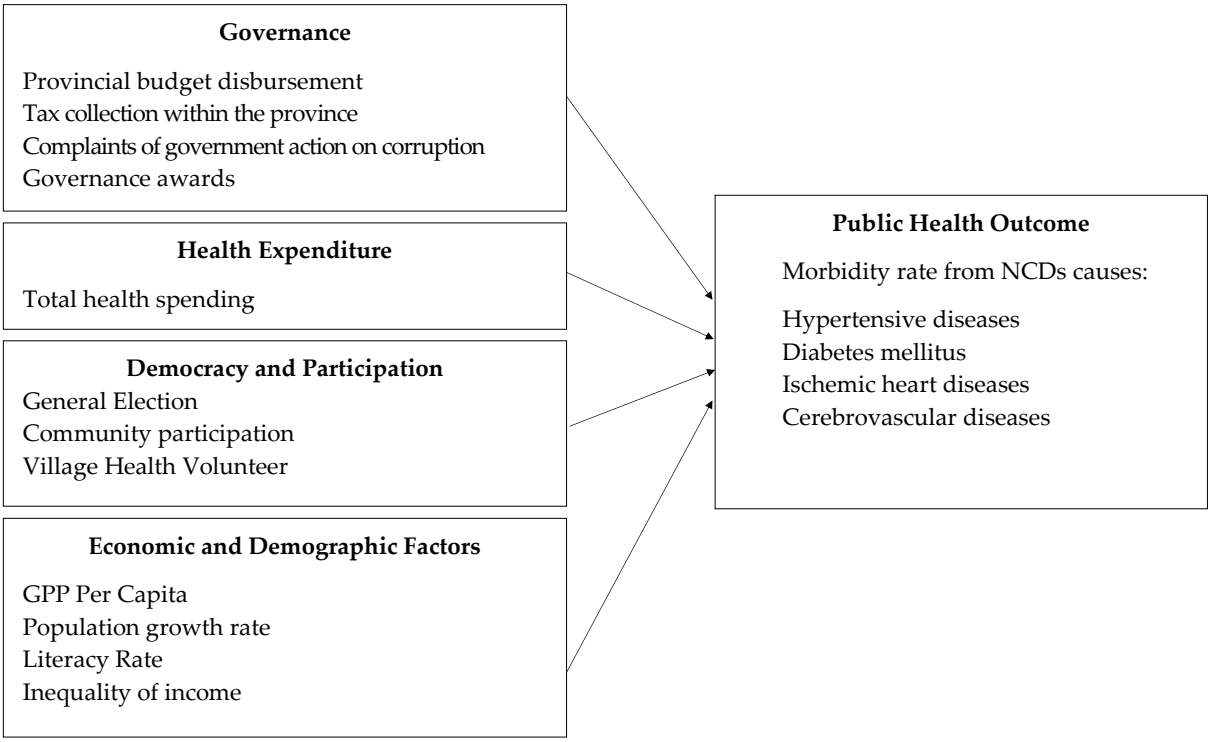
To sum up, according to the literature review, the scope of the factors affecting public health outcomes is focused on governance, public health expenditure, public participation, as well as economic and demographic factors that can affect public health outcomes.

Conceptual Framework:

This paper, according to our review of the literature, attempts to examine the effects of governance, public participation, and public health expenditures on public health outcomes. The following is a conceptual framework for this study.

Figure 5

Conceptual Framework



Research Methods:

The present study employs a quantitative methodology. The technique of multiple regression analysis is employed to examine the panel data encompassing all provinces in Thailand, with the exception of Bueng Kan province. The province is considered the unit of analysis in panel data analysis. The analysis will examine the relationship between independent variables and the dependent variable as presented in the conceptual framework. The empirical estimation entails the examination of four dependent variables, specifically the rates of morbidity associated with hypertensive diseases, diabetes mellitus, and cerebrovascular diseases.

A panel data regression was performed using the most recent year's data from each province, spanning the years 2009 to 2020. The secondary data utilized in this study has been sourced from various government agencies. The study utilized secondary data obtained from government agencies, which were deemed reliable due to the consistent and reliable data collection practices employed by these entities.

The data is processed using robust statistical software that enables users to analyze, manage, and generate graphical visualizations of the data. Panel data regression analysis is commonly conducted using statistical software such as SPSS and STATA. Furthermore, the issue of multicollinearity is predominantly investigated in order to identify the pair of independent variables that exhibit strong and statistically significant correlations.

Results and Discussion:

This part presents the empirical results of a quantitative research approach used to examine the determinants of public health outcomes at the provincial level in Thailand. The empirical results for all models applying panel-data regression in Thailand provinces from 2009 to 2020 are provided to reveal the determinants of health outcomes in Thailand. The findings of empirical estimations will help to provide the determinants of public health outcomes in Thailand's provinces.

Descriptive Statistics:

The descriptive statistics of all variables used in the study. It shows the mean values, the minimum and the maximum values, standard deviation values, as well as the number of observations in this study.

Table 1

Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Dependent Variable					
Morbidity rate from					
Hypertensive diseases	900	1874.562	682.3614	507.5519	4165.625
Diabetes mellitus	900	1190.515	386.8106	287.8349	2229.341
Ischemic heart diseases	900	455.3906	186.2832	98.2274	1154.938
Cerebrovascular Diseases	900	410.2306	149.3404	104.5547	903.4258
Independent Variable					
Provincial budget disbursement	900	75.44347	17.89367	13.45725	100
Province tax collection	900	12.69933	5.629279	4.668253	37.58085
Control of corruption	900	32.73889	26.67286	0	171
Governance awards	900	.1333333	.3401236	0	1
Total health expenditure $_{(t-1)}$	825	533.6162	476.0083	64.91151	3194.909
General election	900	.1666667	.3728852	0	1
Community participation	900	81.76256	13.788	21.88136	99.26618
Village health volunteer	900	1215.901	603.826	105.2491	3101.643
GPP per capita	900	141394.7	122294.1	33575.03	752291.1
Population growth rate	900	783.5738	481.6256	179.262	2538.245
Level of education	900	7.865729	1.094434	3.84	11.3
Inequality of income	900	36.2551	11.79729	.9710776	67.897

The Empirical Results:

The multiple regression analysis in this part provides empirical estimation results for the four dependent variables. The provision of an interpretation for each dependent variable is crucial in order to comprehend the extent to which an independent variable can determine the dependent variable. The statistical significance is offered with an explanation in order to see how these estimations are meaningful.

According to the results, the set of variables from the empirical estimation will be discussed. It enables us to determine whether the same variables have the same impact on various public health outcomes at the provincial level, as well as how the variables impact public health outcomes. An analysis can be very useful in providing policy implications that enhance public health in Thailand.

From the empirical estimation results, it is apparent that all models were considered a good explanation of the determinants of public health outcomes based on their statistical significance, as shown by the F-statistic being significant at more than 95 percent. Additionally, the results of the empirical estimation presented show that model (1) and model (2) can well explain the determinants of public health outcomes. The estimation of models 1 and 2 has a significant R-squared value of .7236 and .7468, respectively, which also indicates that the public health outcome is well explained by this set of independent variables by 72.36 and 74.68, respectively.

Table 2

The Empirical Estimation Results

Variable	(1) Hypertensive diseases (MHYPE)	(2) Diabetes Mellitus (MDIAB)	(3) Ischemic Heart Diseases (MISCH)	(4) Cerebrovascular Diseases (MCEBD)
Provincial budget disbursement	-0.671083	-0.6329078	0.1466355	-0.2925194
	(-0.86)	(-1.38)	(0.43)	(-1.31)
Province tax collection	-38.99281***	-21.73239***	-5.988893*	-11.20015***
	(-4.43)	(-4.91)	(-2.47)	(-4.26)
Control of corruption	1.812795**	0.121905**	0.3310747*	0.457401**
	(3.61)	(3.62)	(2.51)	(2.9)
Governance awards	-16.66212	-6.789474	-12.35728	0.624079
	(-0.57)	(-0.42)	(-0.97)	(0.07)
Total health expenditure	-0.111413***	-0.0486683*	0.006116	-0.0209232**
	(-4.31)	(-3.08)	(0.9)	(-2.85)
General election	16.50749	6.391691	16.98369	-14.08865
	(0.21)	(0.18)	(1.92)	(-0.72)
Community participation	-11.88778***	-6.813896***	-2.941073***	-3.298285***
	(-5.97)	(-6.26)	(-5.35)	(-6.45)
Village health volunteer	0.1427717***	0.0920736***	-0.0092102	0.0460778***
	(3.86)	(4.32)	(-0.74)	(4.37)
GPP per capita	0.0033596***	0.0015237***	0.0003251	0.0003367*
	(3.91)	(4.1)	(1.51)	(2.38)
Population growth rate	-0.3942722	-0.1605038	0.2161436	0.0580311
	(-0.93)	(-0.69)	(1.33)	(0.48)
Level of education	14.38213	-7.101968	7.957164	16.72723
	(0.21)	(-0.2)	(0.7)	(0.75)
Inequality of income	-20.30971	-13.18374	0.9172375	-1.327915
	(-1.55)	(-1.95)	(1.09)	(-0.29)
R^2	0.7236	0.7486	0.2234	0.6429
F-stat	46.95***	60.52***	7.64***	31.89***

Note: 1) ***, **, and * denote statistically significant at 0.05, 0.01, and 0.001 level respectively
2) Numbers in Parentheses are t-stat

According to the results, it is obvious that governance determinant plays a crucial role in improving health outcomes. Tax collection within the province and complaints of government action on corruption are statistically significant in every estimation. Public health outcomes are explained by two of the four governance variables in all kinds of morbidity rates. Regarding the tax collection within the province, it has negative and significant impacts on the public health outcomes for all estimations. It is implied that the government effectiveness in collecting tax revenue helps promote health outcomes in Thailand. Additionally, the statistical results also indicate that complaints of government action on corruption are statistically significant in every estimation.

It is implied that the corruption control dimension of governance has a considerable impact on public health outcome. The fewer complaints of corruption, the better the health outcomes in the province of Thailand.

In addition, the quantitative results showed that total health expenditure plays a significant role in affecting public health outcomes. In several empirical estimations, it has been observed that there is a substantial and adverse influence on the morbidity rate. In other words, a higher increase in health spending corresponds to a lower rate of NCD morbidity.

Regarding the determinants of democracy and participation, it was observed that community participation and village health volunteer exerted a notable influence on the morbidity rate associated with non-communicable diseases. Significantly, the findings indicate that community participation has a substantial negative effect on the morbidity rate associated with non-communicable diseases. Another public participation variable that shows a significant impact from the estimation is village health volunteer. Village health volunteer factor has a positive effect on the morbidity rate associated with non-communicable diseases. This variable is statistically significant, but it has a small coefficient.

Lastly, given the economic and demographic variables, it is obvious that solely GPP per capita exhibits a positive and statistically significant effect on the morbidity rate of non-communicable diseases. Nevertheless, the findings suggest that while GPP per capita does have a noteworthy influence on the morbidity rate of non-communicable diseases, its impact on public health outcomes in the provinces of Thailand is minimal. Meanwhile, the variables of population growth rate, level of education, and inequality of income were found to have no statistically significant impact on public health outcomes.

Discussion of Findings:

This paper examines the effect of governance, public participation, and public health expenditure on public health outcomes in Thailand. The discussion of the determinants affecting public health outcome and the policy recommendations to improve public health outcome will be elaborated.

First of all, governance determinant is obviously crucial to improving health outcomes. Public health outcome is explained by governance determinants (tax collection within the province and complaints of government action on corruption). It is implied that the government effectiveness in collecting tax revenue helps promote health outcome in Thailand. This also supports the governance concept that improves human development. The policymakers should place an importance on strengthening the capabilities of government organizations. Additionally, the factor of complaints about government action on corruption has positive and significant impacts on the morbidity rate of NCDs for all estimations. It is implied that the corruption control dimension of governance has a considerable impact on public health outcome. This also supports the governance concept that improves human development particularly health outcome. The key findings of this study support the findings of previous studies by Gupta et al. (2002), Rajkumar and Swaroop (2008), Yaqub et al. (2012), Farag et al. (2013), Hu and Mendoza (2013), Ahmad and Hasan (2016), and Sagarik (2019), which emphasize the importance of governance and assert that good governance correlates with good health status.

Regarding the determinants of democracy and participation, it was observed that community participation plays a pivotal role in promoting health outcomes across various provinces in Thailand. Greater community participation is associated with improved public health outcomes. This statement serves to endorse the concept of social capital and its correlation with community engagement. The primary recommendation for policymakers is to actively encourage community participation as a means to enhance development indicators, with a particular focus on improving health outcomes. The determinant of public participation in the current study indicates empirical evidence that is consistent with Putnam's notions of social capital and community engagement. The findings of this study are consistent with earlier studies by Abad-Franch et al. (2011), Atkinson et al. (2011), Marston et al. (2013), Rifkin (2014), as well as Bath and Wakerman (2015), which have supported the idea that public and community engagement contributes to improved health outcomes.

In relation to the variable of village health volunteer, the estimations indicate its statistical significance. The empirical evidence suggests that there is a notable and statistically significant correlation between village health volunteer and the morbidity rate of non-communicable diseases. This, nevertheless, presents a contradiction to prior research. Theoretically, it is anticipated that the augmentation of village health volunteers will have a substantial and adverse impact on the morbidity rate. This outcome might differ from the findings of prior research. Additional research is necessary to prove this relationship.

When it comes to public health expenditure, the quantitative results show that total health expenditure is an important determinant of public health outcomes. Supporting the notion from the neoclassical growth model, it posits that a well-educated and healthy labor force contributes to a rise in per capita income for people and their families, hence augmenting the overall worth of human life. Healthcare expenditures have the potential to enhance the provision of improved health facilities and opportunities, thereby bolstering human capital and subsequently contributing to increased productivity and enhanced economic performance. The finding also aligns with prior studies conducted by Bokhari et al. (2007), Kumar et al. (2013), Deluna and Peralta (2014), Barenberg et al. (2015), Arthur and Oaikhenan (2017), Rahman et al. (2018), Rana et al. (2018), as well as Kim and Wang (2019). It has been demonstrated that public health spending has a positive impact on public health outcomes.

Lastly, given the economic and demographic variables, the findings indicated that only GPP per capita exhibits a positive and statistically significant effect on the morbidity rate of non-communicable diseases. Nevertheless, the findings suggest that while GPP per capita does have a noteworthy influence on the morbidity rate of non-communicable diseases, its impact on public health outcomes in the provinces of Thailand is minimal. This result may be unexpected, according to previous research. According to previous research, an increase in GPP per capita is expected to have a negative impact on morbidity rates. The higher the GPP per capita, the lower the morbidity rate. However, this result contradicts previous research by Handwerker (1992), Hojman (1996), Musgrove (1996), Cornia and Mwabu (1997), Lopes (2002), De Vogli et al. (2005), Mayer and Sarin (2005), Cutler et al. (2008), Cornia et al. (2008), Drabo (2011), Arthur and Oaikhenan (2017), Ketenci and Murthy (2018), as well as Chireshe and Ocran (2020). Further investigation is required to prove this relationship.

Policy Implications:

The findings of this study provide useful information for policy implications. There are several implications to be noted here, as they can suggest to policymakers how to improve public health outcomes and public health policy in order to respond to the needs of people performing in the field of public health. The following are the policy implications:

First, increase public participation, particularly community participation, in order to improve public health outcomes. According to the findings, it is clear that community participation plays an important role in promoting health outcomes throughout Thailand's provinces. One of the most important aspects of public health is the process of increasing public participation in health promotion and disease prevention in the community or villages and empowering the community to become involved. This process enables communities and villagers to learn, become aware, and become more health-conscious. People can learn more about health and improve their health outcomes. Thus, public participation is an important mechanism for enabling communities and villagers to learn and build health literacy, which will be an important factor in achieving better health outcomes for those in the community. People who are health-conscious have better health outcomes. Policymakers should consider how to promote health literacy through community participation.

Second, promote governance, particularly the government effectiveness dimension, in order to improve public health outcomes. According to the findings, governance determinants are critical determinants for improving health outcomes. Tax collection within the province has a significant impact on public health outcomes. It implies that the greater

the degree of government effectiveness, the better the people's health outcomes. Policymakers should prioritize strengthening the capacity of government organizations.

Last, promote governance, particularly accountability and corruption control, to improve public health outcomes. According to the findings, corruption control has a statistically significant effect on public health outcomes. It is implied that corruption control has a significant impact on public health outcomes. Given that the budget is allocated in connection with public inspections, the most effective budget spending is made to achieve the desired results. The process of building transparency and accountability in civil society is required to ensure that the government budget is spent entirely on citizens and that public health policies and activity plans are effective. Thus, policymakers should consider how to involve civil society in the public health policy process, such as by planning public health plans, prioritizing public health promotion activities and campaigns, and implementing health promotion and prevention initiatives collaboratively with the public sector.

Suggestions for Further Studies:

Given the limitations of this study, it is suggested that additional research be conducted in this area. Initially, provinces may not be included in WGI's six-dimensional governance data. Researchers will be able to examine the effect of governance at the provincial level for statistical analysis and policy implications if there is a collection of data on governance in various dimensions down to the provincial level. Additionally, data on public health expenditures broken down by job characteristics or type of health expenditure at the provincial level will aid in providing a more thorough description of the types of jobs in public health expenditure and explaining how they affect public health outcomes. Furthermore, since this study uses NCD morbidity rates to measure public health outcomes, future research may use other public health outcome indicators, such as infant, maternal, or other disease mortality rates, to make future research more interesting and informative. Lastly, this study focuses on public health outcomes. It will be useful for future research on how public health outcomes affect economic or social development. Further research can examine how public health outcomes affect other development issues, such as economic growth, inequality, and social justice. Development studies and public administration will greatly benefit from this.

Conclusion:

The objective of this study is to determine the determinants that exert an impact on public health outcomes within the provinces of Thailand. The conceptual framework of this study incorporates various factors, including governance determinants, public health expenditure, public participation, and economic and demographic variables. The research was carried out using a quantitative methodology and a large database spanning the years 2009 to 2020. The major findings suggest that public participation is important in improving health outcomes. Given the determinants of democracy and public participation, it was discovered that community participation and village health volunteers have a significant impact on public health outcomes. Furthermore, effective governance is essential for improving health outcomes. Governance explains public health outcomes, particularly tax collection within the province and complaints of government action on corruption. The study's findings on policy recommendations for improving public health outcomes in Thai provinces suggest that policymakers should consider encouraging community participation and improving governance, with a focus on government effectiveness, accountability, and corruption control, as additional measures to improve public health outcomes.

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