INTRODUCTION

The demographic landscape of diverse regions undergoes continuous transformations influenced by multifaceted factors, encompassing fertility, mortality, and migration. External events, such as the COVID-19 pandemic, significantly impact the determinants of both birth and mortality rates (1, 2). While the concept of natural increase traditionally focuses on the delicate balance between births and deaths, it plays a pivotal role in shaping population growth and stability. Conversely, the phenomenon of natural decrease, marked by a higher number of deaths than births, introduces distinctive challenges to demographic projections. Recent research highlights the ramifications of reduced natural increase, particularly evident in nonmetropolitan areas of the United States (3). The global influence of the COVID-19 pandemic further complicates these dynamics, exerting a widespread impact on birth rates and mortality globally (2, 4-6).

Against the backdrop of worldwide trends indicating population decline and aging, the interplay between population dynamics gains heightened significance, particularly within Thailand (7, 8). This study aims to delve into the demographic shifts observed in Thailand, where an aging population prompts critical questions regarding the influence of the COVID-19 pandemic on fertility and mortality. Unraveling the underlying dynamics is not only an academic pursuit but also an essential prerequisite for informed policy-making and sustainable development. In this context, the study seeks to provide a comprehensive exploration of natural increase rates, shedding light on their evolution within Thai provinces and their adaptive response to the challenges posed by the COVID-19 pandemic.

METHODS

Data Collection:

Monthly population data by age and province, along with birth and death data by province, were collected from Thailand’s Ministry of Interior through the Population Registration Database, spanning from January 2014 to December 2022.

Statistical Methods:

The natural increase rate was computed as the difference between crude birth and crude death rates within specified periods. Analyses included annual rates for each Thai province from 2014 to 2022, with aggregated data sets for two intervals: 2014-2019 and 2020-2022.

Interrupted Time Series (ITS) Analysis:

To gauge the impact of the COVID-19 pandemic on natural increase/decrease rates, linear regression models were employed. The analysis considered periods both before and during the pandemic, with control variables incorporating median age to address age-related effects.

Decomposition Analysis:

A decomposition technique was applied to comprehend the factors contributing to the decline in the natural increase rate among provinces affected both pre- and during COVID-19.

DISCUSSION

Trends in natural increase rates reveal a complex interplay of demographic factors across provinces.

The COVID-19 pandemic significantly affected birth and death rates, causing immediate fluctuations in natural increase rates.

Disparities among northern, central, southern, and northeastern provinces highlight the multifaceted nature of demographic dynamics. The immediate drop in natural increase rates in the capital city and central and southern regions underscores vulnerability to external shocks.

Post-pandemic, certain provinces are expected to experience temporal declines or increases, indicating ongoing challenges in adapting to the aftermath.

LIMITATION

Trends in natural increase rates reveal a complex interplay of demographic factors across provinces.

The COVID-19 pandemic significantly affected birth and death rates, causing immediate fluctuations in natural increase rates.

RESULTS

From 2014 to 2019, several provinces experienced more deaths than births, with notable variations across northern, central, southern, and northeastern regions. Conversely, certain areas, including Bangkok, exhibited the highest natural increase, surpassing 0.500.

In the same period, half of the northern provinces faced a natural decrease, while the remaining provinces were at moderate risk, except for Tak and Maha Sarakham, where births exceeded deaths by approximately 687-954 per one hundred thousand people.

While many provinces in Thailand showed a potential decrease over time, not all experienced a significant decline in their demographic trends.

The onset of the COVID-19 pandemic caused an immediate drop in the rate of natural increase, especially in provinces located in the capital city, central, and southern regions.

Post-COVID-19, northern provinces like Chiang Mai, Phrae, Phuket, and Uthai Thani, as well as southern provinces like Surat Thani and Phuket, observed a temporal decline in the rate. In contrast, Samut Sakhon saw a temporal increase.

When comparing birth effects decomposed from the rate of natural increase/decrease in normal and COVID-19 situations, all provinces experienced a heightened birth effect during the pandemic period (2020-2022). The impact was particularly pronounced in provinces at moderate risk of natural decrease and those already experiencing natural decrease.

CONCLUSION

The study provides valuable insights into Thailand’s demographic landscape and the immediate impact of the COVID-19 pandemic on natural increase rates.

Nuanced provincial variations emphasize the need for tailored policies considering unique challenges faced by different provinces.

Addressing the aging population, coupled with pandemic disruptions, requires a holistic approach to demographic management, especially concerning the decline in fertility.

RECOMMENDATIONS

Tailor demographic strategies to address specific challenges in different provinces, with targeted interventions in vulnerable areas.

Strengthen healthcare infrastructure, particularly in provinces prone to natural decrease, to positively impact birth and mortality rates.

Initiate community engagement initiatives for understanding and active participation in demographic management.

Develop policies resilient to external shocks, ensuring swift and effective responses to mitigate demographic challenges.

REFERENCES