The Impact of Industrialization on Road Traffic Accidents in Thailand

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Abstract

Accompanying the socio-economic changes of Thailand in the past decade, road traffic accidents have become a leading cause of fatality. This study will identify the relationship between industrialization and the trend of fatalities from road traffic accidents. Observing per capita income and national industrial production, 1986 marked the beginning of the period of industrialization. Since that year, the mortality rate from road traffic accidents has rapidly increased. This trend occurred more among males, people between 15-35 years old and in the central region of the country. This trend is a warning to search for measures to prevent this harmful side effect of industrialization.

Over the past decade, Thailand and many other countries in Asia have experienced rapid economic growth. The structure of national production has shifted from an agricultural-based to an industrial-based. This change has impacted people's living conditions in many ways. As the simple agricultural society changed to a more complex one, the patterns of illness, communicable and nutrition-related diseases common in the past have changed to degenerative and "lifestyle" diseases as in industrialized countries. Among these changes, fatalities from road traffic accidents increased very sharply over the past decade. In many countries, road traffic fatalities frequently are underestimated as a major public health problem[1,2]. Besides the significant health burden of the victims in young economically active persons, road traffic accidents cause a lot of property damage. So, the increase in fatalities of road traffic accidents is a major health problem to be focused on during the process of industrialization. This study aims to illustrate the impact of industrialization on road traffic accidents in terms of an epidemiological trend.

MATERIAL AND METHOD

Nationwide epidemiological data of road traffic accidents were traced from 1961-1994. Mortality rates (per 100,000) categorized by age group, sex and region of the country were obtained from the Ministry of Public Health. (Data on age group and region were available only from 1977.)

Economic data were obtained from the National Council of Economic and Social Development. These included per capita income as an index

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of economic growth and proportion of industrial production compared to agricultural as evidence of industrialization. All of these data were traced for 1961-1994.

These data sets were compared to see the relationship between economic growth and fatalities of road traffic accidents in terms of epidemiological characters.

RESULT

Economic Trends

Fig. 1 shows the changing pattern of per capita income from 1961 to 1994. It shows that from 1961 to 1986 the per capita income gradually increased, but after 1986 the increase was rapid. Considering the structure of national production (Fig. 2), the period of 1982-1986 saw industrial

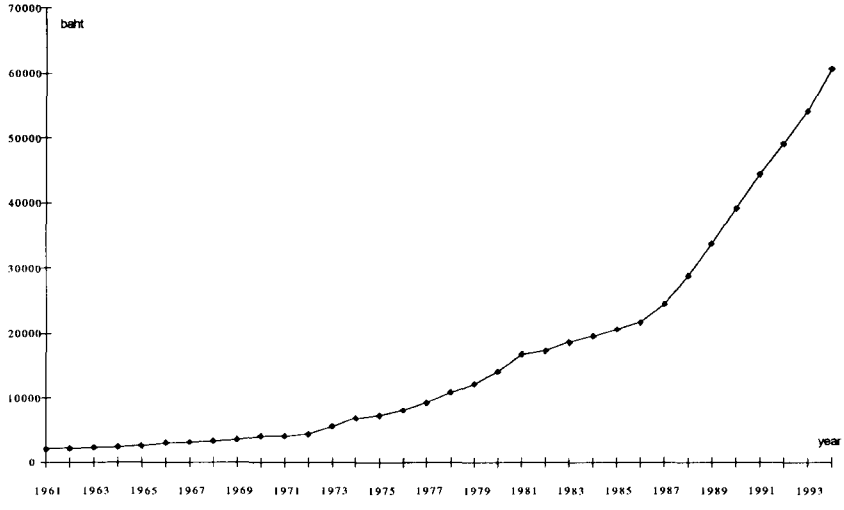

Fig. 1. The changing pattern of *per capita* income from 1961-1994.

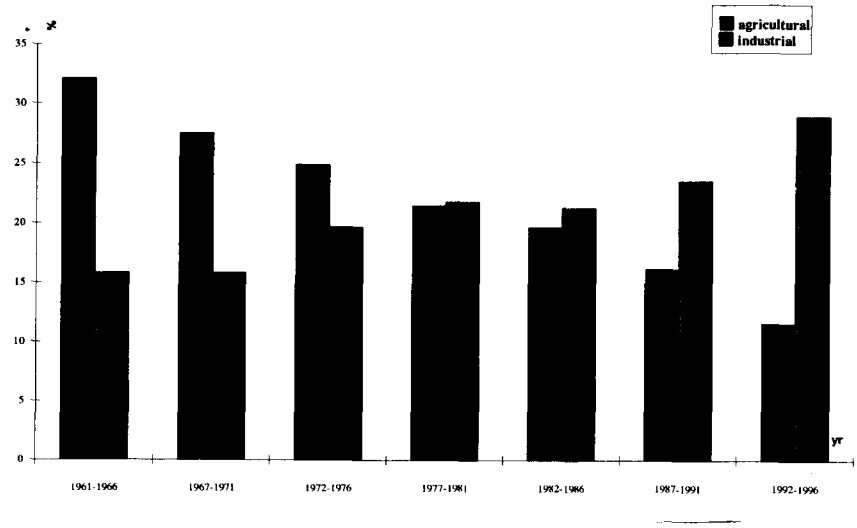

Fig. 2. Structure of national production.

production begin to gain on agricultural production. After 1986, industrial production surpassed agricultural production. After 1986, Thailand underwent rapidly expanding economic growth and industrialization has become the order of the day.

Epidemiological Trends

Fig. 3 shows the changing pattern of mortality rates for road traffic accidents (per 100,000) from 1961 to 1994. Between 1961 and 1972, the mortality rate gradually increased with some fluc-

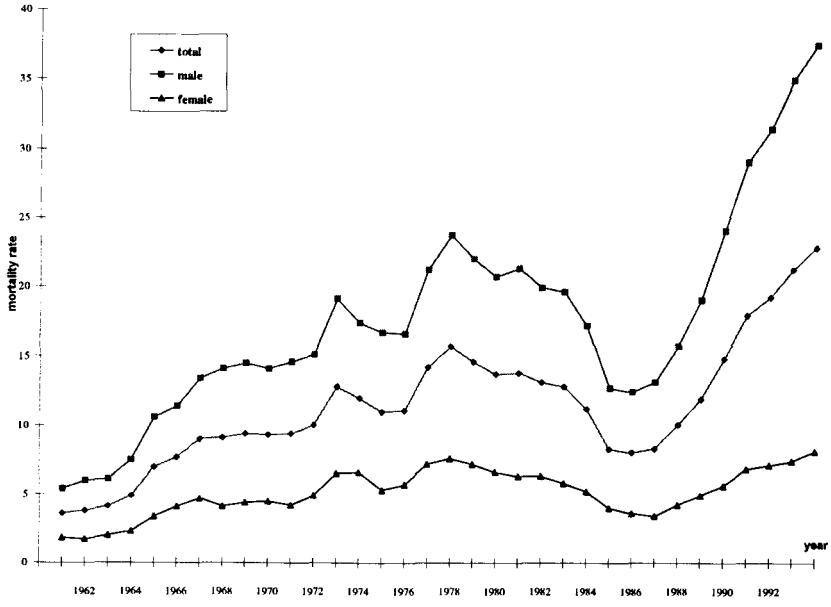

Fig. 3. The pattern of mortality rates of road traffic accidents (per 100,000).

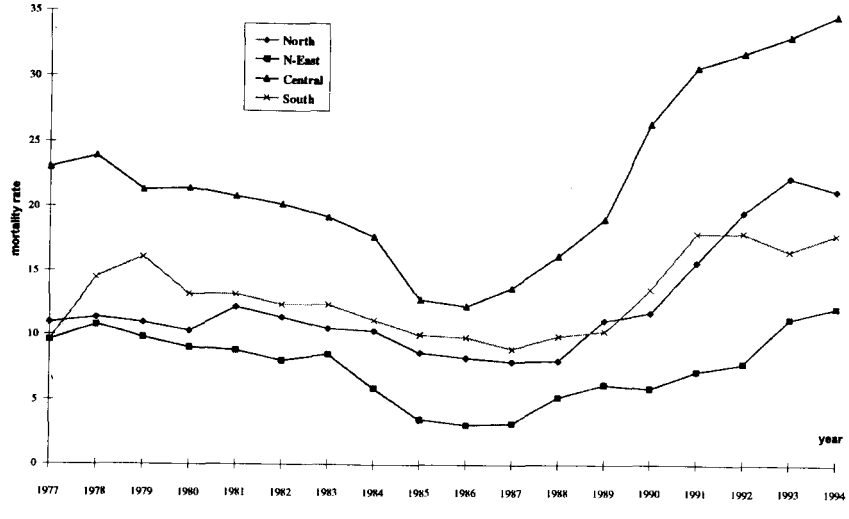

Fig. 4. Mortality rate of road traffic accidents in various regions of the country.

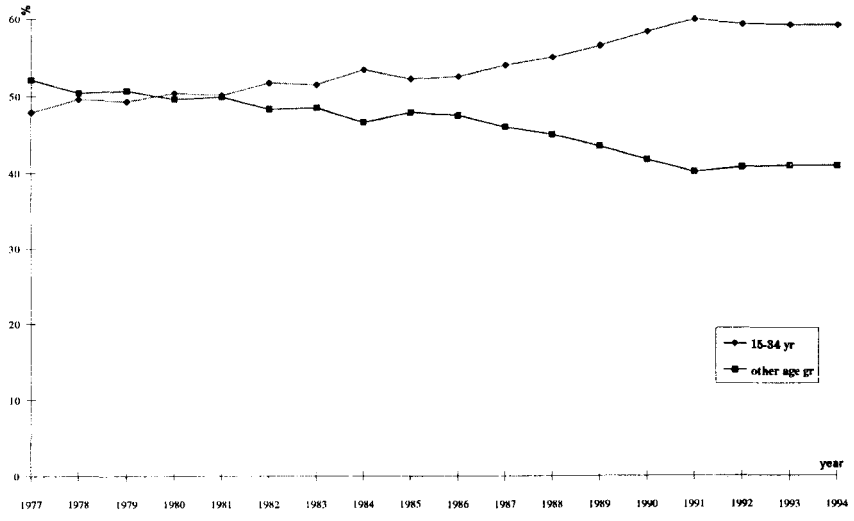

Fig. 5. The portion of fatalities from road traffic accidents in young age group (15-35 years).

tuation from 1973 to 1986. After 1986, the mortality rate increased sharply, nearly tripling over the next decade. Throughout the period of study, most fatalities were males, and the mortality rate for males increased more sharply than females after 1986. Fig. 4 depicts the high mortality rate in the country's central region and the obvious increase in the rate after 1986 that also appeared in this region. Fig. 5 shows that traffic accidents have the greatest impact on the young economically active age group (15-35 years) and fatalities among young adults has also steadily increased since 1986.

DISCUSSION

From the obtained data, it seems that the year 1986 is the turning point of many events. In this year, economic growth skyrocketed, industrialization came to the fore (the industrial production surpassed agricultural production), and national wealth measured by per capita income increased dramatically. On the other hand from this year, many health impacts also developed. The mortality rate of road traffic accidents have risen sharply since the year 1986, particularly among males and characteristics of fatalities have changed. Among the young adult age group (15-35 years), the percentage of fatalities has also risen since 1986. This indicates that road traffic accidents occurred more among the young adult group, which is the majority group active in the labour force during the rapid economic growth and industrialization. Just as most of the high economic activity output and industrialization is located in the central part of the country, mortality in this region rose more quickly when compared to other regions of country.

Road traffic mortality has traditionally been regarded as a problem primarily of industrialized countries[3], and this problem tends to be under-recognized as a major health problem in developing countries[1,2]. However, the World Bank's World Development Report for 1993 emphasized the importance of the worldwide burden of traffic-related mortality in less developed countries[4]. Emerging data suggest that changing trends in road traffic mortality in developing and industrialized countries are in the opposite direction. From 1968 to 1983, road traffic mortality increased by 200 per cent in African countries, 150 per cent in Asian countries but decreased by more than 20 per cent in Europe[5].

Analysis from different countries have shown relationships between road traffic fatalities and national wealth[6-8]. Soderlund has demonstrated relationships between road traffic mortality and per capita income. Initially there is a positive relationship which becomes negative at the higher levels of per capita income[3]. This indicates that wealthier countries appear to have developed effective means of reducing road traffic fatalities.

This study indicated that the process of industrialization influenced road traffic fatalities, and the burden of this "developement disease" seemed to be expanding more and more. The widespread belief that accidents of any kind are "acts of God" may influence the underestimation of road traffic accidents as a major public health problem. In terms of epidemiological change, this disease is in a dynamic state, not to be considered as unpreventable events that come with industrialization. Industrialized contries have learned many lessons about road traffic accidents. Why do we have to relearn these lessons for ourselves?

SUMMARY

The study identified the relationship between industrialization and trends of fatalities from road traffic accidents. Observing per capita income and national industrial production as socio-economic factors. 1986 marks the beginning of the period of industrialization. Since that year, the mortality rate from road traffic accidents has rapidly increased. This trend occurred more among males, people between 15-35 years old and in the central region of the country. This is a warning to search for measures to prevent the harmful side effects of industrialization.

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ผลกระทบของการพัฒนาอุตสาหกรรมต่ออุบัติเหตุทางถนนของประเทศไทย

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ในระยะ 10 ปี ที่ผ่านมาขณะที่ประเทศไทยกำลังมีการเปลี่ยนแปลงสภาวะเศรษฐกิจและสังคมอยู่นั้น อุบัติเหตุทางถนนได้กลายเป็นสาเหตุสำคัญของการตายของประชากร การศึกษานี้มีจุดประสงค์ที่จะแสดงความสัมพันธ์ระหว่างการพัฒนาอุตสาหกรรมของประเทศกับแนวโน้มอัตราตายจากอุบัติเหตุทางถนน เมื่อดูการเปลี่ยนแปลงของรายได้ประชาชาติและผลผลิตทางอุตสาหกรรมของประเทศจะพบว่าปีค.ศ.1986 เป็นระยะที่เริ่มมีการพัฒนาอุตสาหกรรมของประเทศอย่างเด่นชัด นับจากปีนี้มาอัตราตายจากอุบัติเหตุทางถนนเพิ่มขึ้นอย่างรวดเร็ว และปรากฏเด่นชัดในเพศชาย อายุ 15–35 ปี และพบการเปลี่ยนแปลงชัดเจนในภาคกลางของประเทศ การเปลี่ยนแปลงนี้น่าจะเป็นการเตือนให้หามาตรการในการป้องกันผลแทรกซ้อนจากการพัฒนาอุตสาหกรรมของประเทศ

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