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Original Article

Occupational Injuries and Illnesses and Associated Costs in Thailand

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ABSTRACT

Background: The purpose of this study was to enumerate the annual morbidity and mortality incidence and estimate the direct and indirect costs associated with occupational injuries and illnesses in Bangkok in 2008. In this study, data on workmen compensation claims and costs from the Thai Workmen Compensation Fund, Social Security Office of Ministry of Labor, were aggregated and analyzed.
Methods: To assess costs, this study focuses on direct costs associated with the payment of workmen compensation claims for medical care and health services.
Results: A total of 52,074 nonfatal cases of occupational injury were reported, with an overall incidence rate of 16.9 per 1,000. The incidence rate for male workers was four times higher than that for female workers. Out of a total direct cost of $13.87 million, $9.88 million were for medical services and related expenses and $3.98 million for compensable reimbursement. The estimated amount of noncompensated lost earnings was an additional $2.66 million.
Conclusion: Occupational injuries and illnesses contributed to the total cost; it has been estimated that workers' compensation covers less than one-half to one-tenth of this cost.

1. Introduction

The global burden of occupational injuries and illnesses is substantial, particularly in developing countries. Rates of occupational injury fatalities, for example, are estimated to be at least two to five times higher in the developing regions of the world, compared to North America and Western Europe [1]. The associated medical and disability costs are also considerable. In the USA, the total costs associated with occupational injury and illness in 1992 were estimated to be $171 billion, including directly accountable costs of $65 billion and a larger component of indirect costs ($106 billion) [2–4]. According to *Workers' Compensation: Benefits, Coverage, and Costs* in 2008, the total medical expense was $29.1 billion and total cash benefit $28.6 billion [5]. Estimated costs have been less well characterized in developing countries, because there are usually no large, centralized record systems that include health conditions having an occupational cause. Record systems in Thailand, however, allow opportunities to assess the scope of occupational morbidity, mortality, and associated costs for a large sector of the population.

In the past 4 decades, the economy in Thailand has changed from a mainly agriculture base to a broader array of manufacturing and services sectors that now account for about 80% of the country's annual expansion of GDP [6]. In 2007, the total workforce in Thailand was estimated to be 35.7 million people (~56% of the total population). The major employment sectors in the workforce included agriculture (47%), manufacturing (18%), and industrial service (21%). However, only 9.1 million (~25%) of the total workforce was employed in the formal sector that was covered by the Thai Workmen Compensation Fund (WCF) [7].

In 1996, more than half of the 12,325 firms, inspected by Thailand's Ministry of Labor and Social Welfare, were found to have violated Thai occupational and safety regulations (n = 7,015; 57%) [8]. In 1996, 246,616 cases of occupational injuries in the formal sector were insured by the WCF, at a rate of 40 per 1,000 workers. However, the rate of occupational injuries has declined since then, with a rate of 21 per 1,000 workers being reported in 2008. The rate of permanent or temporal disability (>3 days) was 6 per 1,000 workers [9].

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The Thai WCF was set up according to the Workmen's Compensation Act (1994). According to the WCF, the purpose of compensation costs is to replace the employer's liability when employees are injured, sick, or disabled or when they die from work-related injuries and illnesses from employment-based claims based on risks and types of industrial classifications [9]. This funding covers all establishments with at least one employee after 2002. It is the employer's sole liability to contribute an insurance premium to the WCF each year. Employees are eligible to claim compensation benefits, consisting of medical services, monthly indemnities, rehabilitation, or funeral grants, for work-related illnesses or injuries [9]. The employer contribution rate varies from 0.2% to 1.0% of employee wages, based on the risk rating for the type of establishment classified by the Thailand Standard Industrial Classification (TSIC) [10]. No published studies have estimated the costs of occupational injuries and illnesses in Thailand. The main purpose of this study was to estimate the annual incidence of morbidity and mortality, and calculate the direct costs and forgone (uncompensated) earnings associated with occupational injuries and illnesses in Bangkok in 2008. To achieve these aims, researchers examined the actual compensation claims of workmen and claim related reimbursements by the WCF, Social Security Office of the Ministry of Labor. These workplace injury costs are useful for a number of reasons. They provide a compact, comprehensive, and stable measure for describing a diverse range of injuries and illnesses. They also allow us to better understand differences between incidence rates and costs of occupational morbidity and mortality, and provide a baseline for future comparisons.

2. Materials and methods

Data were collected for the 11 social security offices (SSOs) covering 50 districts of Bangkok, Thailand, which consisted of all occupational injuries, illnesses, and fatalities, along with the costs associated with direct payment of medical and related claims by the WCF, Social Security Office of the Ministry of Labor, for the year 2008. This study mainly focused on the direct costs associated with occupational claims, in cases of both morbidity and mortality, in terms of medical expenses, rehabilitation costs, funeral compensation costs, and work compensation costs for lost earnings. In addition, the researchers estimated indirect costs of forgone earnings. All costs in Thai Baht (THB) were converted into US dollar values (US $) ($1 = 31 THB, as of 2013).

2.1. Incidence data management and costing data

The TSIC divides occupations into 140 subgroups. However, this study used only nine major main occupational groups: legislators and managers, professionals, technicians, clerks, service workers, agricultural workers, craftsmen, plant and machine operators, and elementary workers. Similarly, the major industrial types were classified into 15 groups based on an aggregation of 243 subgroups used in the TSIC.

Direct medical costing data related to payment information included health service utilization and costs, including hospital inpatient and outpatient costs, transportation and ambulance, drugs and laboratory tests, medical equipment and disposable supplies, rehabilitation services, and physicians' and nurses' salaries. In addition, compensable costs for rehabilitation, monthly disability allowances, and funeral costs were included (Table 1).

The estimated costs for wage compensation were calculated using the national salary base for each subgroup of minimum wage (male = 7,854 THB and female = 7,338 THB). It should be noted that this study did not take into account costs related to foster care, administrative, and legal services for estimating the total direct costs.

Table 1
Costs associated with occupational injuries and illnesses, according to Thai Labor Act Number 18 (1–4) and Number 19 [8]

Cost category	Component	Description
Direct		
Medical and emergency services	Medical cost	Hospital inpatient/outpatient
		Transport/ambulance
		Physicians, nurses, etc.
		Drugs/laboratory tests
		Counseling
Nonmedical	Rehabilitation cost	
	Work compensation cost	Types I–IV*
	Funeral cost	
Indirect		
Forgone earning loss†	Work compensation cost	Types I–IV

* Type I: paid 60% monthly allowance for temporary disability >3 days (paid for a maximum of 1 year); type II: paid 60% monthly allowance for permanent partial disability (paid for a maximum of 10 years); type III: paid 60% monthly allowance for permanent total disability (paid for a maximum of 15 years); and type IV: paid 60% monthly allowance for death (paid for a maximum of 8 years).

† Estimated costs according to different types of work compensation costs (type I–IV).

In addition, this study did not take into consideration all indirect costs, for instance, costs associated with loss of investment, life insurance, macroeconomics, and health-related decline in quality of life.

In this study, the researchers estimated indirect costs only for forgone earnings losses, based on the average of compensation reimbursements for fatalities and injuries according to Thai Labor Act Number 18 (types 1–4) and Number 19, by measuring the value of time lost due to absence from work or reduced productivity. Indirect costs have been calculated based on each type of compensation claims, including temporary disability >3 days, permanent partial disability, permanent total disability, and death. For each type of claim (defined below), the injured worker receives 60% of the monthly allowance, for the allowed coverage duration. The indirect cost of forgone wages was estimated to be approximately two-thirds of wage compensation (i.e., the uncompensated 40% of monthly allowance).

2.2. Definitions

Workers included in the data set are defined as insured persons under article 33 of the Thai Labor Act who pay premium insurance, which provides entitlement to benefits under the Social Security Act B.E. 2533 that was amended by the Social Security Act.

Under article 39, an insured person is one who has been an insured person under article 33 and whose insurance has subsequently ceased [article 38(2)] and s/he notifies the area SSO for his/her intention to continue to be an insured person.

Compensable forgone earning losses based on Thai Labor Act Number 18 (1–4) and Number 19 are classified into four types (when an employee suffers from injuries or sickness or disappears, the employer shall pay monthly indemnity to the employee or the person entitled to compensation under Article 20): type I, 60% of the monthly wages in case the employee is unable to work for more than 3 consecutive days, irrespective of whether the employee has lost an organ or not—the payment should be made from the 1st day until the employee is unable to work, but not exceeding 1 year; type II, 60% of the monthly wages in case the employee has lost certain organs of the body—the payment should be made according to the category of the organs lost and for the period as specified by the Announcement of the Ministry of Labor and Social Welfare, but not exceeding 10 years; type III, 60% of the monthly wages where the