

Prevalence of Infectious Diseases of Immigrant Workers Receiving Health Examinations at Rajavithi Hospital

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Background: There are rapidly increasing numbers of immigrant workers coming for jobs in Thailand. These immigrant workers often harbor some serious communicable diseases.

Objective: To describe the prevalence of infectious diseases in these immigrant workers.

Material and Method: This is a retrospective study of immigrant workers who presented for check-ups needed for work permits at Rajavithi Hospital during 1 January 2008 to 31 December 2010. They were examined for serious infectious disease including pulmonary TB, elephantiasis, leprosy, syphilis and malaria. Their health status was analyzed.

Results: A total of 102,090 immigrant workers were examined. The majority of cases were female (58.4%) and 94.3% of the population was under the age of 40. Workers from Burma constituted the most cases, (78.9%), followed by workers from Laos (14.0%) and Cambodia (7.0%). The prevalence of infectious diseases in all workers was 1,612.3 cases per 100,000 population. Patients with pulmonary TB, elephantiasis, leprosy, syphilis and malaria were 1,112.7, 7.8, 4.9, 465.3 and 21.5 cases per 100,000 population respectively. The prevalence of TB in Burmese, Lao and Cambodian workers was 1,119.3, 885.9 and 1,493.2 cases per 100,000 population respectively. The prevalence of syphilis in Burmese, Lao and Cambodian workers was 467.8, 258.1 and 851.2 cases per 100,000 population respectively.

Conclusion: Immigrant workers with infectious diseases were 1,612.3 cases per 100,000 population. Those harboring these serious transmitted diseases may be an important factor in these diseases becoming widespread in Thailand.

Keywords: Infectious, Immigrant, Tuberculosis

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Over 100,000 immigrant workers arrive in Thailand each year and the total number of immigrant workers who have stayed in Thailand is estimated at about two to three million. Most of the immigrant workers are laborers, followed by those employed, houseworkers and those in other occupations. There are a rapidly increasing number of immigrant workers, but with legal immigrant workers several times fewer than illegal immigrant workers. Legal immigrant workers have to have their health status evaluated beforehand and have received proper management before receiving a work permit in Thailand, but illegal workers have

ignored these health services. Immigrant workers often conceal some serious communicable diseases that may impede physicians in controlling these diseases. The important infectious diseases in these workers are tuberculosis (TB), elephantiasis, leprosy, syphilis and malaria. The most common serious disease is TB. Patients with TB are at high risk to infect other household persons because *Mycobacterium tuberculosis* is an airborne disease organism⁽¹⁻³⁾. The World Health Organization (WHO) reports that TB is one of the most burdensome diseases for global health care⁽⁴⁾. There is a high prevalence of TB in South-East Asia. The number of immigrant workers from high TB burdened neighboring countries such as Myanmar, Lao and Cambodia has been rapidly increasing in Thailand. Since TB patients have been increasing in Thailand, this may be related to the transmission of these diseases from immigrant workers. There is no previous study about communicable diseases in immigrant workers.

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The purpose of the present retrospective study is to describe the prevalence of infectious diseases in these immigrant workers.

Material and Method

The protocol for this research was reviewed by the institutional ethics committee of Rajavithi Hospital. This is a retrospective study of immigrant workers who had check-ups for work permits at Rajavithi Hospital during 1 January 2008 to 31 December 2010. Their health status was analyzed. These immigrant workers were managed by a multidisciplinary team of Rajavithi Hospital that included primary care physicians and specialists for infectious disease. Health assessment, including history, physical examination and laboratory testing, was conducted for every worker. Trained bilingual interpreters helped physicians to interview patients to assess their health status. They were examined for serious infectious diseases including pulmonary TB, elephantiasis, leprosy, syphilis and malaria. All workers who had abnormal chest radiographs were confirmed for TB infection by sputum examinations on 3 consecutive days and by sputum culture for TB. Pulmonary TB was diagnosed if there were two or more sputum examinations positive for acid-fast bacilli (AFB), or radiographic abnormalities consistent with active pulmonary TB plus one sputum examination positive for AFB or a sputum culture positive for *M. tuberculosis*. Elephantiasis and malaria are tested by blood smear examination by expert microscopy. Rapid plasma regain (RPR) is the screening test for syphilis. If the RPR test showed a positive result, a fluorescent treponemal antibody absorption test (FTA-ABS) was performed to confirm syphilis. The diagnosis for leprosy includes a physical examination for skin lesions plus skin smears and/or biopsy. Immigrant workers found with infectious diseases received the standard treatment from specialists for infectious disease at Rajavithi Hospital.

All data were expressed as mean \pm standard deviation. Comparisons of the variables were examined by Pearson Chi-square or Fisher's exact as appropriate. All analyses were performed using the software program SPSS for Windows version 17.0 (SPSS Inc., Chicago, Illinois, USA). Data was considered statistically significant with a p-value < 0.05 .

Results

This is a retrospective study of immigrant workers who had check-ups for work permits at Rajavithi Hospital during 1 January 2008 to 31

December 2010. A total of 102,090 immigrant worker reports were analyzed. Basic characteristics of these workers are shown in Table 1. Burmese workers constituted most of the cases, (78.9%), followed by Lao (14.0%) and Cambodian (7.0%) cases. These immigrant workers were a predominantly young population (26.9 ± 7.0 years old). 94.3 percent of the population was under the age of 40. The majority of cases were female (58.4%).

Table 2 shows the prevalence of serious infectious diseases in these immigrant workers. From 102,090 immigrant workers, 1,646 workers had infectious diseases with most cases with TB (69.0%), followed by syphilis (28.9%), malaria (1.3%), elephantiasis (0.5%) and leprosy (0.3%). The prevalence of infectious diseases in all workers was 1,612.3 cases per 100,000 population. Patients with pulmonary TB, elephantiasis, leprosy, syphilis and malaria were 1,112.7, 7.8, 4.9, 465.3 and 21.5 cases per 100,000 population respectively.

Table 3 shows the prevalence of serious infectious diseases in Burmese, Lao and Cambodian workers. The prevalence of TB in Burmese, Lao and Cambodian workers was 1,119.3, 885.9 and 1493.2 cases per 100,000 population respectively. Most patients were not aware of the symptoms of TB. The prevalence of syphilis in Burmese, Lao and Cambodian workers was 467.8, 258.1 and 851.2 cases per 100,000 population respectively. The prevalence of TB and syphilis among Cambodians is significantly higher than among Burmese or Lao workers. Elephantiasis and leprosy were found in Burmese only. The prevalence of malaria in Burmese is significantly higher than in Lao and Cambodians.

Discussion

Thailand has an increasing number of industries that require many workers. Thai workers cannot fully handle these workloads. Now there are rapidly increasing numbers of immigrant workers from Myanmar, Lao and Cambodia. By law, every immigrant worker has to register to apply for a work permit from the Thai government. They must have a check of their health status at a local government hospital before receiving a work permit from the government. Rajavithi Hospital is the biggest public hospital of the Ministry of Public Health (MOPH) and is the major center performing check-ups for these immigrant workers, most of whom want to work in and around Bangkok. Data from the Office of foreign workers administration (Department of Employment, Ministry of Labour, Thailand) shows that the number of legal immigrant workers who registered to work in Bangkok during 1

Table 1. Basic characteristics of 102,090 immigrant workers

	2008	2009	2010	Total
n	21,950	47,809	32,331	102,090
Age	28.10 ± 6.60	26.20 ± 7.00	26.90 ± 7.00	26.80 ± 6.90
Age group				
< 20 years	945 (4.3)	7,753 (16.2)	3,975 (12.3)	12,673 (12.4)
20-29 years	13,326 (60.7)	26,820 (56.1)	18,407 (57)	58,553 (57.4)
30-39 years	6,273 (28.6)	10,682 (22.4)	7,996 (24.8)	24,951 (24.5)
40-49 years	1,229 (5.6)	2,242 (4.7)	1,701 (5.3)	5,172 (5.1)
50-59 years	159 (0.7)	270 (0.6)	213 (0.7)	642 (0.6)
60-69 years	8 (0.04)	21 (0.04)	14 (0.04)	43 (0.04)
Gender				
Male	8,361 (38.1)	20,481 (42.8)	13,673 (42.3)	42,515 (41.6)
Female	13,589 (61.9)	27,328 (57.2)	18,658 (57.7)	59,575 (58.4)
Nationality				
Burmese	17,559 (80.0)	36,772 (76.9)	26,258 (81.2)	80,589 (78.9)
Lao	2,937 (13.4)	7,073 (14.8)	4,325 (13.4)	14,335 (14.0)
Cambodian	1,454 (6.6)	3,964 (8.3)	1,748 (5.4)	7,166 (7.0)
Status				
Single	2,663 (12.1)	18,399 (38.5)	12,463 (38.5)	33,525 (32.8)
Married	19,286 (87.9)	29,293 (61.3)	19,804 (61.3)	68,383 (67.0)
Divorced	1 (0)	117 (0.2)	64 (0.2)	182 (0.2)

Data is number and percent

Table 2. The prevalence of infectious diseases in immigrant workers examined at Rajavithi Hospital (n = 102,090)

Diseases	Year			Total
	2008	2009	2010	
Pulmonary TB	188 (856.5)	571 (1,194.3)	377 (1,166.1)	1,136 (1,112.7)
Elephantiasis	0	1 (2.1)	7 (21.7)	8 (7.8)
Leprosy	3 (13.7)	1 (2.1)	1 (3.1)	5 (4.9)
Syphilis	25 (113.9)	293 (612.9)	157 (485.6)	475 (465.3)
Malaria	7 (31.9)	10 (20.9)	5 (15.5)	22 (21.5)
Patients	223 (1015.9)	876 (1832.3)	547 (1691.9)	1,646 (1612.3)

Data is number and rate per 100,000 population in immigrant workers

January 2008 to 31 December 2010 was 270,161. The present study evaluated 102,090 legal immigrant workers who had check-ups at Rajavithi Hospital during 1 January 2008 to 31 December 2010, constituting 37.8% of all legal immigrant workers in Bangkok. The prevalence of infectious diseases in these immigrant workers was 1,612.3 cases per 100,000 population. The majority suffered from pulmonary TB (69.0%) and syphilis (28.9%). These patients had received appropriate treatment from specialist doctors of Rajavithi Hospital. With the exception of TB, these infectious diseases can be cured using readily available,

short-time treatments. TB patients were required to take several anti-tuberculosis drugs for several months⁽⁵⁾. Thus, these infectious diseases in examined immigrant workers at Rajavithi Hospital were controlled avoiding transmission to the larger Thai community.

Alarmingly, legal immigrant workers are fewer than illegal immigrant workers. These illegal workers usually fail to register with the government and neglect to care for their health. No present health service screens or provides care for these illegal workers. These immigrant workers often conceal serious communicable diseases that may be transmitted to family, other

Table 3. The prevalence of infectious diseases in Burmese, Lao and Cambodian immigrants

	Burmese			Laos			Cambodian		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Workers	33,721	46,868	80,589	5,182	9,153	14,335	3,612	3,554	7166
Pulmonary TB	486 (1,441.2)	416 (887.6)	902 (1,119.3)*	64 (1,235.0)	63 (688.3)	127 (885.9)*	68 (1,882.6)	39 (1,097.4)	107 (1,493.2)
Elephantiasis	3 (8.9)	5 (10.7)	8 (9.9)	0	0	0	0	0	0
Leprosy	0	5 (10.7)	5 (6.2)	0	0	0	0	0	0
Syphilis	169 (501.2)	208 (443.8)	377 (467.8)*	10 (193.0)	27 (295.0)	37 (258.1)*	29 (802.9)	32 (900.4)	61 (851.2)
Malaria	11 (32.6)	8 (17.1)	19 (23.6)	0	1 (10.9)	1 (1.2) [#]	2 (55.4)	0	2 (7.0) [#]
Patients	669 (1,983.9)	642 (1,369.8)	1311 (1626.8)	74 (1428.0)	91 (994.2)	165 (1151.0)	99 (2,740.9)	71 (1,997.7)	170 (2372.3)

Data is number and rate per 100,000 populations, *Compared with Cambodians, $p < 0.05$, [#]Compared with Burmese, $p < 0.05$

workers and the community. So there are many infective illegal immigrant workers who are not identified and who do not receive appropriate treatment for their infectious diseases that can spread rapidly. This problem may be the cause of the widespread transmission of diseases in Thailand, especially TB. TB is a common serious disease worldwide and has rapid transmission. WHO estimated a prevalence of 14 million cases of TB globally in 2009⁽⁴⁾. TB is still a public health problem in Thailand, Myanmar, Lao and Cambodia. WHO estimates the prevalence of TB in Thais, Burmese, Lao and Cambodians at about 189, 597, 131 and 693 cases per 100,000 population in 2009. Cambodia has the highest prevalence of TB, followed by Burma, Lao and Thailand according to WHO data, which is consistent with the present study. The present study shows a prevalence of TB in Burmese, Lao, Cambodians and all immigrant workers of 1,119.3, 885.9, 1493.2 and 1,112.7 cases per 100,000 population respectively. The prevalence of TB in these immigrant workers was several times higher than in the Thai population. The estimate of all legal and illegal immigrant workers in Thailand is about two to three million, so many immigrant workers with TB are distributed in all provinces of Thailand. Patients who delay diagnosis and treatment of pulmonary TB will spread it to their family members, friends, other workers and community^(6,7). A mathematical model quantifying the public health risk of TB infection in the workplace puts the rate of TB infection among employees at 74.6% for 150 days⁽⁸⁾.

This infectious disease is easily spread to the community. In the past, TB diagnostic and treatment services have produced good outcomes for Thai patients, but now the TB problem in Thailand has flared up again^(9,10). Immigrant workers with untreated TB may be an important factor in the reemergent TB spread in Thailand.

The prevalence of syphilis in Burmese, Lao and Cambodian workers was 467.8, 258.1 and 851.2 cases per 100,000 populations respectively. Syphilis is a sexually transmitted disease that is related to hepatitis B virus and human immunodeficiency virus (HIV) infections. Hepatitis B virus and HIV are serious infectious diseases. Patients with early stages of these infections usually have no symptoms and they can sexually transmit these diseases to others easily. Treatment of hepatitis B virus and HIV infection is very complicated and expensive. The present screening program for these immigrant workers does not include screening for hepatitis B virus and HIV infection because the MOPH and Ministry of Labour have concerns about human right issues of these workers. Immigrant workers who conceal hepatitis B virus and HIV infection can easily transmit both diseases to their family members and members of the community. Government, MOPH, Ministry of Labour and the public should be concerned about this problem and make plans to control these serious infections. The screening for hepatitis B virus and HIV in immigrant workers may be important in the proper management and control of

these infections in Thailand.

These research findings can be used to understand and address the health of immigrant workers. Legal immigrant workers have a higher prevalence of serious infectious diseases than Thai people. So illegal immigrant workers are likely to have the same higher rate or conceal serious infectious diseases that may cause the transmission of these diseases to the community. The Thai Government and MOPH should have a specific law or incentive that would stimulate illegal immigrant workers to register to receive health care so possibly concealed communicable diseases are identified and treated. Specific care should be intensified to improve health outcomes of these illegal immigrant workers. This would improve the quality of care for all immigrant workers. The awareness of the public about the health problems associated with immigrant workers may also be an important way to decrease the transmission of these serious diseases in Thailand.

Conclusion

Immigrant workers with infectious diseases were 1,612.3 cases per 100,000 population. This problem should be addressed because immigrant workers can transmit these infectious diseases in the Thai community, especially untreated illegal immigrant workers. The present study highlights the need to develop an effective screening and treatment protocol for new immigrant workers.

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Potential conflicts of interest

None.

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ความชุกของโรคติดเชื้อในแรงงานต่างด้าวที่มาตรวจสุขภาพที่โรงพยาบาลราชวิถี

อุดม ไกรฤทธิชัย, เดือนเพ็ญ พึ่งพระเกียรติ, ภัญญา บุญทองโต, กฤษณา อาษายศ,

ภูมิหลัง: แรงงานต่างด้าวมีจำนวนเพิ่มขึ้นอย่างรวดเร็วในประเทศไทย ซึ่งแรงงานเหล่านี้มักจะมีโรคติดเชื้อ ร่วมด้วย

วัตถุประสงค์: เพื่อหาความชุกของโรคติดเชื้อในแรงงานต่างด้าว

วัสดุและวิธีการ: การศึกษาย้อนหลังในแรงงานต่างด้าวที่เข้ามาตรวจสุขภาพสำหรับการขอใบอนุญาตทำงานในประเทศไทย ที่โรงพยาบาลราชวิถีตั้งแต่วันที่ 1 มกราคม พ.ศ. 2551 ถึง 31 ธันวาคม พ.ศ. 2553 ซึ่งแรงงานต่างด้าว จะได้รับการตรวจหาโรคติดเชื้อที่รุนแรง คือ วัณโรค โรคเท้าช้าง โรคเรื้อน โรคซิฟิลิสและโรคมาลาเรีย โดยผลสุขภาพของแรงงานต่างด้าวเหล่านี้จะถูกนำมาวิเคราะห์

ผลการศึกษา: จากการวิเคราะห์ผลการตรวจสุขภาพของแรงงานต่างด้าวจำนวน 102,090 ราย พบว่าส่วนใหญ่เป็นเพศหญิง (58.4%) และ 94.3% มีอายุน้อยกว่า 40 ปี แรงงานต่างด้าวส่วนใหญ่เป็นชาวพม่า (78.9%) ตามด้วยชาวลาว (14.0%) และชาวกัมพูชา (7.0%) พบว่า ความชุกของโรคติดเชื้อในแรงงานต่างด้าวเหล่านี้เท่ากับ 1,612.3 ต่อประชากรแสนราย โดยพบความชุกของผู้ป่วยวัณโรค โรคเท้าช้าง โรคเรื้อน โรคซิฟิลิสและโรคมาลาเรียเท่ากับ 1,112.7, 7.8, 4.9, 465.3 และ 21.5 ต่อประชากรแสนราย ตามลำดับ ส่วนความชุกของวัณโรค ในแรงงานต่างด้าวชาวพม่า ลาวและกัมพูชาเท่ากับ 1,119.3, 885.9 และ 1,493.2 ต่อประชากรแสนรายตามลำดับ ส่วนความชุกของซิฟิลิสในแรงงานต่างด้าวชาวพม่า ลาวและกัมพูชาเท่ากับ 467.8, 258.1 และ 851.2 ต่อประชากรแสนรายตามลำดับ

สรุป: ความชุกของโรคติดเชื้อในแรงงานต่างด้าวเหล่านี้เท่ากับ 1,612.3 ต่อประชากรแสนราย โรคติดเชื้อที่อยู่ในแรงงานต่างด้าวเหล่านี้อาจเป็นสาเหตุสำคัญในการแพร่กระจายโรคเหล่านี้ในประเทศไทย
