Prevalence of Tuberculosis and Its Associated with Intention to Leave in Nursing Career

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Background *(1)*

What is tuberculosis (TB) ?

"Tuberculosis is defined as an infectious disease caused by a bacterium, ***Mycobacterium tuberculosis***; that most commonly affects the lungs."

M. tuberculosis

Background (2)

TB & *Worldwide Public Health Issue*

- TB in the world
  - 9 million infected
  - more than 1 million died

- TB in Asia
  - 40% of the world's cases were in India and China
  - 130,000 cases with 64 million in Thailand; 0.2%

Background (3)

TB among nurses

⦿ **Prevalence**
- Central Brazil   69.5%; n = 128
- Puerto Rico   42.9%; n = 91
- Thailand   03.5%; n = 18,756

⦿ **Effect of TB infection**
- Health problem
- Intention to leave or Stop working
- shortage of medical personnel

Research question

- Tuberculosis infection rates among nurses as much?

- TB associated with intention to leave in nursing career or not?

Objective

- To determine the prevalence rate of TB infection among nurses in Thailand

- To assess association between TB and intention to leave in nursing career

Materials and methods *(1)*

- Study design
  - Cross-sectional study
  - Part of the Thai Nurse Cohort Study (TNCS)

- Sampling method
  - stratified random sampling with probability proportional to size of nurses in each 10-year age intervals

- Study outcome
  - TB infection during the operation
  - Intention to leave (ITL) nursing career within 1-2 years

Materials and methods (2)

Statistical analysis

- Descriptive analysis
  - Percentage
  - Mean ± SD; Median (Min : Max)
  - 95% Confidence Interval
  - P-value

- Bivariate analysis (Crude ORs)
  - Simple logistic regression
  - p-value < 0.25
  - Theories that affect the outcome

Materials and methods *(3)*

Statistical analysis (Cont.)

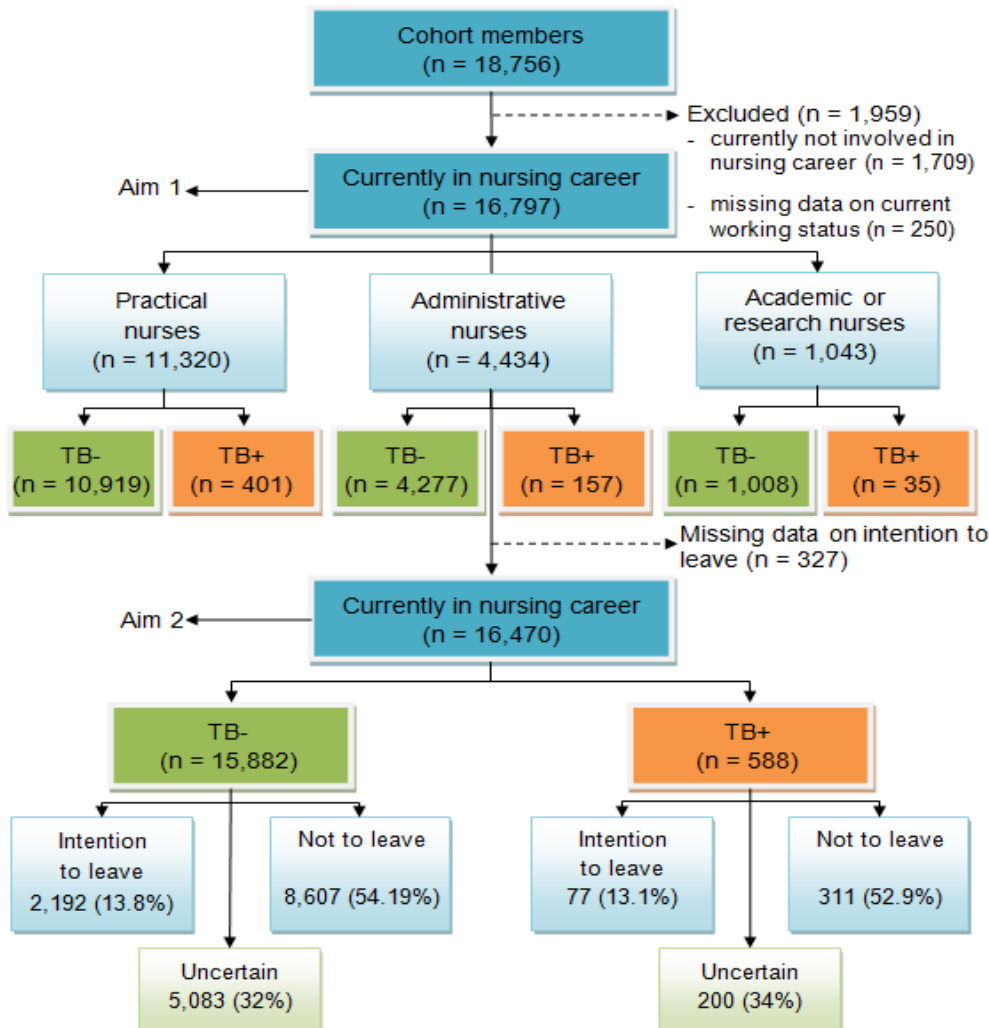- Multivariable analysis (Adjusted ORs)
  - Multiple logistic regression
  - Backward elimination method
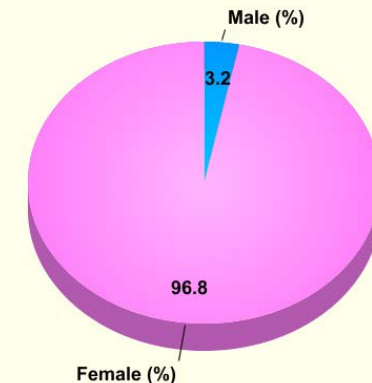 - p-value > 0.05 were exclude

- Statistics software
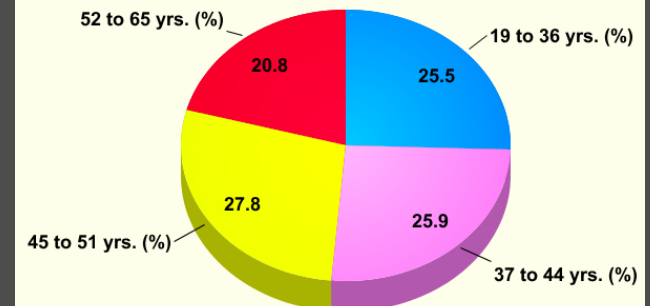 - STATA version 12.0 *(StataCorp, College Station, TX)*

Results (1)

Cohort members (n = 18,756)

Excluded (n = 1,959)
- currently not involved in nursing career (n = 1,709)
- missing data on current working status (n = 250)

Aim 1 ← Currently in nursing career (n = 16,797)

Practical nurses (n = 11,320)	Administrative nurses (n = 4,434)	Academic or research nurses (n = 1,043)
TB- (n = 10,919) / TB+ (n = 401)	TB- (n = 4,277) / TB+ (n = 157)	TB- (n = 1,008) / TB+ (n = 35)

Missing data on intention to leave (n = 327)

Aim 2 ← Currently in nursing career (n = 16,470)

TB- (n = 15,882)	TB+ (n = 588)
Intention to leave 2,192 (13.8%) / Not to leave 8,607 (54.19%)	Intention to leave 77 (13.1%) / Not to leave 311 (52.9%)
Uncertain 5,083 (32%)	Uncertain 200 (34%)

Characteristics of sample

Demographic characteristics

Male (%) 3.2
Female (%) 96.8

Gender (n = 16,699)

Demographic characteristics

- 52 to 65 yrs. (%) 20.8
- 19 to 36 yrs. (%) 25.5
- 45 to 51 yrs. (%) 27.8
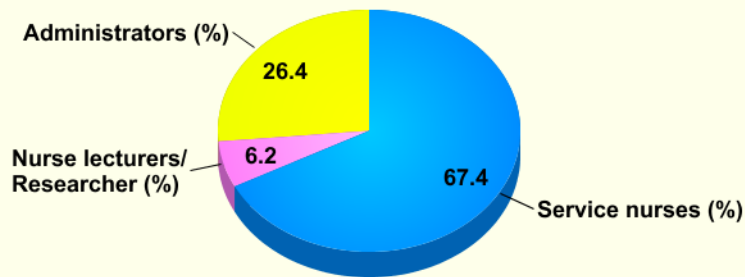- 37 to 44 yrs. (%) 25.9

Mean (SD) = 43.2 (9.4)
Median (Min : Max) = 44 (19 : 65)

Age (n = 16,797)

10

Results *(2)*

Characteristics of sample (Cont.)

Demographic characteristics

Administrators (%)
26.4

Nurse lecturers/
Researcher (%)
6.2

Service nurses (%)
67.4

Currently major work position (n = 16,797)

Demographic characteristics

South (%)
12.8

North (%)
12.8

West (%)
5.5

East (%)
7.4

Northeast (%)
23.3

Central (%)
38.1
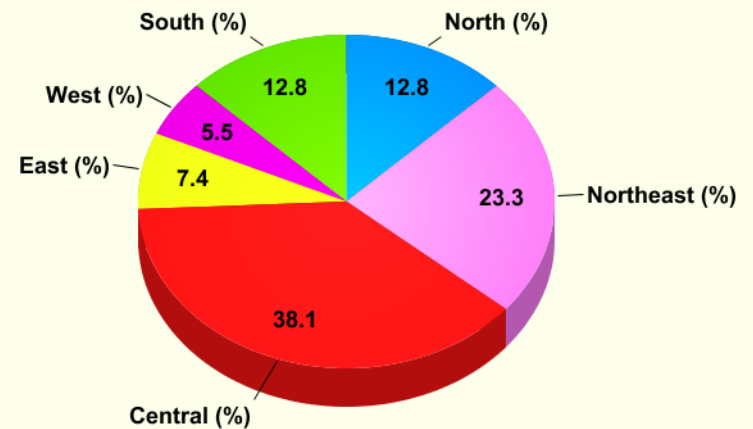
Region of workplace (n = 16,176)

Results *(3)*

Characteristics of sample (Cont.)

Demographic characteristics

Uncertain (%) — 32.1

54.1 — No (%)

13.8

Yes (%)

Intention to leave in nursing career (n = 16,470)

Demographic characteristics

Yes (%)

3.5

96.5

No (%)

Tuberculosis infection (n = 16,797)
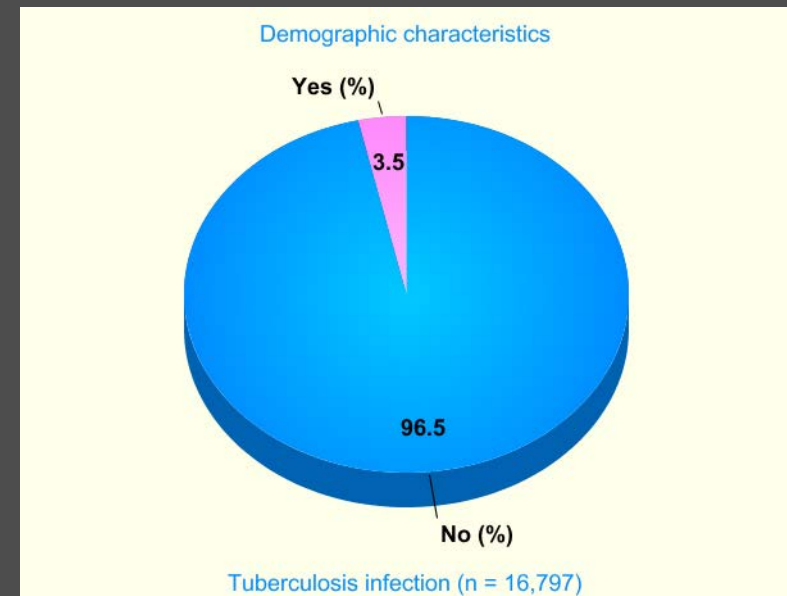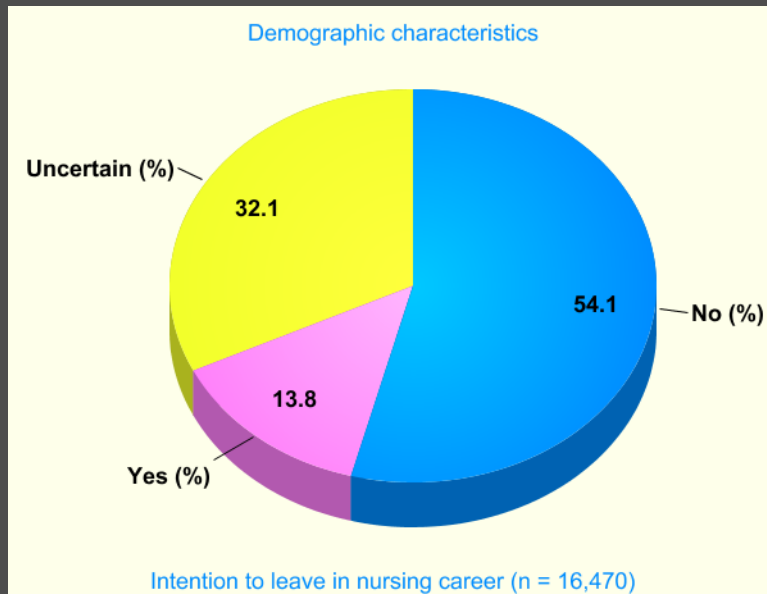
Results *(4)*

Forest plot of TB infection rate

Nurses	TB Rate (%)	95% CI
Female (n = 16,173)	3.6	3.3 to 3.8
Age between 37 to 44 years (n = 4,343)	4.2	3.6 to 4.8
Divorced/Widowed/Separated (n = 1,334)	4.4	3.3 to 5.5
Master's degree (n = 2,760)	4.3	3.6 to 5.1
Receive a scholarship (n = 2,965)	3.8	3.4 to 4.1
Service nurses (n = 11,320)	3.5	3.2 to 3.9
Government officers (n = 14,098)	3.8	3.5 to 4.1
Work in hospitals (n = 13,358)	3.6	3.3 to 3.9
Northeast (n = 3,770)	4.3	3.7 to 5.0
Income 20,000 to 30,000 (n = 5,542)	3.9	3.4 to 4.4
Have liabilities (n = 11,108)	3.6	3.3 to 4.0
Unstable income (n = 650)	4.6	3.0 to 6.2
TB in relative (n = 1,426)	6.5	5.2 to 7.8

TB Distribution

TB infection in nurses
- No TB
- TB

0 30 60 120 180 240 Kilometers

Results (5)

Graphs of TB infection rate

Tuberculosis Infection in Nurses — Rate (%) vs Age (years): 19 to 36: 2.8%, 37 to 44: 4.2%, 45 to 51: 3.9%, 52 to 65: 3.1%

Tuberculosis Infection in Nurses — Rate (%) vs Average income/month (Baht): 10,000 or lower: 2.3%, 10,001 to 20,000: 2.6%, 20,000 to 30,000: 3.9%, 30,001 to 40,000: 3.7%, 40,001 to 50,000: 3.3%, More than 50,000: 3.3%
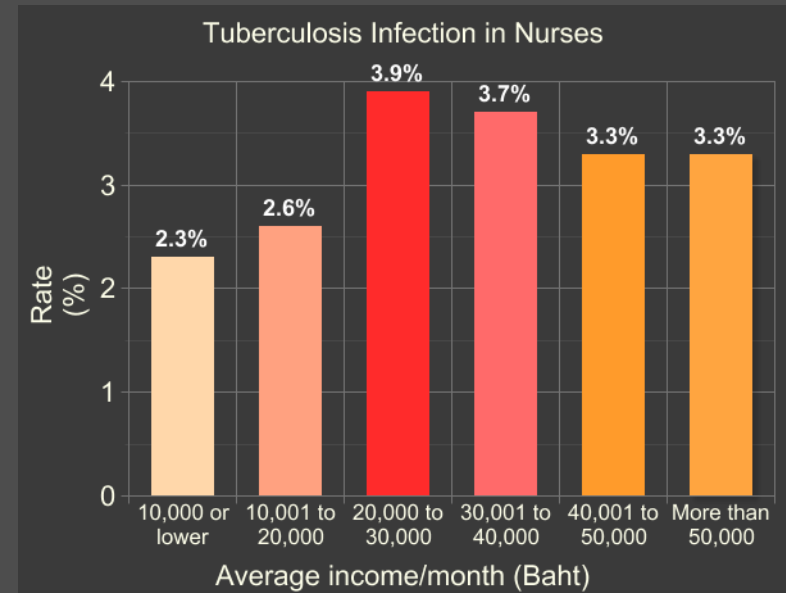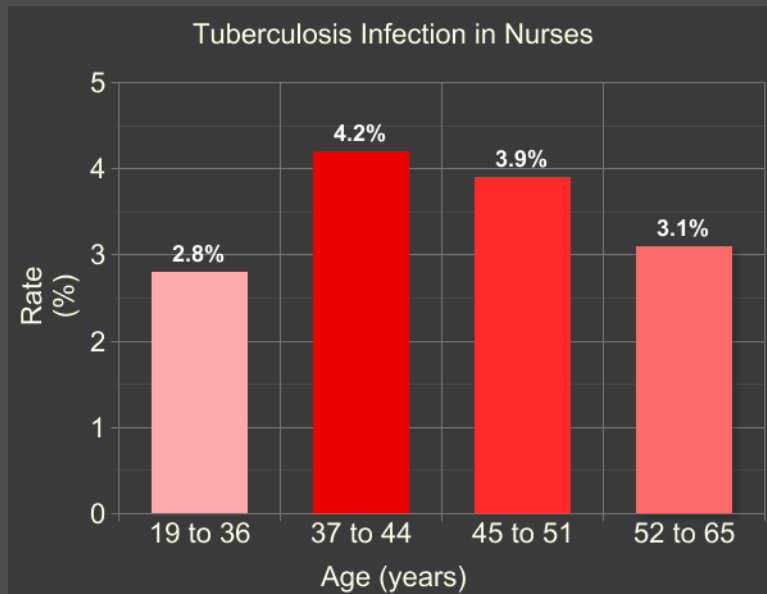
Results *(6)*

Graphs of TB infection rate (Cont.)
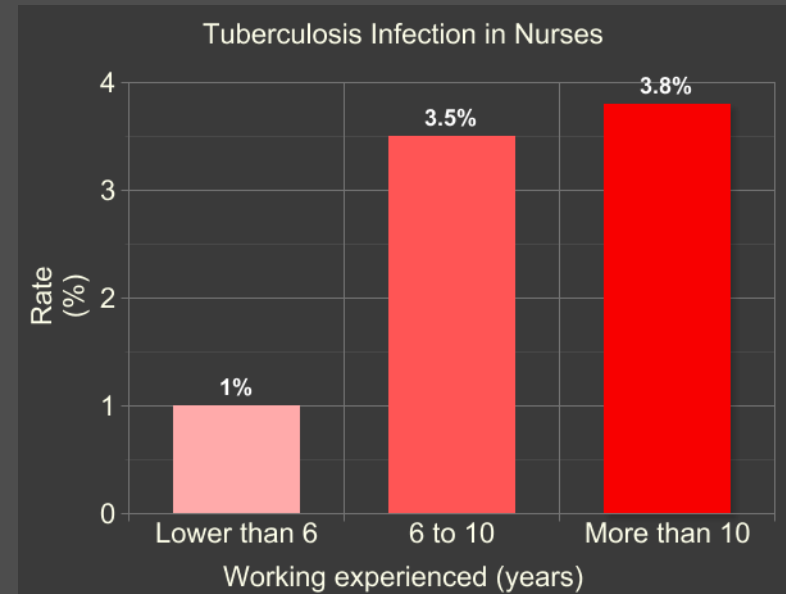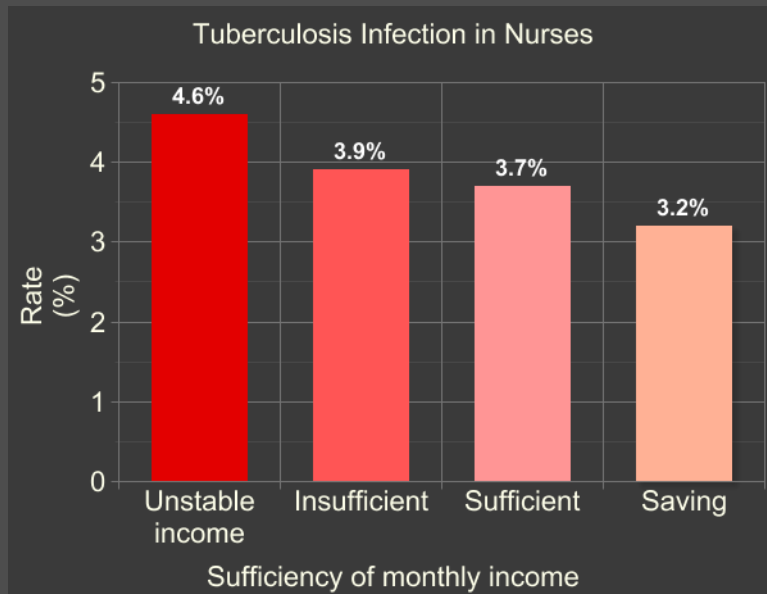
Results *(7)*

ORs of TB With ITL adjusted for all other factors

Factors	Adj.OR	95% CI	p-value
TB infected	1.2	0.8 to 1.8	0.420
Male	1.9	1.3 to 2.9	0.001
Age between 52 to 65 years	3.6	2.4 to 5.4	<0.001
Divorced/Widowed	0.6	0.4 to 0.8	<0.001
Receive a scholarship	1.0	0.8 to 1.2	0.995
MS degree or higher	1.0	0.8 to 1.2	0.858
Lecturers/ Researcher	1.5	1.0 to 2.2	0.044
Health centers	0.9	0.6 to 1.2	0.369
Workplace in East	1.6	1.1 to 2.2	<0.001
Working experienced 6 to 10 yrs.	1.4	0.8 to 2.3	0.112
Average income > 30,000 baht / month	1.1	0.7 to 1.6	0.006

Discussion

- Earlier studies found TB infection rates among nurses were high as opposed to this study that found only 3.5% (593/16,797).

- Not found association between TB and ITL in this study and not found reported in other studies as well.

Strength

- Large sample size

- Variety of cultural, well-being and environmental

- Can be a good representative of the population will be able to study and reference.

Limitation

- A large samples may be varying in terms of statistics.

- Data from the study were derived from self-administered questionnaire.

- TB infection was reported by nurses who respondents without medical diagnosis result to confirmed.

Conclusions

- TB infection rate is high in nurses whose relatives have been TB infected, unstable income, and marital status were divorce/widowed/separated, but its was not associated with ITL in nursing career.

  However, this study shows that TB infection rates remain high and remains a health problem that needs to be burned. Especially, in medical personals who spend a majority of time with patients

Thank you
for your attention