



**PREVALENCE OF DEPRESSIVE SYMPTOMS AND ITS
DETERMINANTS AMONG MYANMAR MIGRANT
WORKERS IN CHIANG RAI PROVINCE,
THAILAND**

THEINT NANDAR AUNG

**MASTER OF PUBLIC HEALTH
IN
BORDER HEALTH MANAGEMENT**

**SCHOOL OF HEALTH SCIENCE
MAE FAH LUANG UNIVERSITY**

2025

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**THIS THESIS IS A PARTIAL FULFILLMENT OF
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Thesis Title: Prevalence of Depressive Symptoms and Its Determinants among
Myanmar Migrant Workers in Chiang Rai Province, Thailand

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Theint Nandar Aung

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ABSTRACT

Depressive symptoms are a serious mental health condition and represent a growing public health concern worldwide, particularly among vulnerable populations such as migrant workers. However, evidence-based research focusing on depressive symptoms among Myanmar migrant workers in Chiang Rai Province remains limited. Therefore, this study aimed to estimate the prevalence of depressive symptoms and identify key determinants among Myanmar migrant workers in Chiang Rai Province, Thailand. A community-based cross-sectional study was conducted among 425 Myanmar migrant workers aged 18 years and above from eight randomly selected communities in Mueang Chiang Rai and Mae Sai districts. Data were collected using a structured and validated questionnaire, including the Patient Health Questionnaire-9 (PHQ-9) to assess depressive symptoms. Descriptive statistics were used to summarize participant characteristics and prevalence, while chi-square tests and multivariable logistic regression were performed to identify associated factors, with statistical significance set at $\alpha = 0.05$. The majority of participants were female (51.3%), with a mean age of 33.72 years ($SD \pm 10.28$), and most were employed in construction work. The prevalence of depressive symptoms was 37.6% (95% CI: 33.2%–42.4%). Seven factors were significantly associated with depressive symptoms, including being a family member rather than head of household (aOR = 1.74; 95% CI: 1.02–2.58), undocumented legal status (aOR = 2.32; 95% CI: 1.09–4.91), underlying diseases (aOR = 2.53; 95% CI: 1.51–4.25), lack of formal healthcare utilization (aOR = 1.82; 95% CI:

1.12–2.97), moderate to high perceived stress (aOR = 1.85; 95% CI: 1.06–3.25), history of violence (aOR = 3.16; 95% CI: 2.00–4.99), and low social support (aOR = 1.86; 95% CI: 1.18–2.92). A substantial proportion of Myanmar migrant workers experienced depressive symptoms. Targeted public health interventions focusing on legal protection, improved access to healthcare, stress management, violence prevention, and strengthened social support are recommended to reduce this burden.

Keywords: Depressive Symptoms, Myanmar Migrant Workers, Prevalence, Determinants



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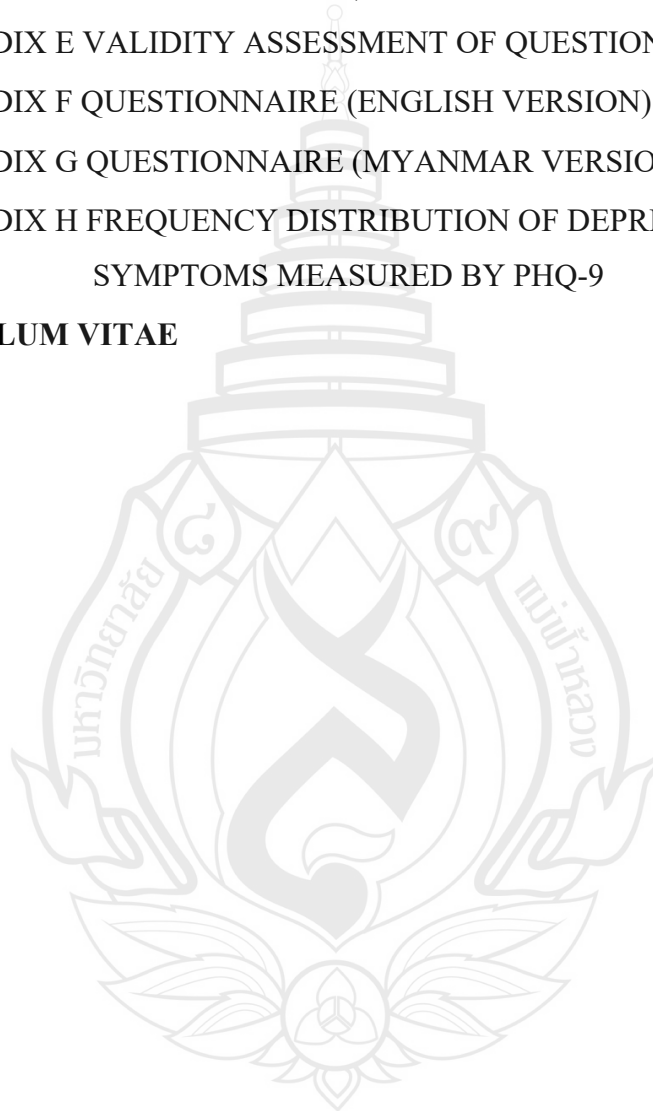
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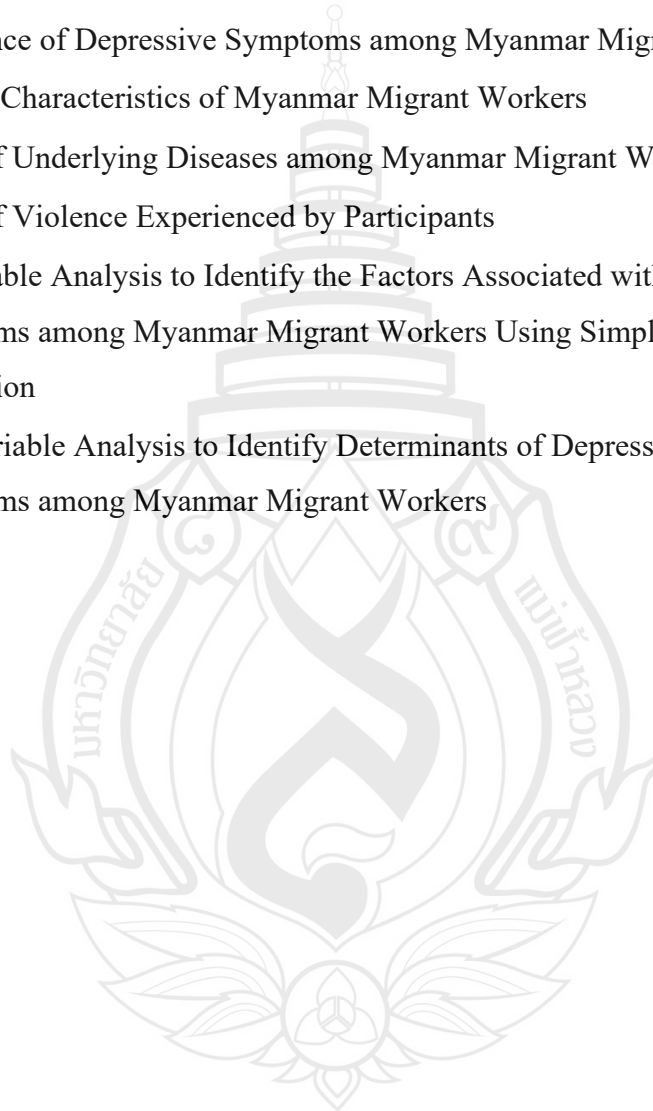
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ABBREVIATIONS AND SYMBOLS

AOR	Adjusted Odds Ratio
APA	American Psychological Association
BDI	Beck Depression Inventory
BPS	Biopsychosocial Theory
CD-RISC	Connor-Davidson Resilience Scale
CES-D Scale	Center for Epidemiologic Studies Depression Scale
CI	Confidence Interval
COR	Crude Odds Ratio
DSM-5	Diagnostic and Statistical Manual of Mental Disorders- Fifth edition
GAD	Generalized Anxiety Disorder
HAM-D	Hamilton Depression Rating Scale
ILO	International Labor Organization
IOC	Index of Item-Objective Congruence
IOM	International Organization for Migration
MSPSS	Multidimensional Scale of Perceived Social Support
PHQ-9	Patient Health Questionnaire-9
PMDD	Premenstrual Dysphoric Disorder
PSS	Perceived Stress Scale
PTSD	Post-traumatic stress disorder
SAD	Seasonal Affective Disorder
SPSS	Statistical package for the social science
UNHCR	United Nations High Commissioner for Refugees

ABBREVIATIONS AND SYMBOLS

WHO	World Health Organization
YLDs	Years Lived with Disability
ZSDS	Zung Self-Rating Depression Scale



CHAPTER 1

INTRODUCTION

1.1 Background and Rationale

Migration has emerged as a significant global challenge driven by political instability, economic hardship, and other environmental factors. According to the United Nation World Migration Report 2024, there were 281 million international migrants, accounting for nearly 3.6% of the world's population (1). Among them, over 169 million are migrant workers, many of whom face discrimination, language barriers, and limited access to healthcare services (2). In Southeast Asia, Thailand is a major destination for migrant workers because Thailand's economic growth has attracted increasing migrant workers from neighboring countries, particularly Myanmar, Cambodia, and Laos. As per the International Organization of Migration (IOM) 2023 report, nearly 3.9 million registered migrant workers reside in Thailand, with Myanmar migrants forming the largest group at approximately 2.3 million (3). Despite the steady number of entries from 2018 onwards, there was a significant increase in irregular entries of Myanmar migrants following the military takeover in 2021. Myanmar nationals also migrate to Thailand, driven by the pursuit of better employment opportunities, safety, and improved living conditions (3). The most recent reasons behind Myanmar national's migration include political instability, ethnic conflicts, economic collapse, and environmental factors such as flooding, all of which force individuals to seek better opportunities abroad (4).

According to IOM 2024, Myanmar's nationals mostly migrated to provinces like Tak, Kanchanaburi, Chiang Rai, Chiang Mai, etc. Interestingly, IOM observed a shift in the year 2023 in the destination provinces from Kanchanaburi and Tak provinces further away from the border, particularly in the Great Bangkok area (4). Moreover, Chiang Rai, a province in Northern Thailand, has emerged as a key province for Myanmar migrants due to its proximity to the Myanmar border, particularly through the Mae Sai border crossing. The province serves as both a transit and destination area,

with many migrants seeking employment in agriculture, construction, manufacturing, and service sector (4).

Chiang Rai Province, particularly Mueang Chiang Rai and Mae Sai Districts, has experienced a significant influx of Myanmar migrants in recent years. As of October 2023, Mae Sai District alone hosts approximately 32,000 non-Thai individuals, making it one of the districts with the highest presence of non-Thai populations in Thailand (5). This substantial migrant population has contributed to the demographic diversity of the region. The province's proximity to the Myanmar border, especially through the Mae Sai border crossing, facilitates both transit and settlement for these migrants.

Migrants are at higher risk of developing depressive symptoms compared to the non-migrant population because migrants have faced many difficulties, including high occupational stressors, poor living conditions, lack of legal status (6), limited access to health care, workplace discrimination, exposure to various form of violence (7), lack of social support and living away from family and taking huge responsibilities as breadwinners (8,9). These unfavorable conditions are driven to these vulnerable populations into the susceptible of depressive symptoms (6). Like any other migrants, migrants in Chiang Rai Province also face numerous challenges, including irregular immigration status, lack of legal work permits, limited healthcare access, and workplace exploitation. In addition, language barriers and cultural differences further hinder their integration into Thai society, affecting their mental well-being, especially depressive symptoms, and overall quality of life.

Depression is a serious and prevalent mental health condition characterized by persistent sadness, sleep pattern disturbance, fatigue, loss of interest in everyday activities, social communication impairment, and impaired workplace performance. It is the leading cause of disability worldwide, affecting over 3.8% of the global population, with 12% of all years lived disability (YLDs) attributed to depressive symptoms. If left untreated, depression can lead to self-harm or suicide, contributing to over 700,000 deaths annually (10). Migrants, particularly from low and middle-income countries, encounter multiple stressors such as poverty, inadequate healthcare access, forced displacement, and social exclusion, all of which increase their risk of developing depressive symptoms (11).

The causes of depressive symptoms are complex and involve a combination of biological, psychological, and social determinants. The biopsychosocial model suggests that biological factors, including genetic predisposition, aging, neurological changes, hormonal imbalances, immune disorder, and underlying chronic medical conditions, play a crucial role in developing depressive symptoms (12). Psychological factors, such as traumatic life events, stress, loss of significant others or relationships, exposure to violence, and alcohol and substance abuse, further heightened the risk. Besides, social determinants, including lack of social support, loneliness, and discrimination, contribute to mental distress (13).

Depressive symptoms among migrants have far-reaching consequences for individuals, families, and society. It is associated with fatigue, poor concentration, decreased work productivity, workplace accidents, and additional healthcare system burdens (14,15). If untreated, depression leads to withdrawal from daily activities, suicidal tendencies, and comorbidities such as cardiovascular disease, stroke, diabetes, and obesity, reducing the quality of life (16). Further, many migrant workers resort to alcohol and substance abuse as a maladaptive coping mechanism, further compounding the higher risk of getting depressive symptoms (8,17). At the family level, depressive disorder strains relationships increase financial burdens and negatively impacts other family members' emotional well-being (18,19). At the societal level, it exacerbates social isolation, increases healthcare costs, and contributes to workplace absenteeism, ultimately affecting national productivity (20,21). Consequently, depressive symptoms among migrant workers are crucial for their well-being and broader social stability. As mentioned above, there are alarming reasons for the need for depressive symptoms prevention research among Myanmar migrant workers in Chiang Rai Province.

The prevalence of depressive symptoms among migrant workers is alarmingly high. A systemic review and meta-analysis study about the mental health of migrant workers indicated that the prevalence of depression was almost 40.00% among 44,365 migrant workers across 17 countries (22). The prevalence of depressive symptoms among migrant workers varies worldwide, and the prevalence varies in different areas. Regarding the developing countries, the prevalence of depressive disorder was 15% to 98.4% [22-24]. In the Thailand content, a study focusing on Cambodian migrant workers in Thailand estimated that nearly 69.7% of those have depressive symptoms

(23). Among Bangladeshi migrants in Thailand, the prevalence of depression was 35.8% (24). Similarly, the study of depression among migrants and refugees along the Thai Myanmar border indicated that around 18.5% of migrant women are suffering from moderate to severe depressive symptoms (25). Likewise, among Myanmar migrant workers who were working in factories in Samutprakarn Province, Thailand, the result showed that 47.90% of Myanmar migrant workers had depressive symptoms (6). Besides, a study among Myanmar migrant workers in Chiang Mai Province, Northern Thailand, found a depression prevalence of 14.4% (26).

Nevertheless, many previous studies regarding depressive symptoms among Myanmar migrant workers only focus on socio-demographic factors such as age, duration of residence, and work-related factors (6,9,26). There is a limited research focus on psychological factors such as violent, stress and anxiety, and social factors regarding social support among these Myanmar migrant workers in Northern Thailand, Chiang Rai Province. Despite the increasing presence of Myanmar migrant workers in Thailand, some studies only focus on urban areas such as Bangkok and Chiang Mai Province, leaving a significant knowledge gap in Thailand's border regions (6,9,26). Few studies explore the combined impact of psychological and social determinants in these vulnerable populations, making it challenging to develop comprehensive mental health interventions targeting migrant workers in northern Thailand.

Therefore, this study aims to estimate the prevalence and factors associated with depressive symptoms among Myanmar migrant workers in Chiang Rai Province. The findings from this study will contribute to evidence-based public health information for tailor-made intervention and policy guidelines and align with a key factor for achieving the United Nations Sustainable Development Goals (SDG) "*SDG 3 Good Health and Well-being*" and "*SDG 10: Reduced Inequalities*", which focus on improving healthcare access and workplace conditions, for a marginalized population, including migrant workers" (27). Subsequently, it will significantly contribute to social and economic stability in Thailand while alleviating the country's healthcare burden.

1.1 Research Questions

1. What is the prevalence of depressive symptoms among Myanmar migrant workers in Chiang Rai Province?
2. What were the determinants of depressive symptoms among Myanmar migrant workers in Chiang Rai Province?

1.2 Research Objectives

1. To estimate the prevalence of depressive symptoms among Myanmar migrant workers in Chiang Rai Province.
2. To identify determinants of depressive symptoms among Myanmar migrant workers in Chiang Rai Province.

1.4 Research Hypothesis

1. Sociodemographic factors are associated with depressive symptoms among Myanmar migrant workers in Chiang Rai Province.
2. Biological factors are associated with depressive symptoms among Myanmar migrant workers in Chiang Rai Province.
3. Psychological factors are associated with depressive symptoms among Myanmar migrant workers in Chiang Rai Province.
4. Social factors are associated with depressive symptoms among Myanmar migrant workers in Chiang Rai Province.

1.5 Scope of the study

A cross-sectional study design was employed to collect quantitative data on the prevalence of depressive symptoms and its determinant factors. The study population of this study were Myanmar migrants aged 18 years and older who that resided in

Chiang Rai Province for at least six months. Participants were drawn from various occupational sectors, including agriculture, construction, domestic work, and informal employment. Different variables include sociodemographic factors (age, ethnicity, religion, marital status, role in family, monthly income, legal status, educational background, length of stay in Thailand, health insurance, occupation, type of occupation, Thai language proficiency, residential Area), biological factors (sex, underlying medical diseases, family history of mental health illness), psychological factors (smoking, alcohol and substance use, exercise, perceived stress, anxiety, resilience, violence), and social factors (perceived social support, acculturation) to identify their association with depression. Migrant workers with severe physical disabilities, those who were not provide consent, and individuals who cannot speak or understand the Myanmar language will be excluded from this study.

1.6 Operational Definitions

Migrant refers to a person who migrates from one country to another, typically to reside, work, or seek better opportunities.

Myanmar migrant workers refer to workers who are originally from Myanmar and have resided in Chiang Rai Province, Thailand, for at least six months before data collection.

Depression refers to depression disorders that a physician or psychiatrist diagnoses following the DSM criteria.

Depressive symptoms refer to a person who had a positive screening test result and is suspected to have depressive symptoms. In this study, depression was measured by using the Patient Health Questionnaire (PHQ-9). The total score was categorized as no depression, mild, moderate, moderately severe and severe levels of depressive symptoms. Participants with a PHQ-9 score of ≥ 5 were categorized as having depressive symptoms (Yes), while those with a score of < 5 were categorized as not having depressive symptoms (No).

Age refers to age of the participant, who has completed 18 years and above. In this study, it was recorded as continuous variables.

Gender refers to the biological distinction between male and female, as self-reported by the participant, categorized as male and female.

Ethnicity refers to people who share a common cultural heritage, ancestry, language, history, religion, or set of traditions that distinguish them from other groups. This were categorized as Myanmar, Mon, Karan, Shan and others.

Marital status refers to the participant's self-reported current legal and social relationship status. This was categorized into married, single, divorced or widowed.

Role in the family refers to the specific responsibilities, duties, and expected behaviors assigned to or assumed by participant within the household. These were categorized as head of the family, member.

Monthly income refers to the total earnings received by participant within one month, measured in Thai Baht (self-reported).

Legal status refers to the official documentation or residency permits determining an individual's lawful presence in the host country, categorized as documented or undocumented.

Educational background refers to the different stages of formal education a person has completed, categorized as no formal education, primary school, secondary school, college, or University.

Duration of stay in Thailand refers to the total time the participant has lived in Thailand, measured in years or months (self-reported).

Health insurance refers to having coverage under one of the insurance types, including a Social Security Scheme, Migrant Health Insurance Scheme, or a private insurance scheme, to address medical expenses, measured as not having and having health insurance.

Health seeking behaviors refers to the patterns of strategies for seeking health care used by Myanmar migrant workers. It was categorized into from hospital, traditional healer, pharmacy, family or community-based health support clinic, do not seek care.

Type of occupation refers to the job the participant is currently working. These were categorized as factory workers, agriculture workers, service workers, or others.

Thai language proficiency refers to the participant's self-reported ability to speak and understand Thai. It was categorized as reading (none, basic, fluent), listening (none, basic, fluent), speaking (none, basic, fluent), and writing (none, basic, fluent).

Area of residence refers to the residential area of Myanmar migrant workers. It was divided into two groups: semi-urban and rural areas.

Underlying diseases refer to chronic medical conditions diagnosed by a healthcare professional, measured in yes or no (self-reported).

Family history of mental health illness refers to the history of participant's parent's illness involved in psychiatric disorders, such as depression, bipolar, and anxiety disorders. Those was categorized as having history of psychiatric disorder, no history of psychiatric disorder and uncertain.

Smoking refers to a current smoker (reported using in the present), an ex-smoker (reported using at least one but not have used in the present day), or never (a non-user behavior) of Myanmar migrant workers.

Alcohol consumption refers to an individual's consumption of beverages containing ethanol, such as beer, wine, or spirits. This study includes any alcohol consumption in the past month, measured as never (a non-user behavior), ex-drinker (reported using at least one but not used in the present day), and current drinker (reported using in the present).

Substance use refers to substance consumption of (marijuana, heroin, and methamphetamine) of participants. This was divided into 3 groups as never (non-user behavior), ex-user (reported using at least one but not have used in the present day) and current user (reported using in the present).

Exercise refers to physical activities doing for at least 30minutes session per week, categorized as yes and no.

Perceived Stress refers to Myanmar migrant workers' perception of situations in their life as tense, worried, exhausted, and irritated. This study measured stress using the Perceived Stress Scale (PSS). The total score was categorized as low, moderate, and high.

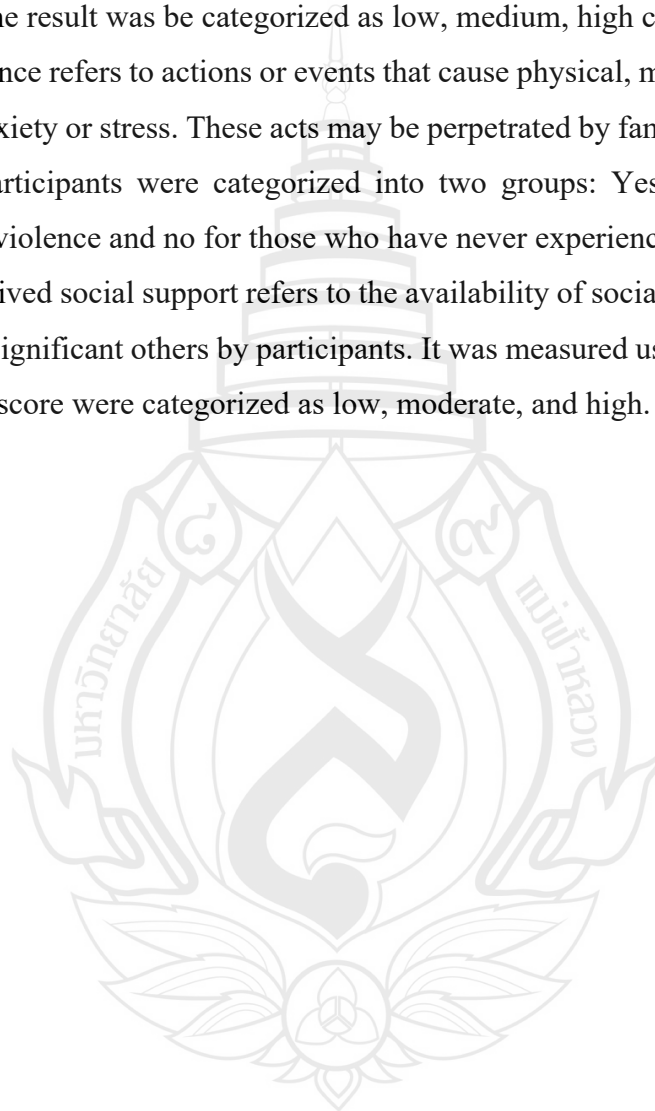
Anxiety refers to a reaction to stressful situations that involves excessive fear and worry. This study assessed using the Generalized Anxiety Disorder-7 (GAD-7)

checklist. The total score was categorized as minimal, mild, moderate, and severe anxiety symptoms.

Resilience refers to adapting, recovering, and thriving in adversity, stress, or significant life challenges. In this study, Connor-Davidson Resilience Scale (CD_RISC) 10 items were used to assess tendencies to cope resiliently in stressful situations. The result was categorized as low, medium, high coping skill.

Violence refers to actions or events that cause physical, mental, or sexual harm, leading to anxiety or stress. These acts may be perpetrated by family members, friends, or others. Participants were categorized into two groups: Yes for those who have experienced violence and no for those who have never experienced violence.

Perceived social support refers to the availability of social support from family, friends, and significant others by participants. It was measured using the MSPSS scale, and the total score were categorized as low, moderate, and high.



1.7 Conceptual Framework

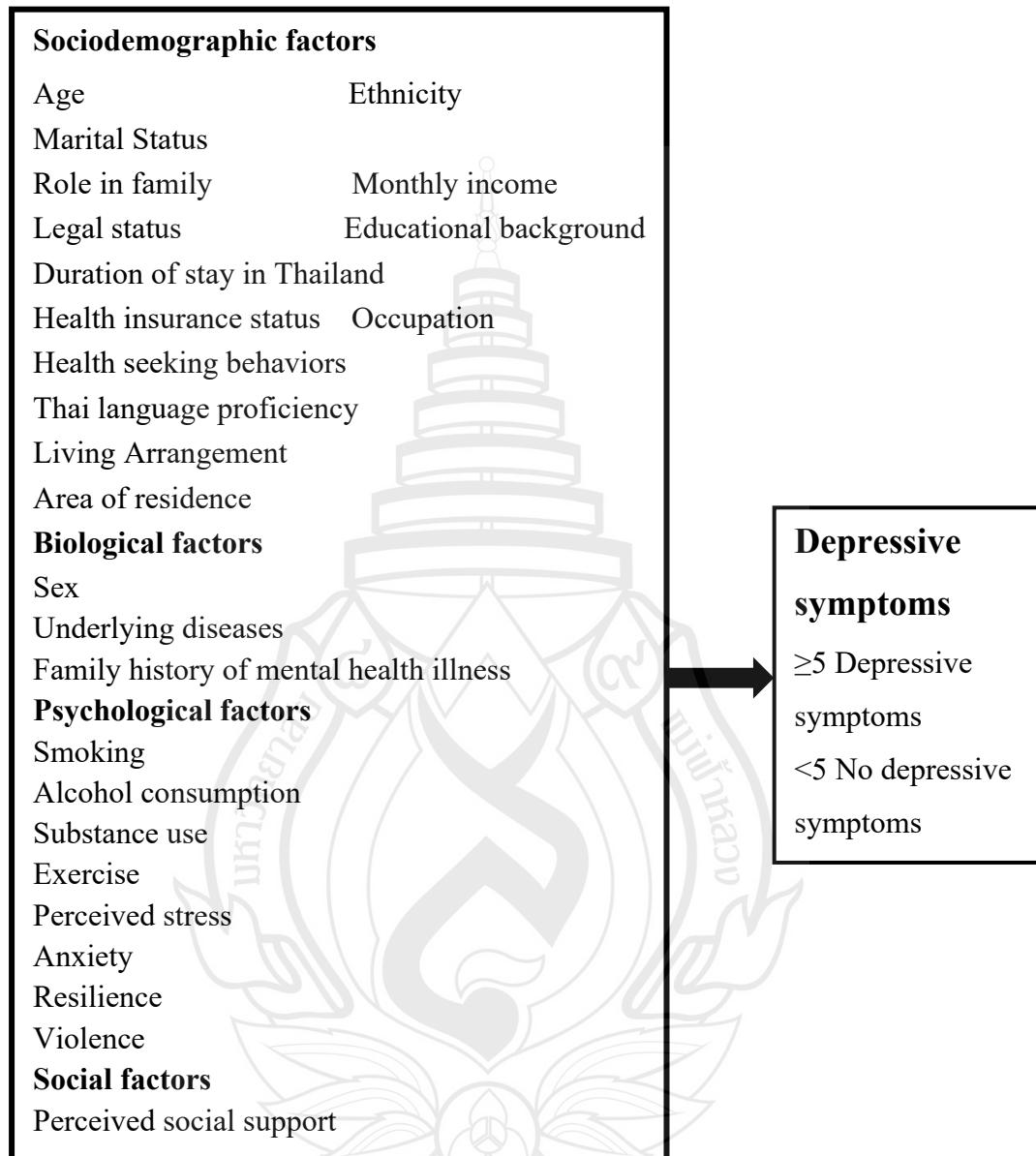


Figure 1.1 Conceptual framework

CHAPTER 2

LITERATURE REVIEW

This chapter presents the literature review on depressive symptoms among Myanmar migrant workers in Chiang Rai Province, Thailand. The literature respected the following topics.

- 2.1 Migration
- 2.2 Migration in Global, Asia, and Thailand
- 2.3 Myanmar migrants and their high risk of depressive symptoms
- 2.4 Depression
 - 2.4.1 Types of depression
 - 2.4.2 Signs and symptoms of depression
 - 2.4.3 Diagnosis of depression
 - 2.4.4 Risk factors of depression
 - 2.4.5 Assessment of depressive symptoms
- 2.5 Biopsychosocial theory
- 2.6 Impact of depression
- 2.7 Prevalence of depressive symptoms among migrant workers
- 2.8 Factors associated with depressive symptoms

2.1 Migration

Migration is the movement of individual apart from their original birthplace to a new place, either pass across an international border or within state(28). Most of the international migration is with the purpose of work, family and study (28). Work is the major reasons of that people migrate internationally, and migrant workers are the largest constituent of the world's international migrants (28).

2.1.1 Types of Migrations

Migration can be generally divided into two types: internal and international migrations. Internal migration refers to the people who move within the same country.

International migration is defined as people across the State boundaries to another country for a certain period (28).

2.2 Migration in Global, Asia and Thailand

As per IOM, 2024 data, there are 281 million migrants globally, almost 3.6% of the world population (1). Work is the major reasons of that people migrate internationally, and migrant workers are the largest constituent of the world's international migrants, most are residing in high-income countries (28). Therefore, the record of global displacement shows constantly high, with the number of internally displaced persons are around 71.2 million and the number of refugee and asylum seekers are at 40.7 million (1).

Asia Pacific, it consists of the world's largest landmass and is home place for population of estimated over 4.30 billion people which is nearly 60% of the world's population. Additionally, Southeast Asia is one of the most economically wide areas, with a large number of migrants moving to that regions. Among them, Thailand is regarded as the history of rapid economic development in the Asia according to the IOM Thailand annual report of 2024 (3).

Thailand also plays a role as country of origin, destination and transit for international migration according to IOM Thailand. According to the department of labor, there are 2.349 million registered migrant workers in 2023, mostly (73%) originated from Myanmar, with smaller percentages from Cambodia (17%), Lao People's Democratic Republic (10%) and Viet Nam (<1%) [4]. Most of the sectors which can be found migrant workers are fishing, agriculture, hospitality, domestic work and manufacturing sectors (3). Chiang Rai is the northmost province of Thailand, which shares borders with Myanmar to the north and Laos to the east. According to the statistical data provided by Myanmar mobility tracking June 2024 data, Myanmar migrants who have work permits in Chiang Rai are over 50,900 (29).

In summary, the significant presence of Myanmar migrant workers in Chiang Rai Province are significantly surged due to political instability. Despite the growing number of migrants, there is no strong evidence of addressing mental health concerns,

particularly depression of these vulnerable population. Investigating of these issues with the aim of policy development to protect mental health well-being of migrant population. Exploration their needs is crucial in aligning of equity and promoting of sustainable development.

2.3 Myanmar migrants and their High Risk of Depressive Symptoms

Myanmar is located in Southeast Asia which has faced decades of political instability, armed conflicts and economic hardship and challenges, making the situation to be worsen to widespread displacement and migration to neighbor countries (30). As per United Nations statistical data (31), Myanmar is one of the highest displacement regions, with over 1million of people are displaced and seeking refuge in neighbor countries, including Thailand. This migration is driven by seeking of better opportunities, safety from conflict, and education. Thailand has huge demand for labor in sectors such as agriculture, construction, and domestic work, which become the hosts for the Myanmar migrant population (30). However, this population is generally faced various stressors and mental health challenges, particularly higher risk of depression.

Migrants have faced unique challenges during at all various stages of migration process. The elevated risk of depression among migrant is largely attributed to the lack of opportunities for education, traumatic experiences, exposure of life-threatening conditions such as violence, displacement, loss of family members, and severe disruptions to their lives. These pre-migration stressors are strongly linked to mental health disorders, including depression and post-traumatic stress disorder (PTSD) (32).

Moreover, the process of migration often involves in uncertainty, dangerous journeys, and disruption of social and family networks, all of these contribute to increased risk of depression. Studies revealed that depression was common mental disorders among migrant workers due to strain of assessing their basic needs, language barriers, feeling of marginalization in the host communities (24,26). These factors create sense of isolation and helplessness, which are significant risk factors of depression.

The high prevalence of depressive symptoms among Myanmar migrants is the result of complex composition of pre-migration trauma, migration-related stressors and post-migration stressors. Addressing their mental health needs especially depression requires a comprehensive approach, including psychological support, improved access to healthcare, and promote social integration in the host communities. Without these kinds of interventions, this Myanmar migrant population remains a significant risk, with long term burden on both individuals and communities in which they live.

2.1 Depression

Depression is a common mental disorder, which is characterized by depressed mood or loss of pleasure or lack of interest in activities for long period of time. Depression can affect all aspects of life, including with family, friends and community which can lead to problems in all aspects of their life (10).

As per American Psychiatric Association (APA), major depressive disorder is a serious medical condition that mostly affects people's feeling, thoughts, and behaviors. It can lead to sadness and/ or loss of interest in previous hobbies which can interrupt people's ability to perform at work and at home and cause negative consequences in mental and physical health issues (33).

Depression is more than just sadness. Depressive can cause lack of interest and pleasure in daily activities, insomnia or over sleeping, significant weight gain or loss, difficulty in concentration, and recurrent thoughts of death or suicide (10). Depression can be treated by a combined therapy and antidepressant medication in order to get recovery stage (33) .

2.4.1 Types of Depression

A depressive episode can be categorized as mild, moderate, or severe depending on the number and severity of symptoms, as well as the impact on the individual's functioning (10) .

1. Major depressive disorder

Major depressive disorder is a severe form of depression which can lead to symptoms like persistent feelings of sadness, emptiness, or hopelessness most of the

day or nearly every day, decreased pleasure and interest in most of the regular activities, a sense of worthlessness or excessive or inappropriate feeling of guilt, energy loss and fatigue and noticeable physical restlessness or slowed movements, sleeping difficulty, difficulty in concentrating or making decision and thoughts of death or suicide, with or without a plan for suicide. These symptoms may last 2 weeks or more (34).

2. Persistent depressive disorder (previously called dysthymia)

It defines as the low mood that can last for minimum 2 years, but it might not reach the intensity as high as major depression. The signs and symptoms may include poor appetite or overeating, difficulty in sleeping or over sleeping, low energy or fatigue, low self-esteem, difficulty in concentration, and feelings of hopelessness (35).

3. Bipolar disorder

It is a form of mental disorder that can lead to extreme changes in mood, energy, activities level, concentration problems, and unable to carry out day-to-day tasks caused due to an imbalance in brain chemistry causing extreme mood swings that include emotional highs (mania or hypomania) and lows (depression). Person with bipolar disorder have episodes of depression. These symptoms can last for weeks, months, or years (36).

4. Seasonal affective disorder

Seasonal affective disorder is another form of depression which is usually known as SAD or winter depression. Individuals with SAD may experience mood changes and symptoms similar to depression and normally occur during the fall and winter months when the sunlight is less (33,37).

5. Perinatal and post-partum depression

Perinatal depression is a severe form of depression which may suffer during pregnancy or after childbirth which involving symptoms like feelings of extreme sadness, indifference and/ or anxiety, as well as changes in energy, sleep, and appetite. It may be harmful to both mother and baby. However, it can be treated with medications (33).

6. Psychotic depression

It is a form of persistent or chronic form of mild depression. Its symptoms are similar with dysthymia to depressive episode, but its symptoms are last longer and intensity is less (10).

7. Premenstrual dysphoric disorder

Premenstrual dysphoric disorder is another form of depression which is estimated to affect between 1.8% to 5.8% of menstruating women. Common symptoms of PMDD include mood swings, irritability or anger, depressed mood, and marked anxiety or tension, decreased interest in usual activities, difficulty concentrating, lack of energy or easy fatigue, changes in appetite with specific food cravings (specifically for sweets and other carbohydrates), trouble sleeping or sleeping too much, or a sense of being overwhelmed or out of control. These symptoms begin a week to 10 days before the start of menstruation and improve or stop around the onset of menses. The symptoms lead to significant distress and problems with regular functioning or social interactions. PMDD can be treated with antidepressants, birth control pills, or nutritional supplements (33).

In summary, depressive symptoms are important indicators of mental health problems that can affect an individual's emotional, psychological, and social well-being. They commonly include persistent sadness, loss of interest or pleasure in daily activities, fatigue, sleep disturbances, appetite changes, difficulty concentrating, and feelings of hopelessness. These symptoms may negatively impact daily functioning, work performance, relationships, and overall quality of life if left unaddressed. Migrant workers are particularly vulnerable to depressive symptoms due to migration-related stressors, financial difficulties, social isolation, and limited access to support systems and healthcare services. Therefore, this study focuses on the prevalence of depressive symptoms and their determinant factors among Myanmar migrant workers in Chiang Rai, Thailand, to better understand their mental health conditions and support the development of appropriate mental health interventions and services.

2.4.2 Signs and symptoms of depression

The signs and symptoms of depression differ from person to person from mild to severe symptoms. However, as per American Psychiatric Association, almost all the common symptoms of major depression are the same in children and adolescents. The symptoms of depression are severe enough to cause noticeable problems in day-to-day activities, such as work, school, social activities, or relationships with others (33).

Common symptoms of depressive symptoms include persistent feelings of sadness, irritability, emptiness, or hopelessness, along with a loss of interest or pleasure

in activities that were once enjoyable. Individuals may experience significant changes in appetite and weight, sleep disturbances such as insomnia or excessive sleeping, decreased energy, fatigue, or noticeable slowing of movements and speech. Some may also show purposeless physical activity, such as pacing or restlessness. In addition, depressive symptoms can lead to feelings of worthlessness or excessive guilt, difficulty thinking, concentrating, remembering, or making decisions, and in severe cases, thoughts of death, suicidal ideation, or suicide attempts (33).

Distinguishing between mild, moderate, and severe depressive episodes requires complex clinical judgment, considering the number, type, and severity of the symptoms. Substance use is also a notable characteristic of depression in adolescents. Depression primarily affects four aspects of human functioning: emotional, behavioral, cognitive, and physiological (10,33).

2.4.3 Diagnosis of depression

According to the criteria defined by DSM-V (38) , the clinical diagnosis of symptoms are as follows

Five or more of the following symptoms have been present during the same consecutive 2 weeks period and represent a change from former activities or functioning: at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Following are the signs and symptoms for the diagnosis of major depressive disorder include depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feeling sad or empty) or observation made by others (e.g., appearing tearful). In children and adolescents, this may present as an irritable mood. Individuals may also experience markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day. Other symptoms include significant weight loss when not dieting or weight gain, decrease or increase in appetite nearly every day, insomnia or hypersomnia nearly every day, psychomotor agitation or retardation observable by others, fatigue or loss of energy nearly every day, feelings of worthlessness or excessive or inappropriate guilt, diminished ability to think or concentrate or indecisiveness nearly every day, and recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or specific plan for committing suicide (38).

2.4.4 Risk factors for depression

Everyone can experience depression, and several factors may play a role in the development of depression. Biochemical factors, such as differences in certain chemicals in the brain, including neurotransmitters like serotonin, dopamine, and norepinephrine, may contribute to the development of depressive symptoms. Genetic factors can also influence depression, particularly among people with the same identical genes. In addition, personality factors, such as low self-esteem and being easily overwhelmed by stress, may increase the likelihood of developing depression. Environmental factors, including prolonged or continuous exposure to violence, neglect, abuse, or poverty, may also increase the risk of depression (33).

2.4.5 Assessment of depressive symptoms

Depression can be assessed by using a depression rating scale based on specific symptoms, medical conditions, environmental factors, family history, or cultural factors. There are various tools used for assessing depression are

1. The Zung Self-rating scale was developed by Zung in 1965 to measure and monitor of depression severity. It is a widely used tool for assessing depressive symptoms across various population. This scale consists of 20 items, with each item with self-administered rating scale from 1 (none or some of the time) to 4 (most or all of the time). The total score ranges from 20 to 80, with higher score scores indicate the severity of depressive symptoms (39,40).

2. Patient Health Questionnaire (PHQ 9) which imposed of 9 items that evaluate DSM-IV major depression inclusion criteria plus a tenth items that evaluate psychological impairment. This tool has strong internal consistency, test-retest reliability, and sensitive to change. The PHQ-9 tool is frequently use in primary care settings for major depression (Mark Zimmerman, 2011). This tool has total scores ranging from 0 to 27. The total score 0-4 indicate (no depression), 5-9 (mild depression), 10-14 (moderate depression), 15-19 (moderately severe depression), and 20-27 (severe depression) (41).

3. Beck Depression Inventory (BDI) consists of 21-items self-reporting scale which is frequently used for screening of depressing and diagnosing its severity. The total highest score for this tool is 63 and the lowest score is 0. BDI tool is used for diagnosing of depression from 13 years to 80 years of age, the total score 0-13 means

minimal depression, 14-19 mild depression, 20-28 moderate depression, 29-63 severe depression (42).

4. Hamilton Depression Rating Scale (HAM-D) which is the oldest commonly used tool for assessing depression. It consists of computer-administered version in addition to version which can be self-reported, and clinician rated. The clinician rated version is used in clinical setting to assess patient response for therapy. It takes 20-30 assessing times by using this tool. It was developed in 1960 and composed with 21 questions. The questionnaire tools include the symptoms such as depressed mood, guilt feeling, suicidal ideation, sleep pattern changes, work related activities, inhibition, agitation, psychotic anxiety, somatic symptoms, gastrointestinal symptoms, general somatic symptoms, hypochondria, weight loss, and cognitive ability (43).

5. Center for Epidemiologic studies depression (CES-D Scale) was originally published by Radloff in 1977, which has 20-item rating scale from 0 to 3 for each item (0 = Rarely or None of the Time, 1 = Some or Little of the Time, 2 = Moderately or Much of the time, 3 = Most or Almost All the Time) and asking about how often they experienced symptoms such as such as restless sleep, poor appetite, and feeling lonely over the past week (44,45). The total score ranging from 0 to 60, with the high scores indicate the severity of symptoms(45).

In this study, Patient Health Questionnaire 9-items scale will be used to assess the various level of depression because it has strong internal consistency, and test retest reliability (46). PHQ-9 is widely used and a reliable tool due to its reliability, and validity and easy to use in assessing depression. It provides not only the ability of measuring depression but also a severity grade of depression. PHQ-9 is a cross-cultural used tool and also highly suitable for resource-limited setting and can use with diverse population. Moreover, it can be utilized in people with all ages and genders. Therefore, it is considered as the most suitable tool for my sample population who are Myanmar migrant workers. In addition, this is widely regarded as a valid and reliable tool using in research in Myanmar migrant workers. Therefore, PHQ-9 is strongly appropriate and suitable for assessing the depression level among Myanmar migrant workers in Thailand.

According to the data from literature review of previous study, there are many theories which explain about the causation of depressive symptoms such as biological, psychological, and social factors. This knowledge enhances the overall understanding about diagnosis, signs and symptoms, assessment of depression and various factors which are significantly associated with the development of depressive symptoms. This knowledge helps in conducting of this study.

2.2 Biopsychosocial Theory

The biopsychosocial (BPS) model was firstly introduced by George Engel in 1977, which provides a comprehensive framework to understand depression by combining of biological, psychological, and social factors (47). The etiology of depression is defined as complex and complicated. According to the literature review, depression is developed by combining of three contributing factors such as biological, psychological and social factors (13).

Depression is recognized as having complex etiology. From a research literature review, depression results from three contributing causes, biological, psychological, and social factors. None of three domains alone can be determinants of this problem. Moreover, any prediction needs to consider a multitude of interacting causal factors. These causal factors operate throughout the individual's lifespan, and the interactive effects depend on the development level (48).

The biological factors which may affect the development of depression including genetics (family history of mental health illness), hormones, neurochemicals, and immune systems (49). Moreover, the psychological factors including negative pattern of thinking, low coping skills, and impaired judgment problems also play in one of the contributing factors of depressive symptoms. Lastly, the social factors such as low social support and chronic stressors are significantly contributed to depression. Thus, the interaction of all the determinants are crucial factors of developing depression (49). Therefore, the biopsychosocial model provides a robust framework to understand clearly about depressive symptoms.

This study applied biopsychosocial theory which are categorized into three groups: biological factors (e.g., sex, underlying diseases, family history of mental

health illness), psychological factors (e.g., alcohol and substance use, perceived stress and anxiety) and social factors (e.g., social support, acculturation and discrimination), and also other factors such as working condition, income level and language skills.

2.6 Impact of Depressive Symptoms among Migrant Workers

Individual level: The impact of depression creates the individual ability at work which can affect workplace productivity, lead to physical and mental health problems, harmful use of alcohol or other substances and decrease in social and community bonding with their surroundings (21). According to WHO, if left untreated depression can lead to reduced interest in their daily routines and seriously may lead to suicide (10). Research indicated that depression is associated with an elevated risk of getting higher likelihood of several chronic health conditions such as cardiovascular diseases, stroke, diabetes, and obesity plus reducing the quality of life (16). Another study stated that depression and stress can also lead to alcohol use disorder and other substances use disorder among migrant workers (50).

Family level: Depression not only impacts the individual but also impacts the whole family system. Depression affects family life due to the need of emotional, physical, and financial support. In addition, depression has been found to occur more among family members than in general population. Moreover, depression strains relationships and causes emotional withdrawal, leading to conflicts. Economic hardship may arise due to reduced earnings, affecting dependents of their family. Children of depressed migrant workers often experience emotional distress and academic struggles (18,19).

Society level: On a societal scale, depressive symptoms exacerbate social isolation, increases healthcare costs, and contribute to workplace absenteeism, ultimately affecting national productivity (20,21). Additionally, many migrant workers resort to alcohol and substance abuse as a maladaptive coping mechanism, further compounding the higher risk of getting depressive symptoms (8,17).

In addition, depression was associated with significantly higher healthcare expenditure, utilization, and costs. Without proper public health promotion, prevention

and care, it will cause many more problems for the migrant workers and their families. It will be severe social problem in the coming years.

2.7 Prevalence of Depressive Symptoms among Migrant Population

Depression is defined as a common and serious mental disorder which can negatively impact on the people's thoughts, act and behavior. It can lead to sadness and/or loss of interest in previous hobbies which can interrupt people's ability to perform at work and at home and cause negative consequences in mental and physical health issues (33).

The prevalence of depressive symptoms among migrant workers varies worldwide. The prevalence is varied across in different area: a systemic review and meta-analysis of mental health of migrant workers across 17 countries show that the prevalence of depression was 40% (22); in Al Qassim, Saudi Arabia 7.3% (51); in United Arab Emirates 25.1%(52) ; in Singapore 29.0% (53); in Taiwan 15.0% (54); in South Korea 98.4% (55); in China 28.0% (56); in Malaysia 14.4%- 79.2% (8,57).

Regarding to Thailand, depressive symptoms are also still a public health problem, with a high disease burden in Thailand among migrant's population. In Central Thailand, a qualitative study among migrant workers found a 11.8% the prevalence of depression (58). Among Bangladeshi migrants in Thailand, the prevalence of depression was 35.8% (24), while A study focusing on Cambodian migrant workers in Thailand estimated that nearly 69.7% of those was having depressive symptoms (23). In Southern Thailand, a study using Center for Epidemiologic Studies-Depression Scale (CES-D) revealed that 47.9% of Myanmar migrant workers suffered from depressive symptoms (6). Another cross-sectional study using Zung's depression scale reported that 42.7% of participants had severe depressive symptoms (9). Moreover, along the Thailand-Myanmar borders, a study on migrant and refugee populations found that 18.5% of migrant women experienced moderate to severe depressive symptoms (25). In Northern Thailand, a cross-sectional study conducted by Aung et al (26) which reported that the prevalence of depression was 14.4% among Shan, Myanmar migrant workers in Chiang Mai, Northern Thailand (26).

The prevalence of depressive disorder among Thailand and other countries are different because of the variety of population structure, selected tools, and screening methods, and diversity of study areas and setting such as in factories, residential area and clinical setting, which may lead to the different prevalence of depression in each country. However, these results consistently indicate that depressive symptoms are still public health problems among migrant workers worldwide.

In addition, most of the previous studies do not focus on the complex interplay etiology of depressive symptoms based on biopsychosocial theory. The biopsychosocial model provides a comprehensive framework to understand depression by combining of biological, psychological, and social factors which contributes the development of depressive symptoms. Therefore, the BPS theory is important in addressing of mental health issues, particularly depressive symptoms among migrant workers.

In conclusion, these results may show the depressive disorder is still public health problem in worldwide. Moreover, there is no scientific information on the depressive symptoms of the Myanmar migrant workers in Chiang Rai Province, Thailand. Therefore, it needs to be investigated among this population.

2.8 Factors Associated with Depressive Symptoms

The literature review variables are based on the conceptual framework, followed by biopsychosocial theory. Finally, the variables associated with depressive symptoms in migrant workers were reviewed to better understand and influence each factor in the previous study.

2.8.1 Age

According to APA, 2024, everyone at any age may experience depressive symptoms (33). Win N, et al (6) , studied about the impact of stressors on depressive symptoms among youth Myanmar migrant workers in Thailand who were residing in Samutprakarn, in his study showed that youth workers aged between 18-24 years had the higher likelihood of depressive symptoms than other age groups due to the workplace stressors (6). Similarly, Acharya et al (55) studied about depressive symptoms among migrant workers in South Korea showed that migrant workers aged

above 25 years had 2.1 times higher chance of getting depression (95% CI 1.084–4.193) (55). Moreover, a systemic review and meta-analysis of mental health of migrant workers across 17 countries revealed that the prevalence of depressive disorder was 0.95 times higher among younger group migrant workers (22). Conversely, Li et al (59) found that migrant elderly was more likely to be mentally unhealthy than other age group (OR = 1.85, 95% CI 1.44–2.36) (59).

Regarding a review of related research articles, younger migrant workers often at higher risk of depression because they might lack of life experiences and low resilience skills than the older migrants. Conversely, for the older migrants may less social integration and limited social support can heighten the risk of depressive symptoms. In addition, age cannot be conclusively determined to be related to depressive symptoms. Therefore, the study aims to explore the relationship between non-modifiable factors like age and depressive symptoms among migrant workers.

2.8.2 Gender

Gender also plays an important role in developing of depression. According to WHO, 2023 report, the prevalence of depression in female is nearly double higher than in male due to hormonal influences and other inequalities factors (10). A study about the prevalence and social determinants of depression in among Shan migrant workers in Chiang Mai, the depression was assessed by using PHQ 2 and 9 which highlighted that being female was 2 times higher risk comparing with male (aOR 2.11, 95% CI 1.08 to 4.11) (26). Similarly, a study conducted by Chen et al (60) about prevalence and gender disparity of those who screen positive for depression among 48,682 participants reported that female had higher prevalence of depression than male migrants in China (aOR = 1.95, 95% CI 1.19–3.19) (60). Conversely, another study about factors influencing anxiety and depression among Myanmar migrants, this study showed that that male had the higher chance of depression than female due to the breadwinner of the family (9).

In summary, based on the relevant literature review, research suggests that gender differences play a significant role in the prevalence, severity, and risk factors of depression, with female migrant workers often experience the high rates due to socioeconomic disparities, unfair treatment and occupational risks. However, male migrant workers may also face unique stressors such as limited emotional support and

work-related stressors. In addition, the gender cannot clearly determine association with depression. These facts lead to study the association between gender and depressive symptoms for gender-based mitigation for depression.

2.8.3 Ethnicity

The relationship between ethnicity and depression among migrants is complicated and multifaceted, influenced by ethnic discrimination(61,62). A population-based study conducted by Missinne & Bracke (62), in 23 European countries among ethnic minorities showed that the prevalence of depressive symptoms in ethnic minorities was 40% higher than the local host population (62).

In conclusion, studying the relationship between ethnicity and depression is important for gaining of comprehensive understanding of how cultural and social factors influence developing depressive symptoms. Ethnicity can shape an individual's experiences with mental health and providing both coping mechanisms and potential sources of stress. However, there is no clear focus on variety of Myanmar ethnic and specific religion group. Therefore, this study aims to focus on association between ethnicity and depressive symptoms.

2.8.4 Marital Status

Marital status plays an important role in the etiology of depression (63). The high prevalence of depression was found in people with separated, divorced, or widowed status (63). Zhai et al (64) conducted a cross-country analysis among 106,556 participants across 17 countries which showed that that unmarried people have 1.86 times higher risk of getting depression than married people (95%CI 1.61-2.14) (64). Similarly, another study was conducted by Bulloch et al (63) which pointed that marital status significantly influences mental health of people, unmarried people, divorced, or widowed have higher risk of developing depressive symptoms than married people (63). Y. Guo et al (65) conducted a cross-sectional study among Chinese migrant workers which found that the married male migrants had the higher risk of getting depression due to take family responsibilities making them to get more stable income to support their family (65).

In conclusion, marital status can be associated with economic hardship in their married life, and do not get emotional support from partners which may lead to major stressors in their lives. These stressors can impact on the mental health of people.

Therefore, this study aims to explore relationship between marital status and depressive symptoms.

2.8.5 Role in the family

Migrant workers usually play a primary role of breadwinners in their families, the responsibilities that can significantly impact their mental health and elevated the level of stress. Phyo et al (9) studied about factors influencing anxiety and depression among Myanmar migrants in Thailand, this study showed that male had the higher chance of depression than female due to the breadwinner of the family (9). Similarly, research on migrant workers in Singapore during the COVID-19 pandemic showed that significant associated with role in family as breadwinner and depression because they had to support their larger families in their home countries, and loss of jobs during pandemic which make them elevation of stress levels and leading adverse mental health outcomes like depressive symptoms (66).

In summary, role in the family can be associated with the higher risk of depression. Addressing the mental health, depression associated with role of family is crucial in mitigating depression. Therefore, the study aims to explore relationship between role in family and depressive symptoms.

2.8.6 Educational Background

Many literatures pointed out that there are many associations between education attainment and depression. Moreover, education plays a significant role in mental health of people, the lower level of education is constantly correlated with the higher risk of developing depression (67). Sikhiwat et.al (58) conducted the study about depressive symptoms prevalence and its associated factors among cross border migrants in Thailand, 2023, which showed that individuals who completed at least high school education was less chance of having depression (aOR 0.43, 95%CI, 0.23 to 0.8) (58). Higher level of educational background is consistently associated with better mental health. Asri et.al (54) conducted a study among Indonesia migrant workers in Taiwan which found that the people with higher education had lower odds of 0.24 than those with lower education (95% CI 0.09-0.59) (54).

In conclusion, education plays a vital role in mitigating of depressive symptoms, as it encourages individuals with knowledge to identify, understand and manage the condition. By fostering awareness and understanding, education helps break down the

social stigma which making them easy for people to seek help. However, there is no clear focus on the education background of my target population, so my study aims to focus on association between educational background and depressive disorder.

2.8.7 Duration of stay and living arrangement

Duration of residence in host country and living alone were also associated with the higher prevalence of depression. In one recent study, Htay et. al., found that Myanmar migrant workers who lived more than five years in Malaysia was more likely to have depressive symptoms than workers who less than five years (8). Similarly, Myanmar migrant workers who lived more than 10years had higher odds of getting depression reported by Aung et al (26) (aOR 2.60, 95%CI 1.08-6.27) (26). However, Asri et al (54) studied about prevalence and factors associated with depression among Indonesia migrant workers in Taiwan stated that the individual who had lived in Taiwan more than 2years had the fewer chance of getting depression (aOR 0.23, 95%CI 0.06-0.28) (54). Moreover, one another study conducted by Phyo et al (9) which revealed that migrant workers who lived alone had the higher chance of getting depression than living with family in the host countries (t/F 4.077) (9).

Based on the literature reviews, the duration of stay and living arrangement play a vital role in mental health of migrant workers. Migrant worker may after face stress due to adjustment challenges, while those who have lived in Thailand for long periods might experience chronic stress from prolonged economic and social struggles. Additionally, living alone significantly increases the risk of developing depression. Therefore, addressing the association between these factors and depressive symptoms in my target population.

2.8.8 Language Proficiency

A study conducted by Hamwi et.al (68) in Portuguese, involving 1475 migrant women, found that language proficiencies were associated with increasingly higher odds of depression (aOR 2.55, 95%CI 1.64-3.99) when compared to native women (68). However, another study conducted by Aung et al (26) among Shan migrant workers in Chiang Mai mentioned that there is no association between language skill and depression (26).

According to literature review, language proficiency plays a vital role in the mental health of migrant workers, particularly in their experience of depression.

Limited language skills can create significant barriers to accessing healthcare, social support, and clearly understanding the relationship between language proficiencies and depressive symptoms.

2.8.9 Legal Status

The legal status of migrant workers also plays in key contributing of developing depression. Win et.al (6) conducted the study about the impact of stressors on depression among Myanmar migrant workers in Samutprakarn, found that the poor legal status heightened their stress which negatively led to the depressive symptoms (6). In addition, one mixed-method study conducted by Khai et al. among undocumented Myanmar migrant workers reported that depression was high prevalence due to undocumented status and fear of deportation(69). Similarly, another cross-sectional study conducted in South Korea among undocumented migrants by Lee et al. 2024 observed that undocumented migrant workers were more likely to have anxiety or depression than those who living with documented status (70). Moreover, Fakhoury et al., 2021 studied about mental health of undocumented migrants and migrants undergoing regularization in Switzerland found that the lack of proper legal documentation status had the significant higher odds of having mental health issues, including anxiety and depression (aOR: 2.2; 95% CI: 1.4–3.3) (71).

In summary, the legal status restricts the access to healthcare and fear of being arrested or fear of deportation which strengthened their stress which may lead to depression. Therefore, this study aims to explore the relationship between the legal status and depressive disorder.

2.8.10 Worked-related factors

Migrant workers are prone to suffer depression due to their demanding nature of their jobs and limited support system for them (72,73). Meyer et al (74) conducted a cross-sectional study about the influence of working environments on depressive symptoms among Myanmar migrant workers in South Thailand, this study showed that indoor working place was highly associated with having depressive symptoms (aOR=1.60, 95%CI 1.17-2.18) (74). Likewise, another study conducted by Zhang et.al (75) which was about work-related factors, job satisfaction and depression: An Empirical Study among Internal Migrants in China, in this study highlighted that type of work such as clerical/technical/managerial, government institutions staff,

compulsory overtime work, and job satisfaction were all significantly associated with depression among migrants (75). Similarly, the study conducted by Organista et.al (76) reported that poor working conditions such as working hours and salary were associated with higher level of depression (76).

In summary, the high possibility of depressive is strongly linked to the worked related factors in diverse population due to unsatisfactory jobs, long working hours, work-related stress, low wages and unfair treatment in the workplace. Therefore, my study aims to find out specific stressors which mediated to depressive symptoms.

2.8.11 Health Insurance Status

Htay et al., 2020 studied a cross-sectional survey among 192 Myanmar migrant workers, in this study found that the having health insurance is a protective factor of getting depression in Malaysia (8). Similarly, another cross-sectional study conducted by Sikhiwat et al (58) among 431 participants of cross-border migrants in Thailand which also mentioned that the role of health insurance played in protective role of depressive symptoms (58).

According to relevant literature review, health insurance status is important in determining access to health care services, which directly impacts the prevalence and management of depressive symptoms among Myanmar migrant workers. Without adequate coverage, many migrants face financial barriers to seeking professional mental health services, leading to untreated or worsening conditions. Therefore, this study wants to highlight the association between health insurance status and depressive symptoms.

2.8.12 Health-seeking behaviors

Health-seeking behaviors play an essential role in determining of mental health outcomes, particularly depressive symptoms among migrant workers. A study conducted by Lam and Johnston 2015 among 1528 migrant workers in Shenzhen reported that poor-health seeking behaviors is strongly associated with higher depressive symptoms (aOR = 3.34; CI = 1.28, 8.71) (77) . Similarly, Fukuda et al.2025 studied about depression among Vietnamese migrant workers in Japan reported that low intention to seek professional help for depression due to stigma, cost concerns, and limited trust in mental health services, contributing to depressive symptoms (78).

In conclusion, the previous research reported that limited or inappropriate health-seeking behaviors are associated with a higher risk of depression among migrant workers. Therefore, understanding of these factors is important for implementing effective, culturally appropriate intervention programs to address the significant barriers faced by migrant populations.

2.8.13 Underlying diseases

Research showed that migrant workers with underlying medical conditions are at a higher risk of developing depression. A systemic review and meta-analysis among 44,365 migrant workers across 17 countries examining the prevalence of depression and anxiety among migrant workers highlighted that migrant workers with pre-existing health problems were more susceptible to depression and anxiety (79). Additionally, a cross-sectional survey conducted by Aung et al. 2019 among Myanmar migrant workers in Chiang Mai reported that having underlying chronic diseases were significantly associated with depression (aOR=2.19; 95%CI:1.10-4.39) (80). Moreover, a population-based study among 1,720 adults in Brazil by Boing et al (81) which reported that the prevalence of depression was 1.44 times (95%CI 1.09-1.92) higher among those reporting one chronic disease and 2.25 times higher among those reporting two or more diseases than among those with no diseases (81). Similarly, a study conducted in Chiang Mai among migrant sex workers observed that history of having sexually transmitted infections (aOR = 2.26, 95 % CI 1.12–4.60, $p = 0.024$) were associated with higher risk of depression (82).

Based on the above research literature review, this factor is vital in unmodifiable predicting depressive symptoms among adolescents. Nevertheless, it is essential to address evidence of divergent arguments between context and underlying diseases on depressive symptoms. This information will guide policy implementation among specific group and another intervention program.

2.8.14 Family history of mental health illness

Research showed that migrant workers with having family history of mental health illness are at a higher risk of developing depression. A systemic review and meta-analysis among 44,365 migrant workers across 17 countries examining the prevalence of depression and anxiety among migrant workers highlighted that migrant workers

with history of mental health illness were more susceptible to depression and anxiety (22).

In conclusion, a genetic predisposition to depression is true to some extent but cannot conclude to its development. Thus, genetics may play a role in depressive symptoms as an unmodifiable determinant. Therefore, this study can address evidence of the effect of genetic/family history of mental health illness and depressive symptoms among Myanmar migrant workers.

2.8.15 Alcohol consumption, Smoking, Substance use and Exercise

A cross-sectional study conducted by Sikhiwat et al., 2024 in Thailand among 431 participants of cross-border migrants which mentioned that migrant workers misused alcohol as a wrong coping mechanism of stress (58). Similarly, Ogunbajo et al (83) studied among 70 migrated African gay and bisexual men in the United States which showed that alcohol use and substance use were significantly associated with depression (83). Besides, Zeng et al., 2020 conducted a study among 641 young rural-to-urban migrants in China highlighted that substance use, including alcohol use were positively associated with depression (84). Moreover, Boing et al (81) studied about the association between physical activity and depressive symptoms among patients in treatment of alcohol and substance use disorder found that moderate activity level had fewer depressive symptoms than those with low activity level (81). Similarly, a cross-sectional survey was conducted by Aung et al (26) which studied about the prevalence of depression among 360 Myanmar migrant workers in Chiang Mai Province. This study showed that regular exercise had the lower odds of developing depression than those who didn't regular exercise (26).

Regarding the related literature review, articles found that health related factors such as alcohol consumption, smoking and substance use were associated with the development of depressive symptoms. However, these factors are classified as modifiable, which means that they can manage to lower risk of depressive symptoms. In addition, regular exercise tended to relate with less chance of getting depression. Therefore, it needs to examine these variables and depressive symptoms among Myanmar migrant workers.

2.8.16 Perceived Stress and Anxiety

Win et al (6) studied about impact of stressors on depression among 165 Myanmar migrant workers in Thailand, this study stated that migrant workers faced unique stressors such as workplace stressors, living stressors and security stressors were strongly associated with depressive symptoms with ($\beta = 0.525$), ($\beta = 0.126$), ($\beta = 0.181$) respectively (6). Similarly, Ogunbajo et al., 2019 revealed that people with post-traumatic stress disorder had higher chance of developing major depressive disorder compared to those without anxiety among African migrants in the United States (83). Moreover, Zeng et al (84) studied about the prevalence of depressive symptoms among young rural-to-urban migrants in China found that high stress levels were positively correlated with anxiety and depressive symptoms (84). In addition, another study was conducted by T.T.L. Nguyen & Nguyen (85) which studied about prevalence of anxiety or depression feelings and its associated risk factors among immigrants Korea found that poor health, disabilities and difficulties in accessing medical services were linked to higher prevalence of anxiety and depression. The overall prevalence was 31.77% (85).

According to the relevant literature review, migrant faced many stressors such as work-related stressors, poor health, security stressors and limited health care access which heightened their prevalence of depression and there is a strong association between stress, anxiety and depression. They are strongly correlated to each other. Therefore, this study conducts to compare the relationship between stress, anxiety and depressive symptoms.

2.8.17 Resilience

Roberts et al (86) studied about the level of resilience, anxiety and depression among 255 nurses working in respiratory clinical areas in UK during COVID-19 which reported that higher level of resilience had a negative correlation with depressive symptoms (Pearson correlation -0.372) (86). Moreover, Kuhne et al (87) conducted a study about the relationship between depression and resilience in 762 young adults during COVID-19 pandemic in Brazil confirmed that there was a significant negative correlation ($r = -0.523$) between level of resilience and depression (87).

In summary, studies highlighted that resilience plays a protective role of developing depression in diverse population. Higher resilience indicated the lower level

of depressive symptoms, and it is also considered as modifiable factor which can be promoted. Therefore, resilience is needed to test as predictor of depressive symptoms in this study.

2.8.18 Violence

A study by Linn et al (88) among 378 Myanmar migrant women in Central Thailand about violence against and its effects on mental health and quality of life which reported that the violence exposure had significant effects on mental health (direct effect: $\beta = 0.53$ and total effect: $\beta = 0.54$ (88). In addition, Patel et al (89) conducted a cross-sectional study about relationship between mobility, violence and major depression among 2400 female sex workers in Southern India reported that individual who had the experience of any form of violence within 1 year had 6.1 times higher chances of getting depression (95%CI 4.4-8.6) compared with those who had not (89). Moreover, Salhi et al (7) studied about the relationship of pre-and post-resettlement violence exposure to mental health among 383 Somalis refugees in the US and Canada which mentioned that the individuals who had experience of violence during past year had the significant association with depression $\beta = 0.39$, (95% CI 0.17-0.62) (7).

In conclusion, the association of having exposure of violence and depression among migrants is a significant concern and many studies reported that the impact of having experience of violence on depression among these vulnerable population. Understanding how violence experiences contribute to depressive symptoms is important for developing effective prevention and intervention for Migrant workers. Thus, this study aims to study the relationship between violence experiences and depressive symptoms among Myanmar migrant workers in Chiang Rai Province.

2.8.19 Perceived social support

Asri et al (54) carried out a cross-sectional study among migrant workers during Covid-19 in South Korea, this study mentioned that the migrant workers who did not receive any relief funds and social support from community during the COVID-19 pandemic were 1.9 times (95% CI: 1.109-3.351) more likely to suffer from depression than the migrants who received social support (54). Similarly, another study by Yang et al (56) reported that the prevalence of depression among rural-to-urban migrant workers was 28% in 43,884 respondents. This study revealed that low social support

was strongly associated with depressive symptoms (56). A systemic review and meta-analysis study of mental health of among 44,365 migrant workers across 17 countries indicated that limited social support had the higher odds of getting depression (22). Sultana et al., 2025 conducted a study about the mental health and associated factors among 360 Bangladeshi migrants in Thailand which highlighted that low social support from family, friend and significant others was consistently associated with increased risk of adverse mental outcomes like depression (24).

According to related literature review, the role social support is crucial in mitigation of depressive symptoms. Getting high social support consistently show that low chance of getting depression. In fact, role of social support is regarded as modifiable factor which can be promoted. Therefore, role of social support is needed to test as a predictor of depressive symptoms in this study.

A review of relevant literature on depressive symptoms of Myanmar migrant workers has shown that several existing theories explain the development of depressive symptoms, such as biopsychosocial theory. The review thus has helped enhance knowledge on the causes, signs and symptoms, diagnoses, assessment, and determinant factors of depressive symptoms. When migrant workers suffer from depressive symptoms, they, as well as their families and society at large, will be affected. Moreover, existing research highlights that studying depressive symptoms among migrant workers is crucial for public health, social stability, and economic development.

As mentioned above, migrant workers often face multiple stressors, poor working conditions and legal insecurities, social isolation, which significantly increase the risk of developing depressive symptoms. However, there is not much research on depressive symptoms in border regions like Chiang Rai Province. While existing studies have focused on socio-demographic factors, work-related conditions, duration of residence, and health-related aspects, primarily in urban areas. There remains a gap in research on psychological and social determinants in border regions. This study explores psychological factors such as violence, perceived stress, anxiety, and resilience and social factors such as the acculturation role of social support. Understanding the prevalence, causes, and impacts of depressive symptoms allows policymakers and healthcare providers to design effective interventions that improve

the well-being of migrant workers. Moreover, this research on migrant mental health can provide evidence-based information, ensuring that migrant workers receive adequate mental health support, workplace protections, and social services.



CHAPTER 3

MATERIALS AND METHODS

This chapter outlines the research design, study setting, study population, sample size, research instruments and their development, procedures for testing the validity and reliability of the instruments, data collection process, data analysis methods, and ethical considerations.

3.1 Study Design

This research was applied a community-based cross-sectional study to identify the prevalence of depressive symptoms and its determinants among Myanmar migrant workers in Chiang Rai Province, Thailand.

3.2 Study Area

This study was conducted in Mueang Chiang Rai and Mae-Sai district within Chiang Rai Province, located in the northern region of Thailand.

3.3 Study Population

The target population was Myanmar migrant workers aged 18 years and above both male and female who are residing in Chiang Rai Province at least 6months.

3.4 Inclusion and Exclusion Criteria

Inclusion criteria

The participants included Myanmar migrant workers aged 18 years and above, including both males and females, who had been residing in Chiang Rai Province for

at least six months. Participants were required to be able to read and write in the Myanmar language and be willing to participate in this study.

Exclusion criteria

Participants with serious physical disabilities and those who did not provide consent to participate were excluded from this study.

3.4 Sample Size Estimation

The estimated sample size was calculated from estimating an infinite population formula (90), considering a prevalence of depression among Myanmar migrant workers in Thailand as 47.9% reference from a previous study of Win et al (6).

$$n = \frac{z_{1-\alpha/2}^2 P(1-P)}{d^2}$$

when n = Estimated sample size

$Z_{1-\alpha/2}$ = 1.96 (value from normal distribution with the confident interval 95% CI)

P = Expected proportion in population based on previous studies which prevalence of depression among Myanmar migrants in Thailand was 47.9% (6) .

d^2 = allowable error or precision = 0.05

Instead of the formula $n = \frac{(1.96)(1.96)(0.48)(1-0.48)}{(0.05)(0.05)}$

= 384

Therefore, the minimum sample size was 384 persons was required for this study but considering potential incomplete responses and withdrawals from the study, an additional 10.0% was added. Thus, we aimed to recruit approximately 425 participants.

3.5 Sampling Techniques

In this study, a multi-stage sampling methods was employed to make sure for getting representative sample among Myanmar migrant workers from Chiang Rai Province. Stage 1: Selection of study areas; the two districts, Mae Sai and Mueang, were purposively selected for their high population density and for representing hard-to-reach populations (5) . Stage 2: Selection of communities; communities within each district were then selected using simple random sampling. The selected communities were classified into large and small categories: those with ≥ 200 residents were classified as large, and those with < 200 residents were defined as small, to ensure representation of different community sizes. Four communities from each district (eight in total) were randomly selected from 19 eligible communities. If a selected community declined participation, a replacement community was randomly chosen. Stage 3: Selection of participants; a total of 425 participants were proportionately allocated across communities based on population size. After proportional-to-size selection, participants who met the study's inclusion criteria were invited to participate using convenience sampling. Convenience sampling was used at the final stage due to the hidden and mobile nature of the migrant population, lack of a complete sampling frame, and concerns regarding participants' legal status.

Table 3.1 Myanmar Communities with Estimated Population in Mueang Chiang Rai and Mae Sai Districts

Myanmar Communities with Estimated Population	
Mueang Chiang Rai District	Mae Sai District
MFU hospital Camp (200)	Ko Sai (250)
Ban Du (200)	Mai Lung Khon (250)
Bab Phlu Thong (100)	Mae Sai Mittraphap (250)
Doi Sa Ken (100)	Pa Muead (100)
Rai Boon Rod (Singha Park) (200)	Chumchon Ban Chong (100)
Api Square (100)	Doi Ngam (300)
Hau Pla Kang (150)	
Den Ha (30)	

Table 3.1 (continued)

Myanmar Communities with Estimated Population	
Mueang Chiang Rai District	Mae Sai District
San Khong (30)	
Koh Loy (100)	
Ta Lard Mae Kron (50)	
Ta Lard Pa Ko (50)	
Thai Samut (100)	
Source Min (91)	

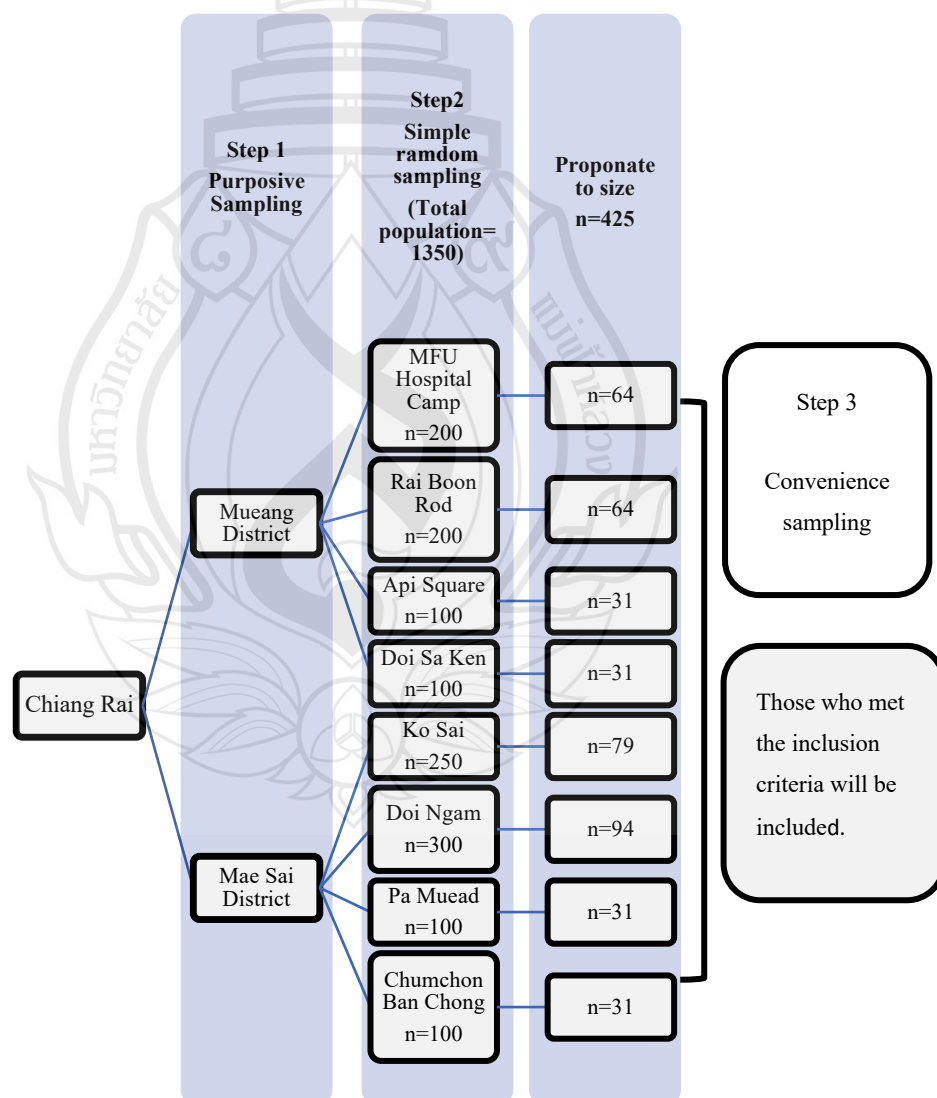


Figure 3.1 Diagram of sampling technique

3.7 Research Instruments

The research instruments for this study were constructed from various literature review and related research which are structured standard questionnaires and assessment consisted of 8 parts as follows:

Part 1: General demographic: This part consisted of the general characteristics of participants. To collect the data on parameters of Age, sex, ethnicity, marital status, role in the family, monthly income, legal status, education background, duration of stay, health insurance status, worked-related factors such as type of occupation, Thai language proficiency skill, living condition status such as place of residence, co-residence status, underlying diseases, family history of mental health illness, alcohol consumption, smoking, substance use and exercise.

Part 2: Depressive symptoms was evaluated by using a standard form for detecting depressive symptoms, the Myanmar version of the Patient Health Questionnaire (PHQ-9). Kroenke et al (92) and Myanmar version of PHQ-9 had a sensitivity of 91.2 %, a specificity of 76.6%al (93). PHQ-9 consisted of 9-items asking about 9 symptoms and feelings during the past two weeks. It comprises nine questions with four respondents on a scale ranging from (not at all 0 points to nearly every day 3 points). The total PHQ-9 score ranges from 0 to 27, with scores categorized as follows: 0–4 indicating no depression, 5–9 mild depression, 10–14 moderate depression, 15–19 moderately severe depression, and 20–27 severe depression. (94). In this study, a PHQ-9 score of ≥ 5 was used as the cut-off point to identify participants with depressive symptoms. This threshold was based on the standard PHQ-9 severity classification (92). The Index of Item-Objective Congruence (IOC) in the current study was 1.0, and Cronbach's alpha coefficient was 0.84.

Part 3: Anxiety was assessed by using the Generalized Anxiety Disorder 7-item self-administered questionnaire (95). GAD-7 consisted of 7 items with 4 Likert scales ranging from 0(not at all) to 3 (almost every day). It had a total range of scores from 0 to 21. In this study, the participant who got a total score 0-4 were categorized as mild, 5-9 as having mild anxiety symptoms, scores 10-14 as moderate anxiety symptoms, and

scores 15-21 as severe anxiety symptoms. The Index of Item-Objective Congruence (IOC) in the present study was 1.0, and Cronbach's alpha coefficient was 0.93.

Part 4: Perceived Stress was measured by using perceived stress scale (PSS) (96). The PSS-10 consisted of 10 self-reported items, rated on a 5-point Likert scale ranging from 0 (Never) to 4 (very often). The total score is ranging from 0-40. In this study, a total score of 0-13 was considered low stress, 14-26 as moderate stress, and 27-40 as high-stress level. The Index of Item-Objective Congruence (IOC) in the current study was 1.0, and Cronbach's alpha coefficient was 0.83.

Part 5: Violence was assessed by using a questionnaire which was modified from the WHO's definition and types of violence (97), and adapted from established frameworks used in violence research and modified to fit the study context among Myanmar migrant workers (98). The questionnaire was constructed based on the four main types of violence, including physical violence, sexual violence, coercive control, and psychological aggression (97). This item consisted of 11 questions with dichotomous responses (1 = yes, 0 = no). The eleven items were summed to create a composite score ranging from 0 to 11 points. Participants who responded "yes" to at least one item were classified as having experienced violence. The Index of Item-Objective Congruence (IOC) in this study was 1.0, and Cronbach's alpha coefficient was 0.92.

Part 6: Resilience was measured by using the Conner-Davison Resilience scale (CD-RISC-10) (99). It is a validated 10-item self-administered scale that consisted of each question with the 5-Liert scale from 0= not true at all to 4= true nearly all the time. The total score ranges from 0-40. The score was categorized as 0-23 as low resilience, 23-29 as moderate resilience, and 30-40 as high resilience (100). The Index of Item-Objective Congruence (IOC) in this study was 1.0, and Cronbach's alpha coefficient was 0.91.

Part 7: Social Support was evaluated by using the Multidimensional Scale of Perceived Social Support (MSPSS) (101). It is a 12-item self-report instrument tool that measures the evaluation of social support from 3 support groups: family (4 items), friends (4 items), and significant others (4 items) (101). The participant rated each item with a 7-Likert scale from 1= very strongly disagree to 7= very strongly agree. The total score of the MSPSS scale provides the level of social support received by participants.

The total score is ranging from 12-84. In this study, the total score was divided into three categories by using by the Best (1997) average score division criteria (102). The calculation as follows:

$$\text{Score range} = \frac{\text{Highest score} - \text{lowest score}}{\text{Number of groups}} = \frac{84 - 12}{3} = 24$$

According to the above calculation, the social support score was divided into 12-36 as low social support, 37-60 as moderate social support, 61-84 as high social support. The Index of Item-Objective Congruence (IOC) in this study was 1.0, and Cronbach's alpha coefficient was 0.94.

3.8 Research Tools Development

3.8.1 Translation Process

The questionnaire development process was firstly in English and then translated into the Myanmar language using the forward-backward method by independent bilingual translators to ensure clarity, accuracy, and cultural appropriateness for Myanmar migrant workers. The items developed were the Perceived Stress Scale, experiences of violence and Conner-Davison Resilience scale (CD-RISC 10).

3.8.2 Content Validity

The content validity of the questionnaire was evaluated and refined by three experts in psychology, family medicine, and public health. The Index of Item-Objective Congruence (IOC) was applied to assess validity. During this process, each item was rated by the experts using three possible scores: “-1” indicating the item was not relevant to the study context, “0” indicating the item was relevant but required revision, and “+1” indicating the item was appropriate and ready for use. Items with scores below 0.5 were removed, those scoring between 0.5 and 0.7 were revised based on expert feedback, and items scoring above 0.7 were retained in the final questionnaire, as presented in Appendix E.

3.8.3 Questionnaire Reliability

The reliability of the Myanmar version of the questionnaire was tested through a pilot study involving 30 Myanmar migrant workers with characteristics similar to the

study population to assess its feasibility, clarity, question order, and reliability. Items with Cronbach's alpha (α) values greater than 0.70 were retained in the final questionnaire, while items scoring between 0.50 and 0.70 were revised prior to inclusion. Overall, all scales demonstrated acceptable internal consistency, with Cronbach's alpha coefficients exceeding 0.70.

3.9 Data Collection Process

After the Ethical Consideration Committee approved the research proposal, the Research Ethics Committee of Mae Fah Lunag University, the data collection was carried out as follows.

The data collection was initiated only after obtaining ethical approval from the Mae Fah Luang University Research Ethics Committee. Participant identification and access were facilitated through coordination with community leaders, migrant worker organizations, and local health service providers. Prior to participation, all selected individuals were provided with detailed information about the study, including its objectives, procedures, and their rights as participants. Written informed consent was obtained from each participant, and only those who signed the consent form were included in the participation. After they signed the consent form, the questionnaires were distributed to the participants. Self-administered questionnaires were used to collect data from participants in safe and private places to ensure their comfort and confidentiality. Due to some items that might be sensitively questioned, participants were allowed to skip answering. The questionnaire's answering times might take approximately 20-30 minutes to complete. If participants have any questions about the questions or aspects of the instruments, they can ask the researcher at any time during the data collection process. The questionnaires were checked for completeness by the researcher.

Following that, the researchers calculated the scores and concluded with a result. Then, the researcher reported the results to participants individually in a safe and private place to ensure confidentiality and uphold ethical standards. In addition, the researcher provided a depression brochure. This brochure included three components:

a depressive symptoms screening questionnaire for future self-assessment, information on depression and self-care strategies, and details of available support services, including community resources, hospitals, and accessible mental health service providers within their district and Chiang Rai Province.

3.10 Data Analysis

All collected data were carefully checked, compiled, coded, entered MS Excel, and then transferred to SPSS (version 18, Chicago, IL) for analysis. The analysis included both descriptive and inferential statistical methods.

3.10.1 Descriptive statistics

Descriptive statistics was performed to describe the characteristics of the participants. Categorical variables were presented as frequencies and percentages, while continuous variables were described as mean $\pm$ standard deviation, median, and interquartile range.

3.10.2 Inferential statistics

Inferential analysis was performed to assess the associations between independent variables and dependent variables. After calculating the PHQ-9 scores, the outcome variable was dichotomized for binary logistic regression analysis. Participants with scores below 5 were categorized as having no depressive symptoms, whereas those with scores of 5 or higher were classified as having depressive symptoms. A cutoff score of ≥ 5 was selected to capture participants experiencing at least mild depressive symptoms, consistent with the standard PHQ-9 severity classification, where scores of 5–9 indicate mild depressive symptoms (103). This lower cutoff was considered appropriate for the present study to enhance the sensitivity of detecting early depressive symptoms among migrant workers and to support public health screening purposes.

1. Univariable logistic regression analysis

Univariable logistic regression analysis was conducted to examine the association between each independent variable and the dichotomized dependent variable (depressive symptoms). Each independent variable was analyzed separately in relation to the dependent variable, as guided by the conceptual framework, to estimate

the odds ratio. The crude odds ratio (cOR) was calculated for each independent variable to assess the strength and direction of the association.

2. Multivariable logistic regression analysis

Multivariable logistic regression analysis was conducted to examine the independent effects of variables associated with depressive symptoms. Variables with a p-value < 0.20 in the univariable analysis were included in the multivariable model. All independent variables were analyzed together with the outcome variable to control for confounding and to determine the independent effect of each factor. A backward elimination method was applied to identify the final set of significant predictors. Statistical significance was set at $p < 0.05$. Multicollinearity was assessed using variance inflation factors (VIF), with all values less than 5 indicating no significant multicollinearity. Model fit was evaluated using the Hosmer–Lemeshow goodness-of-fit test.

3.10 Ethical Consideration

The Human Research Ethical Committee from Mae Fah Luang University (MFU), Thailand No: EC 25111-18: COA: 129/2025: Approval date: 3 July 2025. approved the research proposal before data collection. After approval from the Ethical Committee, the researcher informed the study's objectives, procedures, potential risks, and benefits before data collection. Informed consent was obtained after explaining the study objectives. Participants voluntarily participated in the study. Participants had the right to withdraw from the study at any time without any harm, and the withdrawal had no impact on the participants. To ensure confidentiality, all personal data were securely stored. The study also prioritized minimizing potential psychological distress; participants were informed of mental health support if needed. In addition, participants who were identified as having moderately severe or severe depressive symptoms based on the screening assessment were advised to seek professional mental health support and were referred to appropriate healthcare facilities or mental health services for further evaluation and management. By adhering to these ethical guidelines, this research ensures integrity, fairness, safety, well-being, and respect for participants. All

the study procedures were performed by the relevant guidelines and regulations and within the Declaration of Helsinki of 1975, as revised in 2024 (104).



CHAPTER 4

RESULTS

In this chapter, the findings of this study are presented on data analysis, and interpretation of the results which included the prevalence of depressive symptoms, general characteristics (sociodemographic, biological, psychological, and social factors) of the participants, and as well as the factors associated with and determinants of depressive symptoms among Myanmar migrant workers residing in Chiang Rai Province, Thailand. The results are presented under the following sections,

- 4.1 Prevalence of Depressive Symptoms among Myanmar Migrant Workers
- 4.2 General Characteristics of the Participants
- 4.3 Types of Underlying Diseases
- 4.4 Types of Violence Experienced by Participants
- 4.5 Factors Associated with and Determinants of Depressive Symptoms among Myanmar Migrant Workers: Univariable Analysis
- 4.6 Factors associated with and Determinants of Depressive Symptoms among Myanmar Migrant Workers: Multivariable Analysis

4.1 Prevalence of Depressive Symptoms among Myanmar Migrant Workers (n=425)

A total of 425 Myanmar migrant workers were recruited in this study. The prevalence of depressive symptoms was evaluated by using PHQ-9 assessment, with the cutoff score of 5 or greater were assumed as possible depressive symptoms. As shown in table 4.1, the overall prevalence of depressive symptoms was 37.6% (95% CI:33.20%-42.40%), while 62.40% of participants were recorded as no depressive symptoms. Among those who reported depressive symptoms, 25.9% of respondents experienced mild symptoms, 8.2% reported moderate symptoms, and 3.3% had moderately severe symptoms and the rest 0.2% had severe depressive symptoms (Table 4.1).

Table 4.1 Prevalence of depressive symptoms among Myanmar migrant workers (n=425)

Result	n	%	95% CI
No (0-4 points)	265	62.4	
Yes	160	37.6	33.20%-42.40%
Mild (5-9 points)	110	25.9	
Moderate (10-14 points)	35	8.2	
Moderately severe (15-19 points)	14	3.3	
Severe (20-27 points)	1	0.2	

4.2 General Characteristics of Myanmar Migrant Workers (n=425)

A total of 425 Myanmar migrant workers participated in this study. The mean age of the respondents were 33.72 years (SD±10.28), ranging from 18 to 67 years. More than half of the participants were aged 18-34 years (57.4%), 51.3% were female. Most of the respondents were Myanmar ethnicity (89.6%), followed by Karen (4.0%), Shan (3.1%), and other (2.6%). Regarding marital status, the majority were married (71.3%), while 24% were single. More than one-third (37.6%) were head of the family. Over half of the participants (59.1%) earned more than 9,000 baht per month, the medium monthly income was 9,000 TBH (IQR=5,000-10,000); Min=1,500; Max=30,000).

Most of the participants were documented migrants (90.1%). Educational attainment showed that 55.3% had secondary education, while 17.2% went to college or University. The mean duration of stay in Thailand was 3.5 years (SD±6.67), ranging from 6 months to 30 years. Roughly 56.9% reported having health insurance. 44.9% visited for care from hospitals, 27.3% received care from community support nearest clinic, and 21.9% from pharmacies, while 4.9% did not seek any care. Regarding employment, the largest proportion worked in construction (40.2%), followed by service sectors (24.5%). Thai language proficiency was generally low: 79.8% could not read, 84.7% could not write, and 37.2% could not speak Thai and only 2-8% were fluent in across all four skills. However, 63.8% had basic listening skills, and 56.2% could speak at a basic level. More than half of the participants were from semi-urban area

(57.2%). Most respondents lived in rented dormitories (51.5%) or employer-provided housing (45.9%), and 72.0% lived with family members.

Around 22.4% of participants reported having underlying diseases such as hypertension, diabetes mellitus, heart diseases and renal diseases. Only 3.8% of respondent had the family history of mental health illness. Regarding health behaviors, about 18.1% were current smokers, 74.4% were non-smoker, 17.4% were current drinkers, and 70.4% were never consumed alcohol. Only 0.5% were current substance user. Moreover, only 34.1% showed that having regular physical exercise.

Regarding to the anxiety level of the respondents, 19.8% of respondents had mild anxiety, 11.5% experienced moderate anxiety, and 7.5% had severe anxiety. Perceived stress level of the participants showed that 24.0% of the participants had low stress level, followed by 73.9% experienced moderate stress, and 2.1% had high stress level. About 34.6% of the participants had experienced some form of violence. In terms of resilience level, 43.8% reported low resilience, 22.1% had moderate resilience, and 34.1% showed high resilience. More than half of the participants (58.6%) reported high social support, while 31.8% had moderate social support, and 9.6% had low social support level (Table 4.2).

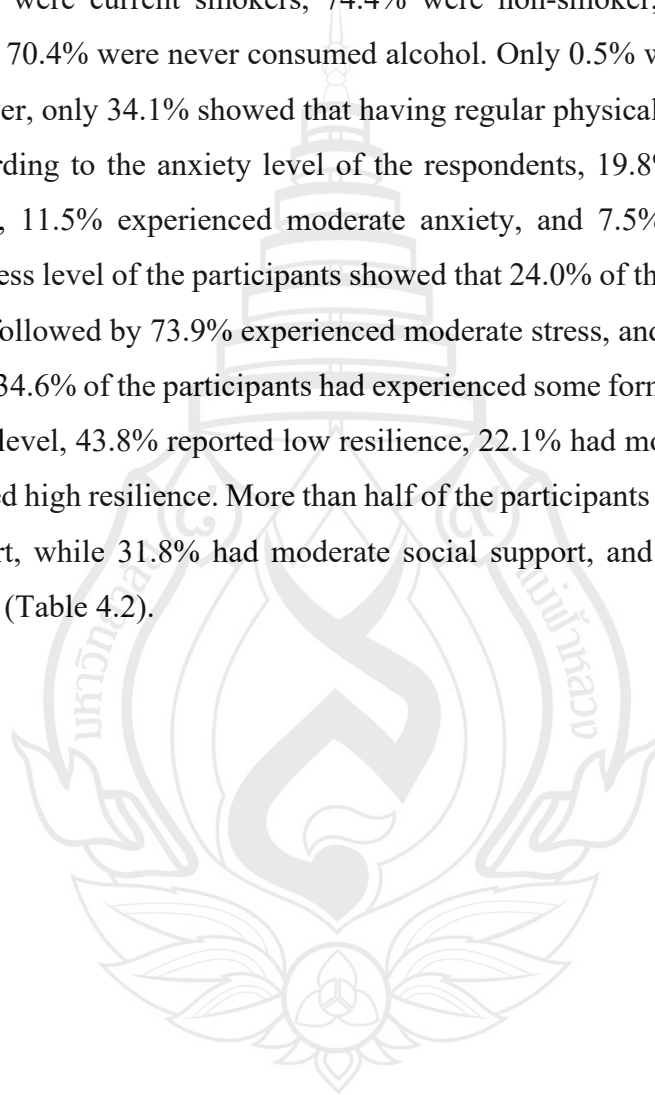


Table 4.2 General Characteristics of Myanmar Migrant Workers (n=425)

General characteristics	n	%
Age (years)		
18-34	244	57.4
35-49	144	33.9
≥50	37	8.7
Mean age=33.72; SD±10.28, Min=18, Max= 67		
Gender		
Male	207	48.7
Female	218	51.3
Ethnicity		
Myanmar	381	89.6
Karen	17	4.0
Shan	13	3.1
Mon	3	0.7
Other	11	2.6
Marital status		
Single	102	24.0
Married	303	71.3
Separate, divorced, or widowed	20	4.7
Role in the family		
Head of the family	160	37.6
Family member	265	62.4
Monthly income Thai Baht		
<9000 baht	185	43.5
≥9000 baht	240	56.5
Median=9000; IQR= (5,000,10,000), Min=1,500; Max=30,000		
Legal status		
Undocumented	42	9.9
Documented	383	90.1

Table 4.2 (continued)

General characteristics	n	%
Educational background		
No formal education	13	3.1
Primary school	104	24.5
Secondary school	235	55.3
University and above	73	17.2
Duration of stay in Thailand (years)		
≤ 3.5	213	50.1
$> 3.5-15$	163	38.4
> 15	49	11.5
Medium=3.50; IQR= (18,120); Min=0.5, Max=30		
Health insurance status		
No insurance	183	43.1
Yes		
Social Security Scheme (SSS)	143	33.6
Migrant Health Insurance Scheme (MHIS)	80	18.8
M-Fund	19	4.5
Health seeking behaviors		
Do not seek care	21	4.9
Traditional healer	4	0.9
Hospital	191	44.9
Pharmacy	93	21.9
Community-based health support clinic	116	27.3
Type of occupation		
Factory workers	90	21.2
Agriculture workers	39	9.2
Service workers	104	24.5
Construction workers	171	40.2
Others	21	4.9

Table 4.2 (continued)

General characteristics	n	%
Thai language proficiency		
Reading		
Fluent	10	2.4
Basic	76	17.9
None	339	79.8
Listening		
Fluent	33	7.8
Basic	271	63.8
None	121	28.5
Writing		
Fluent	10	2.4
Basic	55	12.9
None	360	84.7
Speaking		
Fluent	28	6.6
Basic	239	56.2
None	158	37.2
Area of residence		
Urban	182	42.8
Semi-urban	243	57.2
Place of residence		
Rent dormitory	219	51.5
Employer provided house	195	45.9
Shared housing with other families	11	2.6
Living with family		
Yes	306	72.0
No	119	28.0

Table 4.2 (continued)

General characteristics	n	%
Underlying diseases		
No	330	77.6
Yes	95	22.4
Family history of mental health illness		
Yes	16	3.8
Uncertain	17	4.0
No	392	92.2
Smoking		
Current smoker	77	18.1
Ex-smoker	32	7.5
Never	316	74.4
Alcohol consumption		
Current drinker	74	17.4
Ex-drinker	52	12.2
Never	299	70.4
Substance use		
Current user	2	0.5
Ex-user	3	0.7
Never	420	98.8
Exercise		
Yes	145	34.1
No	280	65.9
Anxiety		
No anxiety	260	61.2
Mild anxiety	84	19.8
Moderate anxiety	49	11.5
Severe anxiety	32	7.5

Table 4.2 (continued)

General characteristics	n	%
Stress		
Low	102	24.0
Moderate	314	73.9
High	9	2.1
Violence experience		
No	278	65.4
Yes	147	34.6
Resilience		
Low	186	43.8
Moderate	94	22.1
High	145	34.1
Social support		
Low	41	9.6
Moderate	135	31.8
High	249	58.6

4.3 Types of Underlying Diseases among Myanmar Migrant Workers

A range of underlying diseases was reported among Myanmar migrant workers. Hypertension was the most prevalent condition (7.1%), followed by diabetes mellitus and gastritis (2.6% each). Other reported conditions included heart diseases (1.9%), allergy (1.6%), arthritis, back pain, migraine, and renal diseases (1.4% each). Asthma was reported by a smaller proportion of participants (0.7%), while cancer was the least common condition (0.2%) (Table 4.3).

Table 4.3 Types of Underlying Diseases among Myanmar migrant workers (n=95)

Underlying Diseases	n	%
Allergy	7	7.4
Arthritis	6	6.3
Asthma	3	3.1
Back pain	6	6.3
Cancer	1	1.0
Diabetes milieus	11	11.6
Hypertension	30	31.6
Gastritis	11	11.6
Heart diseases	8	8.4
Migraine	6	6.3
Renal diseases	6	6.3

4.4 Types of Violence Experienced by Participants

Participants reported various forms of violence, with emotional violence being the most common. Being addressed with anger was the most frequently reported experience (25.9%), followed by being insulted or addressed rudely (20.5%). Other forms of violence included being forced to buy food or work (7.5%), being kicked out of the house (6.6%), and being pushed, pulled, scratched, or having items thrown (6.6%). Additionally, 6.4% reported being told that someone would kill himself/herself, while 6.1% were forced to ask for money or borrow items. Physical violence, such as being slapped, hit, kicked, or strangled, was reported by 4.7% of participants, and 4.5% were forced to use substances. Threats with weapons were reported by 4.0%, and sexual abuse was the least reported form of violence (2.6%) (Table 4.4).

Table 4.4 Types of Violence Experienced by Participants (n=425)

Types of violence	n	%
Being kicked out of the house.	28	6.6
Being pushed, pulled, scratched, or having items thrown.	28	6.6
Being slapped, hit, kicked, or strangled.	20	4.7
Being threatened with weapons	17	4.0
Being forced to drink alcohol, smoke, or use substances.	19	4.5
Being insulted or addressed rudely.	87	20.5
Being addressed with anger.	110	25.9
Being told someone would kill himself/herself.	27	6.4
Being forced to buy food/drink or forced to work.	32	7.5
Being forced to ask for money or borrow items.	26	6.1
Experiencing sexual abuse	11	2.6

Note Multiple responses were allowed; therefore, total frequencies exceed the number of participants who reported violence.

4.5 Univariable Analysis to Identify the Factors Associated with Depressive Symptoms among Myanmar Migrant Workers using Simple Logistic Regression (n=425)

In univariable regression analysis, 13 variables were associated with depressive symptoms; gender, ethnicity, role in the family, legal status, health insurance status, health seeking behavior, Thai language listening skill and speaking, underlying disease, anxiety, perceived stress, violence experiences, and perceived social support (Table 4.5).

Table 4.5 Univariable analysis to identify the factors associated with depressive symptoms among Myanmar migrant workers using simple logistic regression (n=425)

Variables	Depressive symptoms		Univariable analysis		
	Yes n (%) (n=160)	No n (%) (n=265)	cOR	95% CI	p-value
Age (years)					
18-34	91 (37.3)	153 (62.7)	1.00		
35-49	55 (38.2)	89 (61.8)	1.04	0.68-1.59	0.860
≥50	14 (37.8)	23 (62.2)	1.02	0.50-2.09	0.949
Gender					
Male	68 (32.9)	139 (67.1)	1.00		
Female	92 (42.2)	126 (57.8)	1.49	1.01-2.22	0.047*
Ethnicity					
Myanmar	142(37.30)	239(62.7)	1.00	0.61-2.20	0.637
Non-Myanmar	18 (40.90)	26 (59.1)	1.17		
Marital status					
Married	112(37.0)	191(63.0)	1.00		
Single	38(37.3)	64(62.7)	1.013	0.63-0.61	0.958
Separate, divorced, or widowed	10(50.0)	10(50.0)	1.705	0.48-6.02	0.407
Role in the family					
Head of the family	49 (30.6)	111 (69.4)	1.00		
Member	111 (41.9)	154 (58.1)	1.63	1.07-2.47	<0.021*
Monthly Income					
<9000 baht	67 (36.2)	118 (63.8)	1.00		
≥9000 baht	93 (38.8)	147 (61.3)	1.11	0.74-1.66	0.593

Table 4.5 (continued)

Variables	Depressive symptoms		Univariable analysis		
	Yes n (%) (n=160)	No n (%) (n=265)	cOR	95% CI	p-value
Legal status					
Documented	136 (35.5)	247 (64.5)	1.00		
Undocumented	24 (57.1)	18 (42.9)	2.42	1.27-4.62	0.007*
Health insurance					
Yes	79 (32.6)	163 (67.4)	1.00		
No	81 (44.3)	102 (55.7)	1.63	1.10-2.44	0.015*
Education level					
No formal education	7(53.8)	6(46.2)	1.00		
Primary school	42(40.4)	62(59.6)	0.58	0.18-1.85	0.358
Secondary school	78(33.2)	157(66.8)	0.42	0.14-1.31	0.136
College or University	33(45.2)	40(54.8)	0.71	0.22-2.31	0.566
Staying duration in Thailand (years)					
≤3.5 years	91 (42.7)	122 (57.3)	1.87	0.95-3.67	0.071
>3.5-15 years	55 (33.7)	108 (66.3)	1.27	0.63-2.56	0.499
>15 years	14 (28.6)	35 (71.4)	1.00		
Health seeking behaviors					
Yes (formal care)	102(33.2)	205(66.8)	1.00		
No (non-formal care)	58 (49.2)	60(50.8)	1.94	1.26-2.99	0.003*
Type of Jobs					
Factory workers	25 (27.8)	65 (72.2)	0.42	0.16-1.12	0.083
Agriculture	12 (30.8)	27 (69.2)	0.49	0.16-1.45	0.200
Service industries	34 (32.7)	70 (67.3)	0.53	0.21-1.38	0.196
Construction workers	79 (46.2)	92 (53.8)	0.95	0.38-2.34	0.902
Others	10 (47.6)	11 (52.4)	1.00		

Table 4.5 (continued)

Variables	Depressive symptoms		Univariable analysis		
	Yes n (%) (n=160)	No n (%) (n=265)	cOR	95% CI	p-value
Thai language proficiency					
Reading					
Basic & Fluent	37(43.0)	49 (57.0)	1.00		
None	123 (36.3)	216 (63.7)	0.75	0.46-1.22	0.250
Listening					
Basic & Fluent	103 (33.9)	201(66.1)	1.00		
None	57 (47.1)	64 (52.9)	1.74	1.13-2.67	0.012*
Writing					
Basic & Fluent	27(41.5)	38 (58.5)	1.00		
None	133(36.9)	227 (63.1)	0.825	0.48-1.41	0.482
Speaking					
Basic & Fluent	88 (33.0)	179 (67.0)	1.00		
None	72 (45.6)	86 (54.4)	1.70	1.14-2.56	0.010*
Area of residence					
Urban	64(35.2)	118(64.8)	1.00		
Semi-urban	96(39.5)	147(60.5)	1.20	0.81-1.79	0.361
Place of residence					
Rent dormitory	86 (39.3)	133 (60.7)	1.00		
Employer provided	67 (34.4)	128 (65.6)	0.81	0.54-1.20	0.302
house					
Shared housing with	7 (63.6)	4 (36.4)	2.70	0.77-9.52	0.121
other families					
Living with family					
No	41 (34.5)	78 (65.5)	1.00		
Yes	119 (38.9)	187 (61.1)	1.21	0.77-1.88	0.397

Table 4.5 (continued)

Variables	Depressive symptoms		Univariable analysis		
	Yes n (%) (n=160)	No n (%) (n=265)	cOR	95% CI	p-value
Underlying diseases					
No	107 (32.4)	223 (67.6)	1.00		
Yes	53 (55.8)	42 (44.2)	2.63	1.65-4.19	<0.001*
Family history of mental illness					
Yes	7 (43.8)	9 (56.3)	1.00		
No/ Uncertain	153 (37.4)	256 (62.6)	0.77	0.28-2.11	0.608
Smoking					
No	116 (36.7)	200 (63.3)	1.00		
Yes	44(40.4)	65 (59.6)	1.17	0.75-1.82	0.497
Alcohol consumption					
No	114 (38.1)	185 (61.9)	1.00		
Yes	46 (36.5)	80 (63.5)	0.93	0.61-1.44	0.753
Substance use					
No	157 (37.4)	263(62.6)	1.00		
Yes	3 (60.0)	2 (40.0)	2.51	0.42-15.20	0.316
Exercise					
No	114 (40.7)	166 (59.3)	1.00		
Yes	46 (31.7)	99 (68.3)	0.68	0.44-1.03	0.070
Anxiety					
No	53(20.4)	207(79.6)	1.00		
Yes	107(64.8)	58(35.2)	7.20	4.64-11.18	<0.001*
Stress					
Low	23(22.5)	79(77.5)	1.00		
Moderate-to-High	137(42.4)	186(57.6)	2.53	1.51-4.23	<0.001*

Table 4.5 (continued)

Variables	Depressive symptoms		Univariable analysis		
	Yes n (%) (n=160)	No n (%) (n=265)	cOR	95% CI	p-value
Violence experience					
No	73 (26.3)	205 (73.7)	1.00		
Yes	87 (59.2)	60 (40.8)	4.07	2.67-6.22	<0.001*
Resilience					
Moderate-to-high	81(33.9)	158(66.1)	1.00		
Low	79(42.5)	107(57.5)	1.44	0.97-2.13	0.071
Social support					
High	72(28.9)	177(71.1)	1.00		
Low-to-moderate	88(50.0)	88(50.0)	2.45	1.64-3.67	<0.001*

4.6 Multivariable Analysis to Identify Determinants of Depressive Symptoms among Myanmar Migrant Workers (n=425)

In multiple logistic regression model, seven variables were found to be associated with depressive symptoms: role in the family, legal status, underlying diseases, health seeking behaviors, perceived stress, violence experiences, and perceived social support. Participants who were family members rather than head of the family were 1.62 times higher chance of getting depressive symptoms (aOR=1.62; 95%CI: 1.02-2.58). Migrant workers who lived as undocumented status had 2.32 times higher odds of getting depressive symptoms than those who had documented legal status (aOR=2.32; 95%CI: 1.09-4.91). Participants with underlying diseases had 2.53 times higher odds of depressive symptoms compared with those without underlying diseases (aOR=2.53; 95%CI: 1.51-4.25). Participants who did not seek care at hospitals or formal health facilities were 1.82 times more likely to have depressive symptoms compared with those who seek care at formal health center (aOR=1.82; 95%CI: 1.12-2.97). Similarly, participants with moderate to high stress level were 1.85 times higher

chance of getting depressive symptoms than those with low stress level (aOR=1.85; 95%CI:1.06-3.25). Participants with history of having violence experience were 3.16 times more possible to get depressive symptoms compared with those who did not have prior violence experience (aOR=3.16; 95%CI:2.00-4.99). Moreover, participants with low social support were 1.86 times higher chance of experiencing depressive symptoms rather than those who received moderate to high social support (aOR=1.86; 95%CI:1.18-2.92) (Table 4.6).



Table 4.6 Multivariable Analysis to Identify Determinants of Depressive Symptoms among Myanmar Migrant Workers (n=425)

Variables	Multivariable analysis		
	aOR	95%CI	p-value
Role in the family			
Head of the family	1.00		
Member	1.62	1.02-2.58	0.042*
Legal status			
Documented	1.00		
Undocumented	2.32	1.09-4.91	0.027*
Health seeking behaviors			
Yes (formal care)	1.00		
No (non-formal care)	1.82	1.12-2.97	0.016*
Underlying diseases			
No	1.00		
Yes	2.53	1.51-4.25	<0.001*
Stress			
Low	1.00		
Moderate-to-high	1.85	1.06-3.25	0.030*
Violence experience			
No	1.00		
Yes	3.16	2.00-4.99	<0.001*
Social support			
High	1.00		
Low-to-moderate	1.86	1.18-2.92	0.007*

Note *Significant at p-value <0.05

CHAPTER 5

DISCUSSION AND CONCLUSION

This chapter presents the discussion, conclusion and recommendation. This study aimed to estimate the prevalence of depressive symptoms and to identify the determinants of depressive symptoms among Myanmar migrant workers in Chiang Rai Province, Thailand.

5.1 Discussion of Prevalence of Depressive Symptoms among Migrant Workers

The present study revealed that 37.6% of Myanmar migrant workers in Chiang Rai Province experienced depressive symptoms, as evaluated by using the PHQ-9. Among these, 25.9% had mild symptoms, 8.2% had moderate symptoms, 3.3% had moderately severe symptoms, and 0.2% had the severe symptoms. These findings indicate that more than one-third of the migrant worker population may be at risk of depression and require further specific mental health support. This proportion is consistent with the global pooled estimate of 38.99% reported in a systematic review and meta-analysis conducted across 17 countries by Hasan et al. (22). Similarly, a recent meta-analytic review focusing on ASEAN migrant workers reported a pooled rate of 34.7% (105), which closely aligns with the present findings.

National evidence from Thailand indicated a similar prevalence of depressive symptoms among Bangladesh migrants was 35.8% (24). Moreover, studies conducted in Southern Thailand among Myanmar migrant workers reported that the prevalence rates of depressive symptoms were 47.9% (6) and 42.7%, respectively (9). Such variations in depressive symptom rates across settings may be attributed to differences in study design, sample characteristics, assessment tools, and cut-off criteria used to define depressive symptoms. Additionally, contextual factors such as socioeconomic conditions, cultural background, and legal status may influence mental health outcomes. In Chiang Rai Province, Myanmar migrant workers are largely employed in

low-skilled and labor-intensive sectors characterized by low wages, job insecurity, and long working hours. Many also experience overcrowded housing, legal uncertainty regarding migration status, and fear of arrest, which may contribute to persistent stress and emotional distress (6,9,29,91). Limited access to mental health services, inadequate psychosocial support, and ongoing political instability in Myanmar may further increase vulnerability to depressive symptoms in this border setting. The results underscore the importance of continuous mental health surveillance and the urgent need for culturally sensitive, context-specific mental health screening and intervention programs to improve the psychological well-being of migrant workers in border areas of northern Thailand.

5.2 Discussion of Findings

Firstly, 29 variables in total were tested to identify the association with depressive symptoms among Myanmar migrant workers by univariable analysis in the binary logistic regression model with crude odds ratio and p-value <0.2 at 95% confidence interval. In the univariable analysis, 12 variables (gender, role in the family, legal status, health insurance status, health seeking behavior, Thai language listening skill, underlying disease, anxiety, perceived stress, violence experiences, resilience and perceived social support) were found to be associated with depressive symptoms among Myanmar migrant workers.

Next, 12 variables were adjusted in the binary logistic regression model for multivariable analysis to identify the determinants of depressive symptoms where only seven variables such as role in the family, legal status, underlying diseases, health seeking behaviors, perceived stress, violence experiences and perceived social support were examined as the significantly associated independent variables of depressive symptoms among Myanmar migrant workers with adjusted odds ratio and p-value <0.5 at 95% confidence interval.

5.2.1 Role in the family

In our study, non-head family members were more likely to experience depressive symptoms than heads of household. This finding contrasts with and a meta-

analysis across 17 countries (22) and previous studies among Myanmar migrant workers in Thailand (9) which reported higher depression among household heads due to financial pressure and family responsibilities. The opposite finding in Chiang Rai may reflect the vulnerable socioeconomic position of non-head members in this border setting. In this border-area, Chiang Rai Province, non-head family members often occupy more vulnerable positions within both the household and the labor market. They are more likely to have unstable or informal employment, lower and irregular income, reduced autonomy, and limited decision-making power within the family. Many rely on the head of household for financial security, legal arrangements, and access to services, which may heighten feelings of dependency, insecurity, reduced autonomy and lower perceived control over daily life. Reduced control over resources is linked to increased psychological distress through insecurity and lower self-efficacy (106,107). When individuals feel they have little influence over their lives, they may develop feelings of helplessness, which can contribute to developing depressive symptoms.

5.2.2. Legal status

The present study observed that migrant workers with undocumented legal status were more likely to developed depressive symptoms than migrant workers with secure documented status. This finding is consistent with studies in Sweden(108) and in the Switzerland (109), and South Korea (70), which reported that undocumented migrant workers had greater chanes of having depressive symptoms than migrant workers holding secure legal status. Similary, a study conducted by Win et al among Myanmar migrant workers in Southern Thailand confirmed that poor legal status was intricately linked to high levels of depression (6). Legal status functions as a structural determinant shaping access to employment protection, healthcare, and social security(110). Undocumented migrants are often excluded from formal labor rights, social insurance schemes, and legal resource in cases of exploitation. Such institutional exclusion limits stable employment opportunities, restricts upward mobility, and constrains long-term life planning. In the border context of Chiang Rai Province, where informal employment and cross-border mobility are common, undocumented status may intensify economic insecurity and social marginalization. Restricted access to healthcare, unstable work conditions, and weakened social protection may gradually erode psychological stability (6,70). In the long term, these cumulative structural

disadvantages can overwhelm coping capacities, increasing vulnerability to depressive symptoms.

5.2.3 Underlying diseases

The current study demonstrated that migrant workers with underlying diseases had higher chances of experiencing depressive symptoms compared with those who without underlying diseases conditions. This finding aligns with a systematic review and meta-analysis across 17 countries, which reported higher risks of depression and anxiety among migrant workers with pre-existing medical conditions (80). Similar associations were observed in Indonesia (111), and Shanghai (112), all of which reported that the presence of poor health status had increased the risk of depressive symptoms. Moreover, Kitro et al. also confirmed that the migrant workers with the presence of underlying medical conditions had the higher chance of getting depression(82). This might be because health problems can have impacts on physical limitation, reduce working capabilities, and increase financial burden from medical expenses. Chronic illnesses can also heighten stress and anxiety which were recognized as risk factors for depression (113). According to the report of Mental Health Foundation, people's lifestyles can be affected by medical problems, which may increase feelings of sadness, and fatigue (114). In migrant populations, where healthcare access is sometimes delayed, untreated conditions may worsen both physical and psychological distress and increase the risk of depressive symptoms.

5.2.4 Health-seeking behaviors

The current study observed that the migrant workers who do not seek care from hospital or formal health facilities had the higher chance of having depressive symptoms than those who seek healthcare from formal health facilities. This finding is consistent with studies in Shenzhen (77) and Japan (78), which identified poor health-seeking behavior and low intention to access professional care as significant risk factors for depression. Among Myanmar migrant workers in Chiang Rai Province, multiple structural barriers may limit healthcare utilization, including language difficulties, lack of insurance coverage, mistrust of institutions, high medical costs, long waiting times, and transportation challenges (91,115,116). Furthermore, stigma surrounding mental health may discourage early detection and intervention. When individuals delay care,

both physical and psychological symptoms may persist longer. Over time, untreated stress and illness may increase vulnerability to depressive symptoms (117,118).

5.2.5 Stress

The present study found that perceived stress was associated with depressive symptoms. Similar findings have been reported in the United States (83) ,and China (84), where higher stress levels were linked to increased risk of depression among migrant populations. Moreover, a study in Thailand confirmed that migrant workers who had high level of stress were more likely to get depressive symptoms than those who had not (6). These associations may be explained by the chronic stressors commonly experienced by migrant populations such as job insecurity, excessive workloads, unsafe working conditions, workplace discrimination, and exposure to various form of violence (6–8,119). In border areas like Chiang Rai Province, Myanmar migrant workers frequently experience financial pressure, demanding labor conditions, and adaptation to a new social environment. Continuous exposure to these unfavorable daily conditions contributes to prolonged psychological distress and emotional exhaustion. Continuous exposure to chronic stress may impair effective coping mechanisms and disrupt judgment and reduce psychological resilience, thereby allowing perceived stress to increase the risk of depressive symptoms among migrant workers (120).

5.2.6 Violence experiences

This study demonstrated the experiences of violence as a significant factor associated with depressive symptoms among Myanmar migrant workers. Reported form of violence experiences among the participants, which included that verbal abuse by workplace supervisors, previous exposure to arm conflict, forced labor and experiences of domestic violence. This finding is consistent with studies conducted in the United States and Canada (7) , and India (89) , all of which reported strong associations between violence exposure and depressive symptoms. Furthermore, the study conducted in Thailand reported that violence life experiences had serious adverse effects on mental health outcomes, particularly depression (88). The observed association in the present study may be explained by the psychological consequences of repeated or exposure to violence, which often induces chronic stress, persistent fear, and feelings of helplessness. Exposure to violence may produce long-lasting

psychological effects that extend beyond immediate fear. Repeated exposure may lead to fear, shame, self-blame, intrusive memories, or feelings of helplessness. For migrants who have experienced armed conflict in Myanmar before migration, cumulative trauma may further increase vulnerability to psychological burden. Thus, these experiences can disrupt emotional regulation, weak coping capacity, and contribute to social withdrawal, thereby increasing the risk of depressive symptoms.

5.2.7 Perceived social support

This study found that migrant workers with low perceived social support were at greater risk of depressive symptoms compared to those with moderate to high support. Similar findings have been reported in Taiwan (54), China (56) and a meta-analysis across 17 countries (22), which reported that limited social support consistently elevates the risks of experiencing depressive symptoms among migrant workers. Moreover, a study among Bangladesh migrants in Thailand confirmed that migrant workers with low social support from family, friend, or significant others were at higher risk of depressive symptoms (24). This association may be explained by the protective role of social support in coping with stress. Social support provides emotional comfort, practical help, and a sense of belonging, which can reduce feelings of loneliness and distress (121). Among Myanmar migrant workers living in Chiang Rai, social networks are often fragmented due to separation from family, demanding work schedules, and frequent mobility may weaken social networks. When emotional and practical support is limited, individuals may feel isolated. Over time, weakened social support may intensify feelings of loneliness and stress, thereby increasing susceptibility to depressive symptoms.

5.3 Limitations of the study

To the best of our knowledge, few studies have examined depressive symptoms among Myanmar migrant workers in this border area. Nevertheless, a few limitations of this study should be noted. First, because the data were collected using a cross-sectional design at a single point in time, causal relationships, and the direction of associations between the independent variables and depressive symptoms cannot be

determined. Second, this study assessed depressive symptoms using the PHQ-9, a screening rather than a diagnostic tool; therefore, the prevalence of clinically diagnosed depression or depressive disorders based on the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria could not be determined. Third, the use of purposive and convenience sampling methods may have introduced selection bias and may not generalize to the broader population of Myanmar migrant workers in Chiang Rai province. However, given the population's hard-to-reach nature, probability sampling methods were not feasible. Fourth, social desirability bias may have occurred during data collection process. Fifth, recall bias may be a concern in assessing some variables, such as the experience of domestic violence. Finally, considering the vulnerability of the participant group, which included both documented and undocumented migrants, the findings should be interpreted with caution, as the participants' responses might have been influenced by perceived pressure or situational factors.

5.4 Conclusion

A substantial proportion of Myanmar migrant workers in Chiang Rai Province experienced depressive symptoms. Several bio-psycho-social factors including family role, legal status, underlying diseases, health-seeking behavior, perceived stress, experiences of violence and social support were identified as contributors to having depressive symptoms in this group. Strengthening screening, community mental health outreach, and culturally appropriate services may help address the determinants of depressive symptoms among Myanmar migrant workers.

5.5 Recommendations

This study identified the determinants of depressive symptoms among Myanmar migrant workers in Chiang Rai Province, Thailand. Based on the findings, the following recommendations were made.

5.5.1 Recommendations for Policy Implication

The findings of this study highlight the need for stronger policy attention to migrant workers' mental health through the integration of routine depression screening into primary healthcare and migrant health services, together with culturally and linguistically appropriate counseling and referral systems. Policies and interventions should address the major determinants identified in this study, including limited family support, poor health-seeking behaviors, chronic diseases, exposure to stress and violence, unsafe working conditions, and inadequate legal protection for migrant workers.

Targeted support should prioritize high-risk groups, particularly migrant workers experiencing violence, low social support, chronic health conditions, and post-migration stressors. Mental health interventions should incorporate trauma-informed care, psychosocial support services, stress management programs, and workplace- and community-based peer-support initiatives to strengthen emotional well-being and social connectedness. In addition, improving labor regulations, occupational safety, social protection, and employer accountability is essential to reduce psychological distress and barriers to healthcare access among migrant workers. Mental health services should be integrated into routine primary healthcare and occupational health systems to improve accessibility, early detection, and timely intervention. Additional efforts are needed to reduce healthcare barriers faced by undocumented and highly mobile migrant workers through legal support services, advocacy programs, and equitable access to healthcare regardless of legal status.

In addition to preventive interventions, appropriate treatment and management services should be strengthened for migrant workers already experiencing depressive symptoms. Referral pathways for psychological counseling, psychiatric consultation, crisis intervention, and follow-up care should be enhanced to ensure timely and continuous mental health support. Community-based psychosocial support, rehabilitation services, and supportive counseling should also be implemented to promote recovery and improve quality of life among affected individuals.

Furthermore, cross-border collaboration between Thai and Myanmar health-related sectors should be strengthened to support continuity of care, health information dissemination, and coordinated mental health services in border areas. Sustainable funding, resource allocation, and multi-sectoral collaboration among health authorities,

labor sectors, employers, non-governmental organizations, and community networks are essential to ensure comprehensive and sustainable mental health support for migrant populations.

5.5.2 Recommendation to District Health Level

District health offices should consider integrating routine mental health screening for migrant workers by collaborating with employers, community leaders, migrant volunteers, and healthcare providers. Outreach programs should be strengthened to facilitate early detection of depressive symptoms and provide health education on stress management, anxiety, chronic disease management, violence prevention, and mental health awareness. Health promotion interventions should also focus on improving health-seeking behaviors by increasing awareness of available healthcare services and reducing stigma associated with mental health care.

District-level interventions should include regular screening and management of underlying chronic diseases, as these conditions were significantly associated with depressive symptoms in this study. In addition, district health systems should improve referral pathways and establish migrant-friendly mental health services that are accessible, culturally appropriate, and linguistically responsive to migrant populations. Appropriate referral and follow-up systems should also be established for migrant workers identified with depressive symptoms to ensure timely counseling, treatment, and psychosocial support services. These interventions may help reduce the burden of depressive symptoms and improve the overall well-being of migrant workers.

5.5.3 Recommendations to Migrant Help Center

Migrant help center should provide regular mental health awareness sessions, that include basic screening and assists migrant workers in accessing health services when needed. These centers should also implement peer-support programs and family engagement activities to strengthen social support systems, which are protective factors against depression. In addition, provide language training to reduce language barriers between healthcare workers and migrant workers in accessing of emergency healthcare. Culturally appropriate counseling services and mental health education materials should be developed to improve understanding and utilization of mental health services. They should also create safe spaces for reporting of violence, or stress or workplace conditions. Furthermore, referral pathways for victims of violence should be

strengthened to ensure timely psychosocial and legal support. Migrant help centers should also collaborate with healthcare providers and local organizations to support migrant workers already experiencing depressive symptoms through counseling support, referral services, emotional support activities, and continuous follow-up care.

5.5.4 Recommendations to Policy Makers

Policy makers should implement routine mental health screening and strengthen accessible migrant-friendly services to identify and manage depressive symptoms early. Policies should prioritize interventions targeting key determinants identified in this study, including legal status, social support, and exposure to stress and violence. Furthermore, strengthening Migrant Health Insurance Coverage, providing migrant-friendly health literacy programs, and creating safe and violence-free working environments are essential to reduce the burden of depressive symptoms among these migrant populations. Legal reforms should aim to improve the protection of undocumented workers and ensure equitable access to healthcare services regardless of legal status. By addressing these issues faced by migrant workers, policy makers can provide better specific support to enhance the overall well-being of migrant workers. Policy makers should also strengthen access to affordable and culturally appropriate treatment services for migrant workers with depressive symptoms, including psychological counseling, psychiatric services, crisis intervention, and rehabilitation support. In addition, policies should promote employer-based mental health programs and enforce regulations that support safe working environments and psychosocial well-being.

5.5.5 Recommendations for Further Study

Future studies should explore additional modifiable factors such as coping strategies, resilience, workplace conditions, health literacy, and access to social and community resources that may influence depressive symptoms among migrant workers. Research conducted in other provinces with differing migrant worker characteristics and employment settings, using stronger study designs, would allow meaningful comparison of findings. Longitudinal studies, particularly prospective cohort designs, are recommended to clarify causal relationships and to examine changes in mental health status over time. Moreover, mixed methods approaches combining quantitative and qualitative research would provide deeper insights into migrants lived experiences

and contextual factors underlying depressive symptoms. Future intervention studies should evaluate the effectiveness of programs targeting key determinants such as social support enhancement, stress reduction, violence prevention, improved healthcare access, and workplace mental health promotion. Further studies should also evaluate treatment outcomes, service accessibility, and the effectiveness of psychosocial and counseling interventions among migrant workers experiencing depressive symptoms. Finally, intervention and implementation studies are needed to identify effective protective strategies and assess the long-term effectiveness of mental health promotion and prevention programs among migrant populations.



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