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Understanding risky sexual behaviours for HIV infection among Myanmar male migrant workers in Mae Sot, Thailand: The significance of the health belief model

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ABSTRACT

Background: HIV/AIDS remains a critical global health issue, particularly among vulnerable population like migrant workers. In Thailand, Myanmar male migrants face heightened risks due to limited healthcare access, peer influence, and socioeconomic challenges. Understanding factors influencing risky sexual behaviour is essential for developing targeted interventions to support HIV prevention and control efforts.

Objectives: This study aims to explore the prevalence of risky sexual behaviours and identify key demographic, behavioural, and social factors influencing these behaviours among Myanmar male migrant workers in Mae Sot, Thailand.

Methods: A cross-sectional study was conducted with 454 participants. Data were collected through structured interviews, and multivariate logistic regression was applied to determine associated factors. Adjusted odds ratios (AOR), 95% confidence intervals (CI), and P-values were used to present significant factors.

Results: Among 454 participants, the prevalence of risky sexual behaviours was 29.30% (95% CI: 25.28-33.66). Key factors of risky sexual behaviours included being married (AOR: 4.05, 95% CI: 2.44-6.72), having a moderate level of perceived benefits (AOR: 2.80, 95% CI: 1.06-7.42), reporting high levels of perceived barriers (AOR: 2.23, 95% CI: 1.24-3.99) and experiencing peer pressure (AOR: 7.88, 95% CI: 4.72-13.15), all of which were associated with a higher likelihood of engaging in risky sexual behaviours.

Conclusion: Approximately one-third of Myanmar migrant workers engaged in risky sexual behaviours. Key factors contributing to these behaviours included marital status, perceived benefits, perceived barriers and peer pressure emphasizing the need for peer-led education, culturally sensitive awareness and improved healthcare access to reduce risky sexual behaviours and support Thailand's 2030 HIV elimination goals.

Keywords: HIV, Myanmar migrants, Risky sexual behaviours, Thailand

1. Introduction

HIV/AIDS remains a global health challenge with significant social, economic, and public health implications [1]. While sub-Saharan Africa bears the highest burden, Asia and Eastern Europe are experiencing epidemiological shifts [2]. Global efforts target the 95-95-95 goals by 2030, 95% of people living with HIV aware of their status, 95% on antiretroviral therapy (ART), and 95% virally suppressed [3]. Advancements in HIV treatment include increased ART accessibility, pre-exposure prophylaxis (PrEP) and research on long-acting injectables and vaccines [4, 5]. However, challenges such as stigma, discrimination, and limited healthcare access persist, exacerbated by the COVID-19 pandemic [6].

Thailand has made progress in HIV prevention, with 580,000 people living with HIV (PLHIV) in 2023 and a 1.1% prevalence rate [7]. The country aims to reach 90% ART coverage, 86% viral suppression, and 95% HIV status awareness by 2025 [8]. As of 2022, 81% of PLHIV were on ART, and 79% achieved viral suppression, but stigma and institutional barriers remain [8, 9]. Key populations, including sex workers, men who have sex with men, and people who inject drugs, experience higher HIV prevalence, necessitating targeted interventions [10-12].

The Health Belief Model (HBM) explains HIV risk behaviours through perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy [13, 14]. Social determinants like stigma, gender inequality, and limited healthcare further increased risk [15-19]. Understanding migration and risky sexual behaviours in Mae Sot is crucial for HIV intervention strategies. There is a lack of research on the specific factors influencing risky sexual behaviours among Myanmar male migrant workers in Mae Sot, limiting the development of targeted HIV prevention strategies for this vulnerable population. This study aimed to explore the prevalence of risky sexual behaviours and identify key demographic, behavioural, and social factors influencing these behaviours among Myanmar male migrant workers in Mae Sot, Thailand.

2. Methods

2.1 Study Area

Mae Sot, located along the Thai-Myanmar border, serves as a critical economic hub for migrant workers. It is characterized by high population mobility, limited healthcare access, and socio-economic disparities.

2.2 Study Design

An analytical cross-sectional study design was employed to explore associations between socio-demographic factors and risky sexual behaviours from January 2024 to December 2024. Myanmar male migrant workers (documented and undocumented migrant) aged 18 to 59 years who were physically and mentally healthy, had been working in Mae Sot, Tak Province, Thailand for at least six months, and were willing to participate were included in the study. However, those with severe physical or psychological conditions that could affect their participation, as well as those absent on the day of data collection, were excluded.

2.3 Sample Size and Sampling

The study employed a simple random sampling method to assess risky sexual behaviours among Myanmar male migrant workers in Mae Sot, Thailand. Data were collected daily from workers in factories, restaurants, and residential areas. Instead of visiting factories directly, the researcher collaborated with trusted community leaders to recruit participants. Informed consent and confidentiality were ensured, and participants were randomly selected from a list provided by community leaders and factory management, minimizing bias and ensuring representativeness.

The required sample size for this study was 454 participants calculated using Hsieh, Bloch and Larsen's (1998) multiple logistic regression formula [20]. The calculation was based on a previous study on HIV and syphilis knowledge among Myanmar migrant workers in Thailand considering key proportions related to risky sexual behaviours [21]. Using a 95% confidence level (Z-score of 1.96) and 80% power (Z-score of 0.84), the sample size was determined by applying the formula for logistic regression which accounts for the proportion of participants with one sexual partner engaging in risky behaviour (0.25), those with multiple partners engaging in risky behaviour (0.54), and those not consistently using condoms (0.85). The final calculation resulted in an estimated sample size of 454 participants. To account for multicollinearity, the sample size was adjusted using the Variance Inflation Factor (VIF = 2.50) confirming 454 as the minimum required sample.

2.4 Risky Sexual Behaviour Definition and Measurement

Risky sexual behaviour was defined based on participants' responses to key variables

related to sexual practices, substance use, and condom usage. A binary variable was created, where individuals were classified as engaging in risky sexual behaviour if they met at least one of the following conditions: having multiple sexual partners and inconsistent condom use, using dating apps to find sexual partners while also reporting inconsistent condom use, engaging in same-sex experiences along with multiple sexual partners and inconsistent condom use, or consuming alcohol or drugs before sex in combination with inconsistent condom use. Participants who did not meet any of these criteria were classified as not engaging in risky sexual behaviour.

2.5 Data Collection

Data collection was conducted through community leaders to engage Myanmar migrant workers in their communities rather than factories. Surveys took place in private spaces with informed consent obtained beforehand. A structured questionnaire, translated into Myanmar, assessed demographics, HIV knowledge, and risky behaviours. Perceived benefits, barriers, and peer pressure related to risky sexual behaviours were measured using Likert-scale questions evaluating participants' beliefs about condom use, accessibility challenges, and social influences. Confidentiality and participant safety were ensured through anonymous data handling and secure collection locations.

2.6 Data Analysis

Data were entered into Microsoft Excel and analysed using STATA version 18.0. To ensure accuracy, double data entry and validation were performed. Categorical variables were summarized as frequencies and percentages, while continuous variables were described using mean, standard deviation, median and range. Bivariate analysis was conducted using simple logistic regression, with variables showing a P-value < 0.25 considered for multivariable modelling following *Hosmer, Lemeshow and Sturdivant (2013)* [22]. A backward elimination approach was applied to develop the final logistic regression model, initially including age, marital status, Thai language proficiency, occupation, living arrangement, and behavioural factors. Variables were removed sequentially based on significance and model fit, assessing confounding effects through changes in odds ratios. Results were presented as Odds Ratios (OR) with 95% Confidence Intervals (CI) adjusting for covariates, with statistical significance set at $P < 0.05$.

3. Results

3.1 Baseline characteristics of the participants

Among 454 individuals, the majority of participants (74.67%) were young adults aged 18-29 years with a mean age of 25.8 years. Most participants were single (53.74%) or married (28.42%) and the majority reported never having been married (52.86%). A significant portion of participants (76.43%) reported that they cannot speak Thai while only 4.41% were proficient in speaking, reading and writing the language. When assessing participants perceived susceptibility to health risks, 86.78% indicated a moderate level while only 1.54% perceived a high level of susceptibility. Similarly, in terms of perceived severity, 35.24% reported high levels and for perceived benefits, a substantial 46.92% indicated a high understanding of their benefits. Perceived barriers were also high with 46.48% recognizing significant obstacles. In terms of self-efficacy concerning condom use, 32.16% expressed a high level of confidence while regarding safer sex negotiation, 21.37% felt highly confident. Peer pressure surrounding risky behaviour was reported by 27.31% of participants, indicating a notable influence on their decisions (Table 1).

Table 1: Baseline characteristics of the participants (n=454)

Characteristics	Frequency (n)	Percentage (%)
Age (Years)		
18–29 years (Young adults)	339	74.67
30–39 years (Early middle-aged)	102	22.47
40–49 years (Middle-aged)	12	2.64
50–59 years (Late middle-aged)	1	0.22
Mean (±SD)	25.8 (±0.26)	
Median (Min: Max)	24.5 (18:53)	
Marital Status		
Single	244	53.74
Married	129	28.42
Divorced/Separated/Death of Spouse	81	17.84
Number of Marriage		
Single	240	52.86
Married (Monogamous)	155	34.14
Married (Polygamous)	59	13.00
Thai Knowledge Proficiency		
Can't Speak	347	76.43
Can Speak, But Can't Write/Read	87	19.16
Can Speak, Write, and Read	20	4.41
Occupation Type		
Agriculture & Fisheries	37	8.15
Manufacturing & Industrial Work	253	55.73
Construction & Manual Labor	93	20.48
Service & Retail Sector (Sales staff & Domestic helper)	53	11.68

Characteristics	Frequency (n)	Percentage (%)
Other	18	3.96
Living with Whom		
Alone	191	42.07
Spouse	129	28.41
Family	40	8.81
Friends	94	20.71
Perceived susceptibility		
Low Level (<60%)	53	11.67
Moderate Level (60-80%)	394	86.78
High Level (>80%)	7	1.55
Mean (±SD)	12.30 (±1.35)	
Median (Min: Max)	12 (8:19)	
Perceived severity		
Low Level (<60%)	102	22.47
Moderate Level (60-80%)	192	42.29
High Level (>80%)	160	35.24
Mean (±SD)	13.48 (±4.39)	
Median (Min: Max)	12 (4:20)	
Perceived Benefits		
Low Level (<60%)	57	12.56
Moderate Level (60-80%)	184	40.53
High Level (>80%)	213	46.91
Mean (±SD)	7.18 (±2.17)	
Median (Min: Max)	7 (2:10)	
Perceived Barriers		
Low Level (<60%)	66	14.53
Moderate Level (60-80%)	177	38.99
High Level (>80%)	211	46.48
Mean (±SD)	16.36 (±5.09)	
Median (Min: Max)	15 (5:25)	
Condom use self-efficacy		
Low Level (<60%)	98	21.59
Moderate Level (60-80%)	210	46.26
High Level (>80%)	146	32.15
Mean (±SD)	16.80 (±5.10)	
Median (Min: Max)	16 (5:25)	
Safer Sex Negotiation Self-Efficacy		
Low Level (<60%)	81	17.84
Moderate Level (60-80%)	276	60.79
High Level (>80%)	97	21.37
Mean (±SD)	16.41 (±3.37)	
Median (Min: Max)	15 (9:25)	
Peer risky pressure		
Yes (always and sometimes)	124	27.31
No (Never)	330	72.69

Risky Sexual Behaviours that can cause HIV/AIDS

Among the participants, a significant portion (62.50%) reported having their first sexual experience under the age of 24 while 23.28% had their first experience over the age of 44. Regarding sexual partners, 57.53% reported having one partner, 26.03% had two partners

and 16.44% had more than two partners. Alcohol or drug use before sex was reported by 63.93% of respondents, with 54.34% indicating "sometimes" and 9.59% indicating "always." Additionally, 34.70% used dating apps to find sexual partners and 31.05% reported having same-sex experiences. A quarter of respondents (25.11%) admitted to having sex with a prostitute, and among them, 70.91% reported using a condom during such encounters. Condom use varied depending on the type of partner. 51.73% used condoms with their spouse, 29.31% with a boyfriend/girlfriend and only 6.32% with a sex worker. Over the past six months, 49.77% reported often using condoms while 21.92% never used them. Looking ahead, 62.56% expressed an intention to use condoms consistently in the next six months though 37.44% were uncertain or unwilling to do so (Table 2).

Table 2: Risky sexual behaviours that can cause HIV/AIDS of the participants

Risky Behaviours	Number (n)	Percentage (%)
1. Age first time had sex (n=232)		
Under 24	145	62.50
24 - 44	33	14.22
Over 44	54	23.28
2. Sexual partner (n=219)		
One	126	57.53
Two	57	26.03
More than two	36	16.44
3. Ever consumed alcohol or drug before sex partner (n=219)		
Always	21	9.59
Sometimes	119	54.34
Never	79	36.07
4. Used dating apps to find a sexual partner (n=219)		
Yes	76	34.70
No	143	65.30
5. Ever had the same-sex experience (n=219)		
Yes	68	31.05
No	151	68.95
6. Ever had sex with a prostitute (n=219)		
Yes	55	25.11
No	164	74.89
7. Use a condom when having sex with a prostitute (n=55)		
Yes	39	70.91
No	16	29.09
8. If you have sex with whom, do you use a condom? (n=174)		
Spouse	90	51.73
Sex worker	11	6.32
Boyfriend/ girlfriend	51	29.31
Other (specify)	22	12.64
9. How often have you used a condom during sex in the past 6 months? (n=219)		
Almost all the time	45	20.55
Often	109	49.77

Risky Behaviours	Number (n)	Percentage (%)
Rarely	17	7.76
Never	48	21.92
10. Have you considered using a condom every time you have sex in the next 6 months? (n=219)		
I don't think	82	37.44
I think	137	62.56

Prevalence and factors associated with risky sexual behaviours

The prevalence of risky sexual behaviours among the participants was 29.30% (95% CI: 25.28-33.66) indicating that nearly one-third engaged in behaviours that could increase their risk of sexually transmitted infections (STIs) or unintended pregnancies. In contrast, 70.70% (95% CI: 66.34-74.72) did not report engaging in such behaviours. After controlling for the effects of confounding factors such as age, marital status, Thai language proficiency, occupation type, living with whom, perceived severity, perceived benefits, perceived barriers, condom use self-efficacy, Safe-sex negotiation self-efficacy, social support from media and peer pressure were included in the initial model. Multivariable analysis using multiple logistic regression revealed that several factors were significantly associated with risky sexual behaviours. Marital status was a key factor, with married individuals having more than four times the odds of engaging in risky sexual behaviours compared to those who were single, divorced, separated, or widowed (AOR: 4.05, 95% CI: 2.44-6.72). Perceived benefits also played a significant role as individuals with a moderate level of perceived benefits were 2.80 times more likely to engage in risky sexual behaviours compared to those with a low level (AOR: 2.80, 95% CI: 1.06-7.42). Perceived barriers were another important factor with individuals reporting high levels of perceived barriers having significantly increased odds of engaging in risky sexual behaviours (AOR: 2.23, 95% CI: 1.24-3.99). Finally, peer pressure had the strongest association with individuals experiencing peer influence being nearly eight times more likely to engage in risky sexual behaviours compared to those without peer pressure (AOR: 7.88, 95% CI: 4.72-13.15) (Table 3).

Table 3: Bivariate and multivariable analysis of factors associated with risky sexual behaviors using simple and multiple logistic regression (n=454)

Characteristics	No. of Respondents	% of risky sexual behaviour	COR	95% CI	AOR	95% CI	P-value
Overall	454	29.30	NA	25.28-33.66			

Characteristics	No. of Respondents	% of risky sexual behaviour	COR	95% CI	AOR	95% CI	P-value
Age							
18–29 years	339	27.73	1	1	-		
30–39 years	102	36.27	1.48	0.93-2.37	-		
≥ 40 years	13	15.38	0.47	0.10-2.18	-		
Marital Status							<0.001
Single/Divorced/ Separated/ Death of Spouse	325	20.92	1	1	1	1	
Married	129	50.39	3.84	2.48-5.94	4.05	2.44-6.72	
Thai Language Proficiency							
Can't Speak	347	25.65	1	1	-		
Can speak, but can't write or read / Can Speak, Write, and Read	107	41.12	2.02	1.29-3.19	-		
Occupation Type							
Service & Retail Sector (Sales staff & Domestic helper), Others	71	18.31	1	1	-		
Construction & Manual Labor	93	33.33	2.23	1.06-4.68	-		
Agriculture & Fisheries, Manufacturing & Industrial Work	290	30.69	1.98	1.03-3.79	-		
Living with Whom							
Alone	191	21.99	1	1	-		
Spouse	129	41.09	2.47	1.52-4.04	-		
Family	40	20.00	0.89	0.38-2.07	-		
Friends/ Others	94	31.91	1.66	0.96-2.89	-		
Perceived susceptibility							
Moderate & High level	401	28.43	1	1	-		
Low level	53	35.85	1.41	0.77-2.57	-		
Perceived severity							
Low level	102	16.67	1	1	-		
Moderate level	192	33.33	2.50	1.37-4.56	-		
High level	160	32.50	2.41	1.29-4.46	-		
Perceived benefits							<0.001
Low level	57	12.28	1	1	1	1	
Moderate Level	184	35.87	4.00	1.71-9.31	2.80	1.06-7.42	
High level	213	28.17	2.80	1.20-6.52	0.89	0.32-2.53	
Perceived barriers							0.007
Low and Moderate level	243	22.22	1	1	1	1	
High level	211	37.44	2.09	1.39-3.16	2.23	1.24-3.99	
Condom-use self-efficacy							
Low level	98	19.39	1	1	-		

Characteristics	No. of Respondents	% of risky sexual behaviour	COR	95% CI	AOR	95% CI	P-value
Moderate level	210	31.90	1.95	1.09-3.48	-		
High level	146	32.19	1.97	1.07-3.63	-		
Safe-sex negotiation self-efficacy							
Low level	81	18.52	1	1	-		
Moderate level	276	34.06	2.27	1.23-4.19	-		
High level	97	24.74	1.45	0.69-2.99	-		
Social support from media							
No	68	10.29	1	1	-		
Yes	386	32.64	4.22	1.88-9.49	-		
Peer pressure							<0.001
No	330	16.97	1	1	1	1	
Yes	124	62.10	8.02	5.05-12.73	7.88	4.72-13.15	

Note: N/A Not Applicable

4. Discussion

The findings from this study revealed significant demographic, behavioural and psychosocial factors influencing risky sexual behaviours among Myanmar male migrant workers in Mae Sot, Thailand. The overall prevalence of risky sexual behaviours was 29.30% (95% CI: 25.28-33.66), indicating that nearly one-third of participants engaged in behaviours that increased their risk of HIV infection.

Marital status was a key predictor, with married participants being 4.05 times more likely to engage in risky behaviours compared to their single, divorced, or widowed counterparts (AOR=4.05, 95% CI: 2.44-6.72, P<0.001). This finding is unexpected as married individuals are generally assumed to have lower engagement in risky sexual behaviours due to stable partnerships. However, studies among migrant populations have suggested that long periods of separation from spouses, economic stress and limited access to sexual health education contribute to increased engagement in extramarital sexual activities, often without consistent condom use [8, 21]. Similar patterns have been observed among married migrant workers in other settings, where perceived trust within a marital relationship reduces condom use, despite external risk factors such as transactional or casual sex [13, 23]. This underscored the need for targeted interventions addressing HIV prevention among married migrants including tailored counselling and outreach efforts for those separated from their spouses.

Perceived benefits also significantly influenced risky behaviours. Participants with a moderate level of perceived benefits

were 2.80 times more likely to engage in risky behaviours than those with low perceived benefits (AOR=2.80, 95% CI: 1.06-7.42, P<0.001). This suggested that while individuals may acknowledge the benefits of safe sexual practices, misconceptions and insufficient reinforcement of protective behaviours persist. Previous studies on migrant health have indicated that knowledge alone is insufficient to change behaviours unless accompanied by accessible resources, community support and strong self-efficacy in practicing safe sex [15].

Perceived barriers emerged as another significant factor. Those who reported high perceived barriers were 2.23 times more likely to engage in risky sexual behaviours (AOR=2.23, 95% CI: 1.24-3.99, P=0.007). These barriers include stigma, fear of discrimination and challenges in accessing condoms and healthcare services which are commonly reported among migrant populations facing language barriers and legal uncertainties [6, 12]. Migrant workers often experience difficulties navigating local healthcare systems leading to lower utilization of sexual health services and increased reliance on informal or unregulated sources of information and prevention tools.

Peer pressure was the most influential predictor, with individuals who reported experiencing social pressure being nearly eight times more likely to engage in risky behaviours (AOR=7.88, 95% CI: 4.72-13.15, P<0.001). This finding aligns with broader literature on social determinants of health among migrant workers, where peer networks heavily influence behaviour, particularly in environments where alcohol consumption and group dynamics encourage risky practices [21, 24]. Given the transient nature of migrant communities, social norms that normalize risky sexual behaviours can be difficult to counter without structured interventions such as peer-led education programs and workplace-based awareness campaigns.

Condom-use self-efficacy and safe-sex negotiation self-efficacy were found to have borderline significance in bivariate analysis indicating that individuals with higher confidence in their ability to use condoms and negotiate safe sex practices were less likely to engage in risky behaviours. However, the lack of significance in multivariate analysis suggested the presence of other underlying factors influencing behavioural choices such as cultural beliefs,

social pressures and misconceptions about HIV transmission [14].

The results underscored the relevance of the Health Belief Model (HBM) in understanding risky sexual behaviours among Myanmar migrant workers. Perceptions related to benefits and barriers were particularly influential, suggesting that interventions should prioritize improving condom accessibility, reducing stigma and enhancing migrants perceived benefits of safe sexual practices. Additionally, the significant impact of peer pressure highlights the need for peer-based outreach programs tailored to this population's sociocultural context. Future HIV prevention strategies should integrate culturally adapted behavioural interventions alongside structural support such as improved healthcare access, targeted sexual health education and employer-supported programs for migrant workers.

This study has several strengths. It employed a rigorous random sampling method, ensuring representativeness of Myanmar male migrant workers in Mae Sot. The use of validated measurement tools and multiple logistic regression analysis enhanced the reliability and robustness of the findings. Additionally, incorporating psychosocial factors such as perceived benefits, barriers and peer pressure provides valuable insights into behavioural determinants supporting targeted intervention strategies. However, some limitations should be acknowledged. The cross-sectional design prevents establishing causal relationships between risk factors and risky sexual behaviours. Self-reported data may have introduced social desirability bias, potentially leading to underreporting of sensitive behaviours. Additionally, the study focused on male migrant workers limiting generalizability to female migrants or other migrant populations. Future research should consider longitudinal studies and qualitative approaches to exploring deeper behavioural motivations and intervention effectiveness.

5.Conclusion

One third of the Myanmar male migrant workers in Mae Sot, Thailand had risky sexual behaviours with key factors including marital status, perceived benefits, perceived barriers, and peer pressure. Among these, peer pressure emerged as the strongest predictor, with migrants experiencing peer influence being nearly eight times more likely to engage in high-risk behaviours. The findings emphasize the urgent need for peer-led HIV education programs, improved

access to healthcare services, and culturally tailored interventions. Public health initiatives should focus on dismantling stigmas, addressing misconceptions about HIV transmission, and promoting consistent condom use. Additionally, integrating HBM-based strategies into health promotion activities can effectively address cognitive and emotional factors influencing risky behaviours, thereby contributing to Thailand's 2030 HIV elimination goals. The study underscored the need for targeted health interventions among Myanmar male migrant workers in Mae Sot, Thailand.

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Author contributions

HMA: Conceptualization, data curation, formal analysis, methodology, writing original draft, writing review and editing. KS: Conceptualization, methodology, supervision, writing original draft, writing review and editing. KA: Conceptualization, methodology, writing original draft, writing review and editing. RN: Conceptualization, methodology, writing original draft, writing reviews and editing.

Declaration

Ethics approval and consent to participate

This study was approved by “the Centre for Human Research Ethics Khon Kaen University, Thailand” with the reference number HE672166 on 11 November 2024.

Competing interests

We declared that we have no competing interests

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