The Limited Health Literacy and Associated Factors Among Construction Workers in Bangkok, Thailand

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Abstract

This cross-sectional study aimed to study the level of limited health literacy and its associated factors among construction workers in Bangkok, Thailand. Multistage random sampling was used to select the sample of 225 Thai and 183 Myanmar construction workers in Bangkok. Research instruments were questionnaires to gather data for socioeconomic factors, health behavior, physical health status, access to health services and health literacy. Descriptive statistics and multiple logistic regression were used to analyze the data.

The results revealed that the sample had limited health literacy in 36.27%. Limited health literacy was significantly correlated with nationality (AOR = 2.32, 95%CI : 1.72-3.12, $p < 0.001$), eucational level (AOR = 2.86, 95%CI : 1.64 - 4.97, $p < 0.001$), difficulty in accessing health services (AOR = 5.49, 95%CI : 2.92 - 10.34, $p < 0.001$), taking medical treatment at the clinic, (AOR = 3.79, 95%CI : 11.78 - 8.06, $p < 0.001$) and patient-provider communication (AOR = 2.54, 95%CI : 1.44 - 4.46, $p < 0.001$).

The findings suggest that health care providers could apply these results to develop activities/ programs to enhance health literacy for construction workers by focusing on accessing health services, taking medical treatment at the clinic, and patient-provider communication.

Key words: Factors, Limited health literacy, Construction workers

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Received 11/04/2025 Revised 18/05/2025 Accepted 18/05/2025

Significance of the Problem

Thailand is a major labor destination for migrants from neighbouring countries, and 2.55 million legal migrant workers in 2023, who are essential in labor-intensive, blue-collar sectors such as manufacturing, construction, and the food sector (Barber & Sciortino, 2024). Comparing the proportion of migrant workers, Myanmar migrant workers comprised 80% of the total migrant population in Thailand (Aung et al., 2022).

The construction industry is the most dangerous in Thailand, the rate of work-related injuries was 11%, and rate of work-related fatalities was 19% compared to other industries (Vongpisal & Yodpijit, 2017). Moreover, the International Organization for Migration (2018) indicated that migrant workers may adopt unhealthy lifestyle behaviors, which could affect exposures and vulnerability to non-communicable diseases risk factors. It was noticed that some migrants arrive home less healthy than when they left.

Health Literacy and Social Determinants of Health are closely mingled (Flores et al., 2023). Health literacy is the ability to find, understand, evaluate, and use health information (Liu et al., 2024a) to maintain and promote health (Kayalkar & Dmello, 2024). Health literacy refers to the resources and abilities required to make and implement health decisions. In Public Health, health literacy is a key concept (Liu et al., 2024), encompassing the understanding and interaction with health information and services (Kayalkar & Dmello, 2024). Public health views health literacy as a tool that can lessen health disparities. More than half of Thai people (58.9%) had health literacy at a moderate level, followed by high and low levels at 24.3% and 16.8%, respectively. (Intarakamhang et al., 2022).

Limited health literacy among construction workers is significantly impacting their ill health because of poor assessment of health information and a language barrier. Sociodemographic factors: age (Poza-Méndez et al., 2023), gender, education level (Jaafar et al., 2021; Kosiyaporn et al., 2020; Poza-Méndez et al., 2023), health-related lifestyle behaviors (Kinoshita et al., 2024), ethnicity, and access to health information.

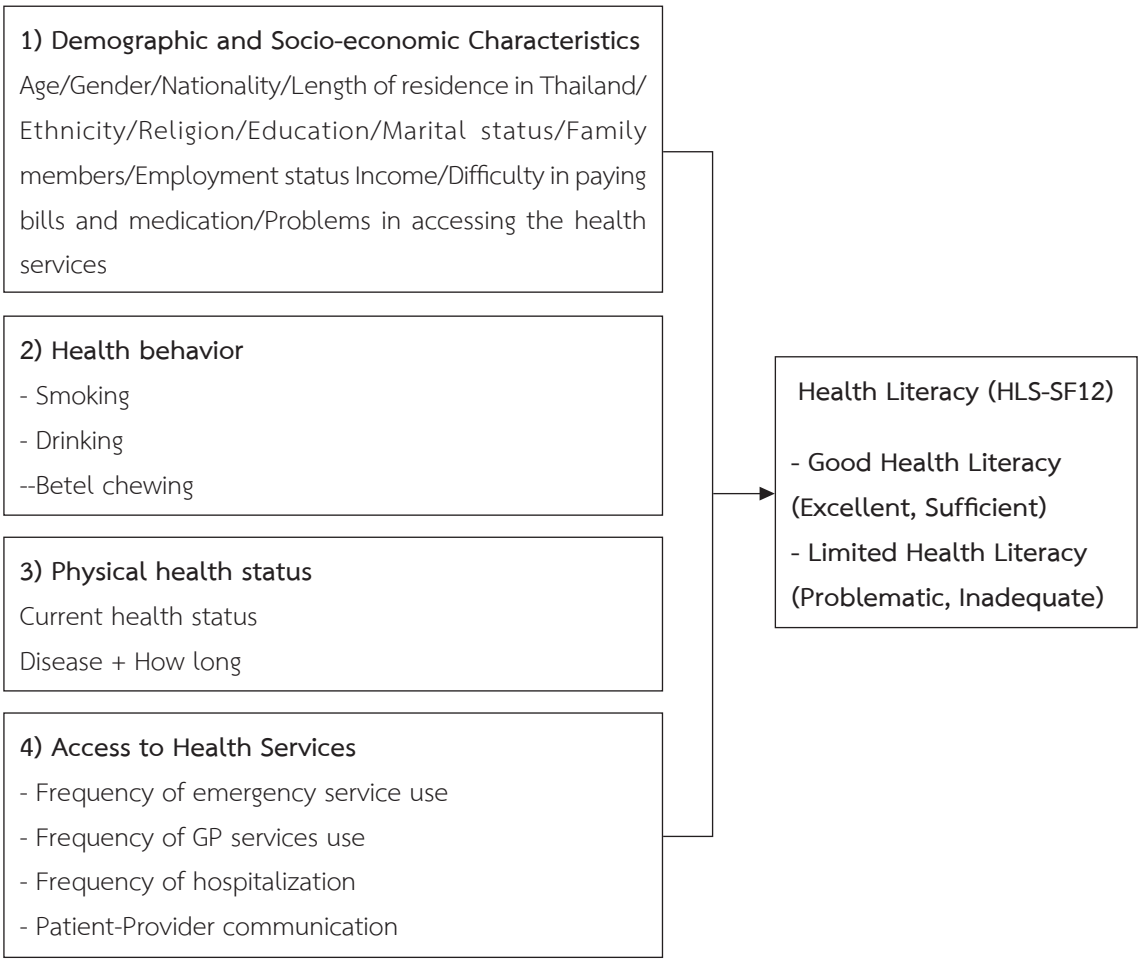
Many studies have suggested that health literacy is an important contributor to the existing health disparities (Jaafar et al., 2021). To the best of our knowledge, there is a scarcity of research on limited health literacy and its associated factors among construction workers in Thailand.

Reserch objectives

1. To study the level of limited health literacy among construction workers in Bangkok, Thailand

2. To determine the factors associated with limited health literacy among construction workers in Bangkok, Thailand.

Conceptual Framework



Method

Research design

The cross-sectional analytical study was used to assess the limited health literacy and its associated factors among construction workers in Bangkok, Thailand.

Population and sample

Population and sample referred to construction workers who lived in Bangkok.

The inclusion criteria were construction workers who were aged between 18 and 60 years, could verbally communicate with the researchers, and agreed to participate in this study.

The exclusion criteria were construction workers who didn't give informed consent and those with severe impairment and/or mental illness.

Sample size and sampling procedure

A sample size of 408 will require assessing the health literacy among construction workers in Bangkok, Thailand. The type of dependent variable is a dichotomous outcome. The statistics used to answer the research question is multiple logistic regressions, and the sample size is estimated based

on the multiple logistic regression formula (Hsieh, Bloch, & Larsen, 1998; Alam et al., 2010) and is calculated by software version 10. The following formulation is to obtain the required number:

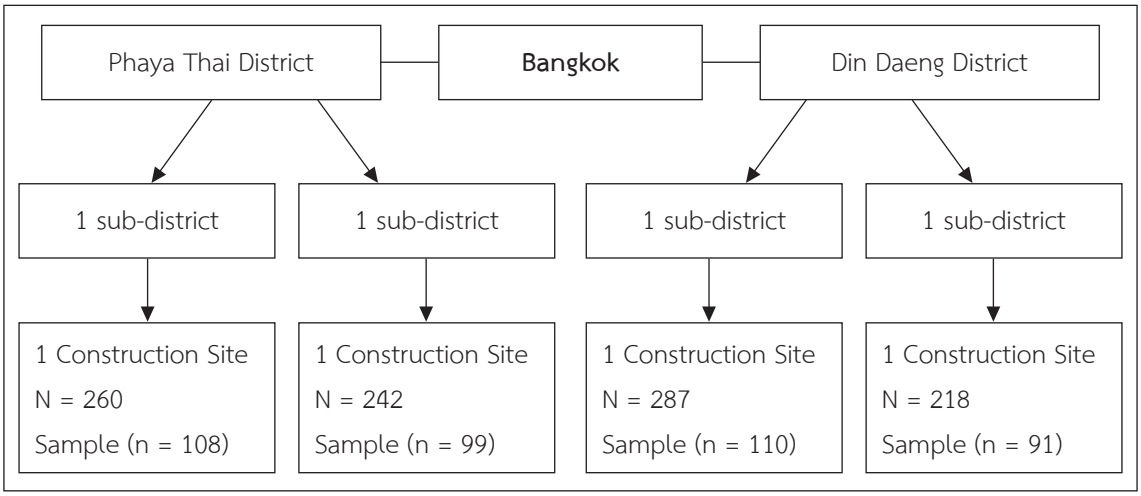
$$n = \left(\frac{P(1-P)(Z_{1-\alpha} + Z_{1-\beta})^2}{B(1-B)P_0 - P_1)^2}\right) \times \frac{1}{(1-\rho^2)}$$

Where, $P = (1-B)\,P_0 + BP_1$

This study was conducted using a structured questionnaire from 1st December 2024 to 1st March 2025. Preliminary questions were asked with inclusion and exclusion criteria before obtaining consent to be counted as potential participants. The inclusion criteria were construction workers, able to communicate in the Myanmar and Thai languages, gave informed consent, willing to participate, and aged between 18–60 years old. The samples were chosen by a multistage random sampling method.

Data collection

The total study population of this study was construction workers between 18 and 60 years of age living in the study area. A multistage random sampling method was used to select the sample in this study. Firstly, Bangkok was purposively selected because it is the most congested, outbound, and migratory city in Thailand. Then, two districts were randomly selected, namely Phaya Thai and Din Daeng. After that, two sub-districts from each district were randomly selected; thus, four sub-districts were included in the study. Finally, one construction site was randomly selected from each sub-district. Then, participants were selected proportional to the size of the study population. Trained Myanmar and Thai researchers interviewed the study participants.



Research instruments

A structured questionnaire was developed from reviewing the literature as a research tool. Then, the questionnaire was translated into Thai and Myanmar languages. The questionnaire consisted of three parts:

(1) Demographic and socioeconomic characteristics questionnaire which was developed from the literature review. It contains items including gender, age, nationality, ethnicity, religion, marital status, educational attainment, family members, employment status, monthly income, difficulty in paying bills and medications, and length of residence in Thailand (only for Myanmar construction workers).

(2) Health behavior questionnaire which was developed from the literature review. It contains items including, physical health status, medical diseases, duration of disease suffering, frequency of emergency medical services, taking medical treatment at the clinic, history of hospitalization, and patient-provider communication. and accessibility to health services.

(3) Health Literacy. The researchers ap;ied the HLS19-Q12 instrument (Pelikan et al., 2022), which is a newly developed 12-item short-form questionnaire of HLS19-Q47 for measuring comprehensive, general health literacy in general adult populations. It is a 12-matrix (three health domains×four health management tasks), which comprises three health domains (health care, disease prevention, and health promotion) and four aspects of health information management (access, understand, evaluate, and apply). Respondents answered each item on a four-point Likert scale (1 = very difficult, 4 = very easy) concerning the experienced difficulty of each task. The reliability both Thai form and Mynmar form were 0.70.

The translation of this tool from English to Thai and Myanmar languages was carried out during the translation procedure by Myanmar and Thai researchers. The HLS19-Q12 score is calculated as the percentage (ranging from 0 to 100) of items with valid responses that were answered with “very easy” or “easy,” provided that at least 80% of the items contain valid responses:

$$\frac{\text{Number of “easy” or “very easy” responses}}{\text{Number of valid responses}} \times 100$$

If less than 80% of the items contain valid responses, the score is set to “missing”. Four categories were created based on the recommended cut-off points by the WHO M-POHL working group: (1) Excellent: “very easy” ≥ 50 and “very difficult” + “difficult” < 8.334, (2) Sufficient: “very easy” + “easy” > 83.33, and not more than 2 out of 12 with “very difficult” or “difficult”; (3) Problematic: all respondents who were not in groups of “excellent”, “sufficient”, or “inadequate”; and (4) Inadequate: “very easy” < 8.334, “very difficult” and “difficult” ≥ 50. (Pelikan et al., 2022). In this study, construction workers who has scores at problematic and inadequate were we categorize as limited health literacy.

Ethical consideration: This research proposal and tools have been approved by the institutional research board of St Teresa International University, issued number (TRSU 010/2024), issued date was November 15, 2024, and expiry date was November 14, 2025. A coding scheme was used for data collection, and every document relating to the participants was destroyed upon completion of the research.

Data analysis

Data were analyzed by STATA® (ver.13; College Station, TX, USA: Stata Corp). Per descriptive analysis, frequency and percentage were used to analyze categorical data, whereas continuous data were described using mean, standard deviation, median, and range.

The Myanmar and Thai versions of the HLS19-Q12 instrument were used to determine the level of Health Literacy. Excellent and sufficient health literacy was categorized as high health literacy, and problematic and inadequate health literacy was classified as limited health literacy. Nearly one-third of construction workers had limited health literacy.

Bivariable logistic regression analysis was utilized to identify the association of each independent variable with limited health literacy. The factors with $p < 0.25$ in the bivariable analysis have proceeded to the multivariable logistic regression analysis. The type of dependent variable is a categorical outcome. The statistics that were used to answer the research question were multivariable logistic regression, and the sample size was estimated based on the multiple logistic regression formula and was calculated by software version 10.

Results

Table 1. Socioeconomic and demographic factors of respondents (n = 408)

Characteristics	Number	Percent (%)
1. Age of workers (years)		
18-24	47	111.52
25-34	209	51.23
35-44	75	18.38
456-60	77	18.87
Mean (±SD)	33.59 (±9.52)	
Median (min : max)	30 (18:60)	
2. Gender		
Male	240	58.82
Female	149	36.52
Prefer not to say	19	4.66
3. Nationality		
Thai	225	55.13
Myanmar	183	44.85
4. Marital Status		
Single	206	50.49
Married	178	43.63
Widow/Separate/Divorced	24	5.88

Table 1. Cont.

Characteristics	Number	Percent (%)
5. Religion		
Buddhist	371	90.93
Christian	35	8.58
Islam	2	0.49
6. Educational level		
No formal education	28	6.86
Primary school	74	18.14
Secondary school	167	40.93
Bachelor or equivalent	139	34.07
7. Employment		
Part-time	206	50.49
Full-time	202	49.51
8. Family monthly income (Bahts)		
< 10001	112	27.45
10001 - 15000	148	36.27
≥ 15000	148	36.27
Mean (±SD)	14968 (±6863)	
Median (min : max)	12000 (4000:30000)	
9. Family members		
1	117	28.68
2-5	244	59.80
6-10	47	11.52
10. Length of stay in Thailand (n = 183)		
1 year	62	33.88
2-5 years	90	49.18
6-10 years	31	16.94
11. Difficulty in paying bills and medication		
Very difficult	51	12.50
Difficult	145	35.54
Easy	177	43.38
Very easy	35	8.58

Concerning the health behavior of the construction workers, only 97 (23.77%) smoked, and 149 (36.52%) drank alcohol. However, 118 Myanmar construction workers had the habit of chewing betel.

Nearly 15% of construction workers had chronic diseases such as hypertension, diabetes mellitus, heart disease, musculoskeletal diseases, and skin disease. Eighty-five (20.83%) of the construction workers responded that they had difficulty accessing health services. Only 33 (8.09%) of respondents used emergency services within one year. Nearly 104 (25.49%) of construction workers took medical treatment at the clinic, and only 66 (16.18%) workers were hospitalized within one year. Nearly 28% of construction workers had difficulty in patient-provider communications.

Table 2. Number and percentage of Health Literacy among construction workers in Bangkok

Health Literacy	Number	Percentage
Excellent	200	49.02
Sufficient	60	14.71
Problematic	103	25.25
Inadequate	45	11.03

Table 3. Number and percentage of the level of health literacy among construction workers in BKK

Health Literacy	Number	Percentage
High	260	63.73
Limited Health Literacy	148	36.27

Factors Associated with Health Literacy (Bivariate analysis)

Table 4. Crude odds ratio from performing bivariate logistic regression analysis of each factor and limited HL

Characteristics	Number	% of LHL	CrudeOR	95%CI	p-value
1. Gender					<0.001
Women, Prefer not to say	168	25.60	1		
Men	240	43.75	2.26	1.47 - 3.48	
2. Nationality					<0.001
Thai	225	16.44	1		
Myanmar	183	60.66	2.80	2.22 - 3.52	
3. Educational Level					<0.001
Secondary education and above	306	28.10	1		
Up to Primary education	102	60.78	3.97	2.48 - 6.34	
4. Employment					<0.001
Full-time	202	16.34	1		
Part-time	206	55.83	6.47	4.04 - 10.28	

Table 4. Cont.

Characteristics	Number	% of LHL	CrudeOR	95%CI	P-value
5. Monthly Income					<0.001
>12000	197	16.24	1		
≤12000	211	54.98	6.30	3.95 - 10.03	
6. Difficulty in accessing health services					<0.001
No	323	29.72	1		
Yes	85	61.68	3.73	2.27 - 6.13	
7. Current Health Status					0.164
Healthy	347	34.87	1		
Unhealthy	61	44.26	1.48	0.85 - 2.57	
8. Use of Emergency Medical Services				0.252	
Yes	33	27.27	1		
No	375	37.07	1.58	0.71 - 3.48	
9. Taking medical treatment at the clinic					<0.001
Yes	104	18.27	1		
No	304	42.43	3.30	1.91 - 5.70	
10. History of Hospitalization					0.585
Yes	66	33.33	1		
No	342	36.84	1.17	0.67 - 2.04	
11. Patient-provider communication					<0.001
Easy	295	24.41	1		
Difficulty	113	67.26	6.36	4 - 10.22	

After running the bivariate analysis, gender, nationality, educational level, employment status, monthly salary, difficulty in accessing health services, current health status, use of Emergency Medical Services, taking medical treatment at the clinic, history of hospitalization, and patient-provider communication were associated with limited health literacy. The factors with $p < 0.25$ (Kosiyaporn et al., 2020) in the bivariate analysis, the researcher proceeded to the multivariate analysis.

Table 5. Multivariable logistic regression analysis for factors associated with limited health literacy (n = 408)

Characteristics	CruOR	AdjOR	95%CI	p-value
1. Nationality				<0.001
Thai	1	1		
Myanmar	2.80	2.32	1.72-3.12	
2. Educational Level				<0.001
Secondary education and above	1	1		
Up to Primary education	3.97	2.86	1.64-4.97	
3. Difficulties in accessing health services				<0.001
No	1	1		
Yes	3.73	5.49	2.92-10.34	
4. Taking medical treatment at the clinic				<0.001
Yes	1	1		
No	3.30	3.79	1.78-8.06	
5. Patient-provider communication				<0.001
Easy	1	1		
Difficulty	6.36	2.54	1.44-4.46	

The associations between multiple independent variables and limited healthy literacy were determined by using multivariate analysis after controlling for the covariates.

Discussion

In this study, nearly half (49.02%) of the construction workers in Bangkok had excellent health literacy, 14.71% had sufficient health Literacy, and 36.27% had limited health literacy, which included 25.25% problematic and 11.03% inadequate. Myanmar construction workers accounted for nearly 45% among the respondents.

The prevalence of limited health literacy among construction workers in Bangkok was lower than in the studies, with 65.1% (Poza-Méndez et al., 2023), 61.8% (Kayalkar & Dmello, 2024), 60% (McCaskill et al., 2024), 42.5% (Liu et al., 2024) assessed by HLS19-Q12 questionnaires. The finding was more than the studies among Lithuanian students, 35% (Jaafar et al., 2021), 32.9% (Sukys et al., 2024) 16.8% (Intarakamhang et al., 2022).

Regarding the whole spectrum of health literacy scores, the average score was 35.9 (out of a total score of 48) in this study. This finding is relatively similar to that of Malaysia (35.5%) (Jaafar et al., 2021b), Ireland (40%), Germany (54.3%), Taiwan (34.4%), Sri Lanka (32.5%), and Vietnam (29.6%) (Jaafar et al., 2021). We found that nearly one-third of our sample had problematic or inadequate health literacy when using the HLS19-Q12, suggesting an urgent need to promote and intervene on blue-collar population health literacy.

The study pointed out that nationality, educational level, difficulty in accessing health services, taking medical treatment at the clinic, and patient-provider communication were significantly associated with limited health literacy among construction workers in Bangkok.

The possible explanation could be that

In this study, Myanmar construction workers were 2.32 (95%CI : 1.72 - 3.12) times more likely to have limited health literacy than Thai construction workers. This finding was consistent with these studies (r = 0.398, 95%CI : 0.13, 0.24) among migrants in Spain (Poza-Méndez et al., 2023), and (β = 1.42, 95%CI : -1.46, 4.31) among Chinese adults (Liu et al., 2024), 3.47 and 2.13 times (OR = 3.47, 2.13, 95%CI = 1.30 - 9.24, 1.32 - 3.45) among Thai adult population in eastern region of Thailand (Jasiyajirawattana et al., 2022)

The construction workers with non-formal and primary education had 2.86 (95%CI : 1.64 - 4.97) times higher odds of having limited health literacy than those with secondary education and above. This finding was in agreement with the studies (β = 0.182, 95%CI : 1.134, 5.126) among migrants in Spain (Poza-Méndez et al., 2023), 64.8 (55.71, 72.93) among Malaysian (Jaafar et al., 2021), (β =0.94, 95%CI : 0.49,1.39) among Chinese adults (Liu et al., 2024c), (β = 0.128, p = 0.015) among Diabetes patients (Finbråten et al., 2020), (r = 4.24, 95%CI : 0.38 - 8.11) among migrant workers (Kosiyaporn et al., 2020), (AOR = 1.55, 95%CI : 0.92 - 2.61) among middle age group in Germany (Berens et al., 2016), (aPR = 2.45, 95%CI : 1.07 - 5.57, p = 0.033) OR = 3.47, 2.13, 95%CI : 1.30 - 9.24, 1.32 - 3.45) among rural adolescents in India (Kayalkar & Dmello, 2024).

In this study, lower education level has been proven to be a significant determinant of lower health literacy level. Because of low education, poor access to health information.

This study revealed that construction workers with difficulties in accessing health services were more likely to change 5.49 (95%CI : 2.92 - 10.34) times to get limited health literacy than those without difficulty in accessing health services. This finding was similar to the studies done among Chinese adults (β = -0.009, 95%CI : -0.011 - 0.008) (Liu et al., 2024).

The odds of having limited health literacy were about 3.79 times (95%CI : 1.78 - 8.06) higher among respondents who didn't take medical treatment at the clinic as compared to the respondents who took medical treatment. This finding was allied with the studies, 27.9 (26.01, 29.89) (Jaafar et al., 2021), (AOR = 5.51, 95%CI : 3.14, 9.66) (Berens et al., 2016), (AOR = 2.1, 95%CI : 1.29, 3.27) (Denuwara & Gunawardena, 2017), (β = -9.963, 95%CI : -18.417, -1.509) (Poza-Méndez et al., 2023).

The workers who had difficulty communicating with the health service providers are 2.54 (95%CI : 1.44-4.46) times more likely to have limited health literacy than workers who could easily communicate with the health service providers. This finding was identical to the study among uninsured primary care patients in the United States (β =0.35, p<0.01)(Kamimura et al., 2020).

Conclusion

About one in three of the construction workers had limited health literacy. The results revealed that 'limited' health literacy was a considerable problem among construction workers in

Bangkok, Thailand. This suggests the necessity of incorporating health skills and promotion into formal education to enhance health literacy across all construction workers.

Limitations of the study

This cross-sectional study was conducted among construction workers aged between 18 to 60 years in Bangkok of Thailand; consequently, it might not represent construction workers of other regions. The independent variables and dependent variables were simultaneously assessed, so the causal relationship was not identified.

Recommendation

To improve the health literacy among construction workers, it is recommended that a clear and concise health information pamphlet with the Myanmar and Thai languages, and a social media platform for communicating the health service information. Also, the necessity of incorporating health skills and promotion into formal education to enhance health literacy across all construction workers.

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