

Occupational Health and Safety Problems, Health Literacy, Mental Health and Quality of life among Public Work Division Workers in the Northeast of Thailand- A Cross-sectional Study

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ABSTRACT

Introduction: Public Work Division is a local government organisation in Thailand. The workers of the Public Work Division are vulnerable to Occupational Health and Safety (OHS) problems. Those who could cope with various hazards should be able to maintain their good Quality of Life (QOL).

Aim: To determine the OHS problems, level of Health Literacy (HL), mental health status, QOL and its association among Public Work Division workers of Local Government Organisations in the Northeast of Thailand.

Materials and Methods: A cross-sectional study was conducted among 823 participants recruited by using multistage random sampling from Public Work Division of Local Administration Organisations in eight provinces of the Northeast of Thailand. A self-administered structured questionnaire was administered to assess OHS problems, HL, mental health and QOL. Multiple logistic regression was used to determine the association

between mental health, HL, OHS problems and QOL when controlling other covariates.

Results: More than half of the workers were male (71.20%) with the mean age of 39.38 years (± 9.64). Almost one-third of the workers had high level of ergonomic OHS (32.20%), 39.49% had high level of depression and 60.51% had interactive level of HL. Only 32.32% had good QOL. The multivariable analysis indicated factors that were significantly associated with good QOL of participants. These factors were critical level of HL on self-management skills (adj. OR=5.57; 95% CI: 3.46-8.94), critical level of HL on media literacy skills (adj. OR=3.29; 95% CI: 1.92-5.63), moderate depression (adj. OR=2.56; 95% CI: 1.68-3.91), mild depression (adj. OR=5.05; 95% CI: 3.23-7.78) and low-to-moderate ergonomic problems (adj. OR=1.42; 95% CI: 1.01-2.09) when controlling the effect of other covariates.

Conclusion: Less than one-third of public work division workers had good QOL. HL, depression, OHS problems had influence on QOL.

Keywords: Depression, Ergonomic occupational health, Socioeconomic distribution

INTRODUCTION

Public Work Division workers are responsible for road, bridge, sidewalk and dam constructions, installations, maintaining electrical and plumbing systems. These workers are vulnerable to Occupational Health and Safety (OHS) hazards including physical, chemical, biological, ergonomic and mental health. Their work include lifting, carrying, pulling of heavy objects, work with poor ergonomic conditions which put them at high risk of musculoskeletal disorders [1-3]. In addition, many workers working outdoors are more likely to be exposed to various physical hazards such as extreme temperature, ultraviolet radiation from the sun, and vibration from the machine. These hazards put the workers at risk of various illness [4,5]. Other exposures include chemical hazard such as dusts, mists, fumes and gases biological hazard such as bacteria, fungus, poisonous animals including centipede and mice [6-8].

These conditions if not properly managed could not only lead to physical but also mental health deterioration. Some studies indicate that mental disorders are major global public health problems. Psychological distress, depression and anxiety can result in functional impairment at work and a decrease of QOL [9-12]. HL, on the other hand, might help reducing health hazards at work and make appropriate health decisions [13]. HL is a person's ability to access and motivation to use health information, which is influenced by a person's age and stage in life. Thus, HL can promote and maintain good health and, consequently, QOL [14-16].

There were many studies conducted to identify the relationship between HL, OHS problems, mental health, and the QOL of people among workers various occupations [17-19]. However, there was no study on QOL and its determinants among the high-risk group, the Public Work Division's workers in the Northeast of Thailand, the country's largest region. Therefore, it is important to determine the QOL and its possible associate factors including mental health status, HL, OHS problems among workers of Public Work Division of the local government organisation in the Northeast of Thailand.

MATERIALS AND METHODS

This cross-sectional study was conducted among workers of the Public Work Division of the local government organisations. The data collection was conducted between January and March 2019. This study was approved by the Ethical Committee of Khon Kaen University, the approval number is HE 622204.

The inclusion criteria were- a worker who has been working for at least one-year, aged between 19-59-year-old, agreed to participate in this study by signing a written informed consent. The exclusion criteria were workers who did not agree to participate in this study.

The sample size was calculated by using the formula of Hsieh FY et al., to estimate sample size for a logistic regression analysis [20]. The estimated sample size was 823. The study population comprised of Public Work Division workers from eight provinces of the Northeast of Thailand. Multi-stage random sampling was used to select the samples based on the context of Public Work Division

Workers of Local Government Organisations who work in Northeast of Thailand, which consists of 20 provinces. There are four Public Health Regions in the Northeast of Thailand. The researchers randomly selected two provinces from each Public Health Region as samples: Khon Kaen and Mahasarakham (7th Public Health Region), Udon thani and Sakon nakhon (8th Public Health Region), Nakhon Ratchasima and Buriram (9th Public Health Region), Ubon ratchathani and Umnarh Charean (10th Public Health Region).

A self-administered structured questionnaire was used to assess demographic and socioeconomic characteristics, health status, health behaviours and OHS conditions. The OHS questionnaire has 43 questions. It is written in Thai and scored using a 5-scale rating.

The WHOQOL-BREF-THAI were used to assess QOL, the Perceived Stress Scale (PSS), and the Center for Epidemiologic Studies Depression Scale (CES-D) were administered to assess stress and depression. Health literacy was determined based on Nutbeam's HL concept [21-24]. The questionnaire was validated by five experts and was revised later. The Cronbach's alpha coefficient was 0.76.

STATISTICAL ANALYSIS

Descriptive statistics including frequency and percentage were used to describe categorical data, whereas mean, standard deviation, median, maximum, and minimum were used for continuous data. A simple logistic regression was used to identify the association between each independent variable and good QOL. The independent factors that had p-value <0.25 [25] were proceeded to the multivariable analysis using the multiple logistic regression to identify their association with good QOL when controlling the effect of other covariates. The magnitude of association was presented as adjusted odds ratio (Adj. OR), 95% Confidence Interval (CI). The p-value less than 0.05 was statistically significant. All analyses were performed using Stata version 10.0 (Stata Corp, College Station, TX).

RESULTS

Among the participants, 71.20% were males with the mean age were 39.38±9.64 years. Majority were single 55.29%, and 43.01% had a bachelor's educational degree. The median duration of work experience was eight years (minimum=1: maximum=40). Their median monthly income was 13,000 Thai Baht (THB) (minimum=6,000: maximum=60,000) [Table/Fig-1].

Demographic and socio-economic factors	Number	Percent
Gender		
Male	586	71.20
Female	237	28.80
Age (Years)		
<30	152	18.47
30-39	260	31.59
40-49	256	31.11
50-59	155	18.83
Mean±SD	39.38±9.64	
Median (Min, Max)	39 (19,59)	
Marital status		
Single	455	55.29
Married	305	37.06
Separated/divorced/widowed	63	7.65
Educational level		
Elementary school	38	4.62
Junior school	56	6.80
Senior high school	116	14.09
High or vocational certificate	189	22.96
Bachelor's degree	354	43.01
Master's degree	70	8.51

Type of work		
Civil employee	272	33.05
Permanent employee	56	6.80
Temporary employee	495	60.15
Personal monthly income (Thai Baht)		
<10,000	203	24.67
10,000-20,000	418	50.79
20,001-30,000	128	15.55
>30,000	74	8.99
Mean±SD	16,133.23±9,641.21	
Median (Min:Max)	13,000 (6,000:60,000)	
Experience of working years		
<10	511	62.09
10-19	217	26.37
≥20	95	11.54
Mean±SD	9.82±8.00	
Median (Min:Max)	8 (1:40)	

[Table/Fig-1]: Demographic and socioeconomic distribution of the study population.

One-third of the participants reported having BMI of 18.5-22.9 (kg/m²). Half of them were alcoholics, however majority of them were nonsmokers and had no chronic disease. [Table/Fig-2].

Health status and health behaviours	Number	Percent
Body mass index (kg/m²)		
<18.5	40	4.86
18.5-22.9	285	34.63
23.0-24.9	191	23.21
25.0-29.9	222	26.97
≥30	85	10.33
Mean±SD	24.41±4.16	
Median (Min:Max)	23.87 (13.88, 39.18)	
Alcohol consumption		
Non drinker	284	34.51
Former drinker	88	10.69
Drinker	451	54.80
Smoking		
Non smoker	586	71.20
Former smoker	64	7.78
Smoker	173	21.02
Chronic diseases (hypertension, diabetes, allergy, asthma CVD, peptic ulcer)		
No	641	77.89
Yes	182	22.11

[Table/Fig-2]: Health status and health behaviours (N=823).

This study illustrated that majority of the workers had low/moderate OHS problems concerning Physical, Biological, Chemical, Ergonomic and Psychological health, problems [Table/Fig-3].

Most of them had interactive level of overall HL (60.51%). In terms of HL on access to information skills, HL on communication skills, HL on decision skills and HL on media literacy skill, most of them had interactive level. Nonetheless, HL on self-management skills level was functional [Table/Fig-4].

Most of the Public Work Division workers had moderate level of stress and severe level of depression [Table/Fig-5].

Most of the public work division workers had fair level of QOL (64.52%), only 32.32% having good QOL [Table/Fig-6].

The bivariate analysis indicated factors that were significantly associated with good QOL were older than 45-year-old, married, graduated bachelor's degree and higher graduated bachelor's degree, working for ten years or higher, good health, low/moderate level of OHS problems,

	Number	Percent
Occupational Health and Safety (OHS) condition exposure level		
Low/moderate	615	74.73
High	208	25.27
OHS problem: Physical		
Low/moderate	605	73.51
High	218	26.49
OHS problem: Biological		
Low/moderate	730	88.70
High	93	11.30
OHS problem: Chemical		
Low/moderate	643	78.13
High	180	21.87
OHS problem: Ergonomic		
Low/moderate	558	67.80
High	265	32.20
OHS problem: Psychological		
Low/moderate	441	53.58
High	382	46.42

[Table/Fig-3]: Occupational Health and Safety (OHS) condition exposure level base on The OHS questionnaire (N=823).

Health literacy	Number	Percent
Health literacy (Overall)		
Functional	162	19.68
Interactive	498	60.51
Critical	163	19.81
HL: Access to information skills		
Functional	98	11.91
Interactive	400	48.60
Critical	325	39.49
HL: Communication skills		
Functional	79	9.00
Interactive	399	48.48
Critical	345	41.92
HL: Decision skills		
Functional	115	13.97
Interactive	364	44.23
Critical	344	41.80
HL: Media literacy skills		
Functional	225	27.34
Interactive	406	49.33
Critical	192	23.33
HL: Self-management skills		
Functional	401	48.72
Interactive	234	28.84
Critical	188	22.84

[Table/Fig-4]: Health Literacy (HL) based on Nutbeam's HL concept (N=823).

low OHS problems: physical exposer, high level of health knowledge, good attitude on health, critical level of HL, critical level of HL on access to information, critical level of HL on communication skills, critical level of HL on decision, critical level of HL on media literacy skills, critical level of HL on self-management skills, low level of stress and mild depression and moderate depression. The multiple logistic regression indicated four factors that were significantly associated with having good QOL that were; critical level of HL on self-management skills, critical level of HL on media literacy, low level of depression and low-to-moderate levels of OHS problems on ergonomic when controlling other covariates [Table/Fig-7,8].

Mental health	Number	Percent
Stress		
Low	183	22.24
Moderate	632	76.79
High	8	0.97
Depression		
Mild	216	26.25
Moderate	282	34.26
Severe	325	39.49

[Table/Fig-5]: Mental health base on the Perceived Stress Scale (PSS) questionnaire [22] and the Center for Epidemiologic Studies Depression Scale (CES-D) [23] questionnaire (N=823).

Quality of life	Number	Percent	95% CI
Poor level (26-60 scores)	26	3.16	2.07-4.59
Fair level (61-95 scores)	531	64.52	61.14-67.79
Good level (96-130 scores)	266	32.32	29.13-35.63

[Table/Fig-6]: Quality Of Life (QOL) base on The WHOQOL-BREF-THAI [21] questionnaire (N=823).

Factors	Number	% Good QOL	Crude OR	95% CI	p-value
Gender					
Female	237	31.22	1		0.668
Male	586	32.76	1.07	0.77-1.48	
Age (Year)					
≤45	572	29.37	1		0.006
>45	251	39.32	1.54	1.12-2.10	
Marital status					
Single/Separated/Divorced/Widowed	368	44.73	1		0.036
Married	455	54.07	1.37	0.92-1.84	
Educational level					
Lower than bachelor's degree	399	30.33	1		<0.001
Bachelor's degree	354	30.23	0.99	0.72-1.35	
Higher than bachelor's degree	70	54.29	2.72	1.62-4.57	
Experience of working (years)					
<10	551	28.18	1		<0.001
≥10	312	39.10	1.64	1.21-2.20	
Personal monthly income (Baht)					
<10,000	203	27.09	1		0.063
≥10,000	620	34.03	1.39	0.97-1.97	
Health status					
Poor/Fair	217	18.43	1		<0.001
Good	606	37.29	2.63	1.79-3.85	
Chronic diseases					
Yes	176	28.98	1		0.281
No	647	33.23	1.21	0.84-1.75	
Alcohol consumption					
Drinker/Former drinker	451	32.15	1		0.908
Non drinker	372	32.53	1.01	0.75-1.36	
Smoking					
Smoker/Former smoker	173	28.90	1		0.275
Non smoker	650	33.23	1.22	0.84-1.76	
Occupational Health and Safety (OHS) problems exposure					
High	208	25.48	1		0.013
Low/Moderate	615	34.63	1.54	1.08-2.20	

OHS problems: Physical					0.004
High	218	24.77	1		
Low/Moderate	605	35.04	1.64	1.15-2.32	
OHS problems: Chemical					0.025
High	180	25.56	1		
Low/Moderate	643	34.21	1.51	1.04-2.19	
OHS problems: Biological					<0.001
High	93	12.90	1		
Low/Moderate	730	34.79	3.60	0.14-0.51	
OHS problems: Ergonomic					0.001
High	265	23.40	1		
Low/Moderate	558	36.56	1.88	1.35-2.63	
OHS problems: Psychological					0.117
High	382	29.58	1		
Low/Moderate	441	34.69	1.26	0.94-1.69	
Knowledge on health					<0.001
Low	15	13.33	1		
Moderate	139	20.86	1.71	0.36-8.02	
High	669	35.13	3.51	0.78-15.72	
Attitude on health					<0.001
Good	45	11.11	1		
Fair	509	21.90	3.09	1.19-8.00	
Poor	269	44.24	6.34	2.42-16.58	
Health literacy (HL)					<0.001
Functional	162	11.11	1		
Interactive	498	26.71	2.91	1.72-4.94	
Critical	163	70.55	19.16	10.57-34.73	
HL: Access to information skills					<0.001
Functional	98	19.39	1		
Interactive	400	18.50	0.94	0.53-1.65	
Critical	325	53.23	4.73	2.74-8.17	
HL: Communication skills					<0.001
Functional	79	16.46	1		
Interactive	399	21.80	1.42	0.75-2.68	
Critical	345	48.12	4.70	2.50-8.85	
HL: Decision skills					<0.001
Functional	115	18.26	1		
Interactive	364	20.60	1.41	0.76-2.68	
Critical	344	49.42	4.37	2.60-7.34	
HL: Media literacy skills					<0.001
Functional	225	17.33	1		
Interactive	406	27.34	1.79	1.19-2.69	
Critical	192	60.42	7.27	4.63-11.42	
HL: Self-management skills					<0.001
Functional	401	14.71	1		
Interactive	234	37.18	3.43	2.33-5.03	
Critical	188	63.83	10.22	6.81-15.35	
Stress (PSS)					<0.001
High/Moderate	640	26.09	1		
Low	183	54.10	3.34	2.37-4.69	
Depression (CES-10)					<0.001
Severe	325	16.00	1		
Moderate	282	34.40	2.75	1.87-4.04	
Mild	216	54.17	6.20	4.16-9.25	

[Table/Fig-7]: Bivariate analysis of factors associated with good Quality of Life (QOL) using the simple logistic regression presenting crude odds ratios, 95% CI and p-value (N=823).

Factors	Number	% Good QOL	Crude OR	Adjusted OR	95%CI	p-value
HL on self-management skills						
Functional	401	14.71	1	1		<0.001
Interactive	234	37.18	3.43	3.39	2.25-5.12	
Critical	188	63.83	10.22	5.57	3.46-8.94	
HL on media literacy skills						
Functional	225	17.33	1	1		<0.001
Interactive	406	27.34	1.79	1.69	1.07-2.65	
Critical	192	60.42	7.27	3.29	1.92-5.63	
Depression						
Severe	325	16.00	1	1		<0.001
Moderate	282	34.40	2.75	2.56	1.68-3.91	
Mild	216	54.17	6.20	5.05	3.23-7.78	
Occupational Health and Safety (OHS) problems on ergonomic level						
High	265	23.40	1	1		0.046
Low/Moderate	558	36.56	1.88	1.42	1.01-2.09	

[Table/Fig-8]: Multivariable analysis of factors associated with good Quality of Life (QOL) using the multiple logistic regression presenting odds ratios, adjusted odds ratios, 95%CI and p-value (n=823).

DISCUSSION

This study found that less than one-third of public work division workers in the Northeast of Thailand had good QOL (32.32%), whereas 64.52% had fair QOL. This finding was consistent with the previous study on OHS and QOL among municipal waste collector in the northeast of Thailand found that 56.90% had fair level of QOL and the previous study among Thai building construction workers which found that half of the workers (50.9%) had fair level of QOL [26,27]. It was also similar with a previous study on occupational hazards and QOL among fertiliser factory workers in Assiut city, Egypt found that more than half of workers (53.10%) had fair QOL [28].

This study indicated that having interactive and critical level of HL on self-management skills, HL on media literacy skills were associated with having good QOL among public work division workers. The possible explanation could be that workers who have good understanding of health information could maintain good QOL. This explanation was supported by previous studies identifying the relationships between HL, especially on access to health information and services, and QOL [29,30].

In addition, this study also found that those with mild-to-moderate depression were more likely to have good QOL when compared with those with severe depression. This finding was consistent with a previous study among Myanmar migrant workers in the South of Thailand [31]. This study reported that about 40% of the Public Work Division workers had severe depressive symptoms. A study among Japanese employees on the prevalence of depressive symptoms and related factors found that 44.2% had high scores of depression on the CES-D [32]. Furthermore, a study on Hypogonadism, rectal dysfunction, depression and QOL among middle-aged male workers in Korea found that factors associated with QOL were depression [33]. This may be because of hard work, work in hazardous environments and work pressure affecting psychological and physical health of the workers and QOL [34].

This present study found that 74.73% of the workers had moderate level of OHS problems. Having low ergonomic OHS problems were associated with having good QOL of Public Work Division workers. This might be that health hazards especially ergonomic had impact on their health [4,5,8]. This finding is supported by the study which indicated that ergonomic and stress had impact on QOL of dentists [35].

Limitation(s)

This cross-sectional study was conducted among Public Work Division workers of Local Government Organisations in the Northeast of Thailand; consequently, it might not represent Public Work Division workers of other regions. The independent variables and dependent variable were simultaneously assessed, so the causal relationship was not identified.

CONCLUSION(S)

This present study observed that less than one-third of Public Work Division workers in the Northeast of Thailand had good QOL. After adjusting other covariates, this study found that HL, depression, and ergonomic OHS problems had influence on QOL. Appropriate OHS management at work, improving HL and mental health would help strengthening their QOL.

It is suggested that further studies should identify the causal relationship by using longitudinal designs, such as cohort study, to confirm this causality.

Acknowledgement

Special thanks to the Faculty of Public Health, Khon Kaen University, and Rajabhat Nakhon Ratchasima University, Thailand for their support.

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jul 18, 2020
- Manual Googling: Sep 23, 2020
- iThenticate Software: Oct 26, 2020 (5%)

ETYMOLOGY: Author Origin

Date of Submission: Jul 17, 2020
Date of Peer Review: Aug 21, 2020
Date of Acceptance: Sep 23, 2020
Date of Publishing: Nov 01, 2020