ORIGINAL RESEARCH

IJPHY

AN ANALYSIS ON KNOWLEDGE AND ATTITUDE OF SHIPPING PORT WORKERS TOWARD NONSPECIFIC BACK PAIN

[1]Izham Zain

[2]Faizal Mohamad

ABSTRACT

Background: Nonspecific back pain can be defined as pain and discomfort, localized over below the costal margin and above the inferior gluteal folds. Such disorder are known to be a major cause of reduced work capabilities and causing substantial financial consequences and poor productivity. Occupational related nonspecific back pain is the common disorder affecting those workers performing high physical demanding task. The shipping port workers were exposed to hazardous working nature and known to be affected. Numerous study indicate that knowledge and attitude towards safety were contributing factors to occupational related back pain. Currently no study was conducted to determine the relationship between knowledge, attitude and occupational related back pain among them. The objective of this study is to evaluate the prevalence of nonspecific back pain and determine the difference between knowledge and attitude toward such incident.

Methods: The respondents were workers known to have nonspecific back pain. The data collection is carry out through a set of questionnaire consists of knowledge, attitudes and Nordic questionnaire on area of back pain.

Results: Majority of respondents (n = 70) involve in driving and maneuver terminal crane cargo. The mean of knowledge score is 7.49 (±1.20), attitude score is 5.72 (±1.33) and were ranked in good and moderate respectively. There is no statistical difference between knowledge, attitudes with workers job nature, academic qualification and years of working experience.

Conclusion: A preventive intervention should be introduced to enhance workers attitudes and curb the nonspecific back pain incidents. Employee positive involvement, strongly supported by employer and active engagement of healthcare provider able to curb occupational related back pain at work place.

Key words: Occupational related injury, non-specific back pain, shipping port workers, knowledge and attitudes.

Received 31st May 2015, revised 16th June 2015, accepted 24th July 2015

www.ijphy.org

DOI: 10.15621/ijphy/2015/v2i4/67738

CORRESPONDING AUTHOR

[2]**Dr. Faizal Mohamad**

Postgraduate Programme of Industrial Safety Management,
School of Applied Physics,
Faculty of Science and Technology
University Kebangsaan Malaysia, Bangi,
SELANGOR, Malaysia.

[1]Physiotherapy Department,
School of Health Sciences,
KPJ Healthcare University College,
Malaysia

INTRODUCTION

Nonspecific back pain can be defined as pain and discomfort, localized over below the costal margin and above the inferior gluteal folds area and it is not attributed to a recognizable pathology. Work factors such as performing repetitive task, awkward posture, heavy physical task and vibration effects were known to be a risk for the occupational related nonspecific back pain. Numerous studies indicate that such disorder are known to be a major cause reduced work capabilities and causing substantial financial consequences due to workers' compensation, medical expenses, and poor productivity.[1]

In the shipyard industry, working environments is known to be well-established risk factors for predisposing low back pain. Many of the shipping port workers are often required to adopt awkward postures for significant periods of the workday. The prevalence study done by Fallentin (2003) on workers involve in heavy industry found that the incidents of back pain is significantly high among workers involved in manual materials handling activities, maneuver heavy vehicle, performing repetitive and static work process, and from the effects of sitting on vibration originating from machinery. The shipping port workers were exposed to hazardous working condition and have high probability of suffering occupational related back pain.[13] Prevalence study conducted by Evangelos et al (2006) found that 38% of shipping port workers suffered back pain and majority were blue collar types of workers. The recent study conducted by Izham et al (2013) on prevalence of occupational related disorders among shipping port in Selangor found that 45% of workers whom seek for physiotherapy intervention was diagnosed of occupational back pain. In addition, 50% of them were engaged in maneuver heavy vehicles. There is consistent finding between both studies on the incident of back pain among shipping port workers.

There is other study found that 80% of occupational related injuries were due to workers attitude towards practicing hazardous practice at workplace.[14] Such factors seems to be a complex phenomenon which is difficult to understand and yet to be proven scientifically. However, such theory cannot be decline totally without an effort to determine the relationship between workers attitude and safety at workplace.

Sanaei Nasab et al (2009) conducted a questionnaire study to determine the relationship between workers attitude and occupational accident. They found that 53% of respondent have low knowledge on safety and 30% indicate an unsafe working practice at workplace. Henrich (1931) has highlighted the relationship between attitude and behavior in the workplace through the domino theory. He pointed out that 88% of workplace injuries are due to poor human attitude towards practicing safe work practice at work place. He believes that, workers knowledge and attitudes were major contributing factors to workplace injuries.

Currently no study was conducted to determine the relationship between knowledge, attitude and occupational related back pain among shipping port workers. It gave difficulty to health care provider to design suitable intervention to curb such occupational related disorders. Therefore, there is a need for studies addressing this issue, especially in the context of work in the shipping port industry.

The objective of this study is to determine the prevalence of nonspecific back pain among shipping port workers and to evaluate the difference between knowledge and attitude of safety at work with the nonspecific back pain incident among them.

METHOD

This is a cross sectional prevalence type of study conducted on shipping port workers. The selection exercise was carry out based on the medical certificate of year 2013 that kept at the human resource department. To determine the adequate sample size that has a significant power of inference, calculation is based on the formula by Kish.L. (1965) of $n = (z_{1-\alpha})^2 (P(1-P)/D^2)$.

The screening process for eligibility of respondent is carry out by the researchers. The researcher will compile the eligible workers name list before distributing study questionnaire to their respective department. To minimize the data collection bias, respondents need to kept the completed answer questionnaire in the given envelop and dispatch it to the shipping health clinic.

The research team develops the set of questionnaire. The items in the questionnaire were constructed based on literature review. The questionnaire consists of 4 sections and were in Malaysia language.

Section 1 consist of 11 questions on respondent characteristic data which included age, department of work, job nature and type, work activity that caused back pain, academic qualification, and employment duration. Such information provides respondents background in order to determine the difference of back pain among them.

Section 2 and 3 consist of 10 questions that acquired respondent knowledge and attitude towards safety at work place. The correct answer will carry one mark and the total scores is ranked 0 – 4 (poor), 5 – 7 (moderate) and 8 – 10 (good).Section 4 is Nordic questionnaire on area of back pain, the numbers of back pain episodes and level of back pain and discomforts.

Cronbach alpha were used to determine the reliability of knowledge and attitude questionnaire section and the scores is r = 0.870 and r = 0.906 respectively.

Individual-informed consents obtained from respondent prior data collection. Confidentiality of respondents data were maintained throughout the study.

All data were analyzed using SPSS version 12. The descriptive analysis was used to describe demographic data and characteristic on nonspecific back pain among respondents. ANOVA test was used to determine any significant difference between knowledge and attitude among respondents with back pain episode.

RESULTS

The prevalence rate of nonspecific back pain among port workers is 3% (n=103) with the highest prevalence age of 19 to 54 years old. The mean years of working are 6.8 years. Majority (n=75) of respondent were from secondary school leavers, (n=24) having training skill certificate from recognized training institutional and remaining (n=3) and (n=1) were holding bachelor and diploma qualification respectively. The highest numbers of respondents were engaged to terminal cargo operator (68%), performing computer work (11.7%) and driving heavy vehicles (9.7%). (Table 1).

Distribution area of back pain is varies among respondents. Low back pain is significantly higher among them (n=36), mid back till low back (n=32) and remaining of 23 respondents complain of whole back pain. Less than 7 respondents complain of having mid and upper back.

To determine the difference between confounding variables with knowledge, attitude and the prevalence of back pain among respondents, ANOVA test was used. There is no statistical significant difference was detected. However there is a difference of mean score between knowledge and attitude. The knowledge score of respondents were high compare to the attitude score (Table 3). Majority of respondent (53%) have good score of knowledge on safety at workplace, however only small percentage (4.9%) of respondent indicate good attitude. The attitude score of safety at work place among terminal crane operator, heavy vehicles driver and forklift driver were ranked moderate category with the score is less than 6. It reveals that the good score of knowledge is not a main indicator to assume respondent will have a good attitude score.

Driving and maneuver heavy vehicles were known to be a prime cause of back pain among them (n=50). The finding is consistent to the majority number of respondents were engaged as terminal crane operator which involve in maneuver of heavy crane in shipping cargo activity. It required them to lean forward for certain period of time during loading and unloading cargo activity.

DISCUSSION

The study indicate that there is a difference between knowledge and attitude score among them. Majority have better knowledge score (7.49 ±1.20) however lower in attitude score (5.7 ±1.33). We cannot assume, good knowledge ranked and score will directly influence the good attitude towards safety at work place. There is other confounding factor need to be evaluated and considered before jump to any conclusion.

Numerous studies mentioned on the relationship between safe working environment and performance. It is suggested that safe working environment should be classified as an utmost agenda in achieving safety attitude at work place.[3,9,11] The relationship between safe working environment and safety attitude can be attained through adequate knowledge of safety at work place. In this study, 53% of workers indicate good knowledge on safety, however majority of them (85.5%) didn't indicate good attitude towards safety at work place. It suggests that there is no association between knowledge and attitude towards nonspecific back pain. Furthermore, good knowledge alone cannot be an indicator of acceptable behavior at work place. Working environment should be assessed to determine it association however it is not the scope of this study.

The factor of difference academic qualification difference which will influence the employee's knowledge and attitude score were statistically not consistent. Even though there is good knowledge score, but the attitude score among them remain at moderate level. The academic qualification is not relatively a factor in determining good and safe attitude at work place. It seems thaton job training is not adequate to mold good attitude and belief. A more structure training programme is require to enhance better attitude towards self-safety at work place.

It is assume that a more experience workers will indicate safe work attitude. Study conducted by Cleveland & Shore (1992) on compliance with safety practices indicates that experienced and older workers tend to show more positive work attitudes than their younger counterparts. Recent report by Boyce & Geller (2002) noted that in the risk-taking and accident at work place it found that the younger workers tend to engage in dangerous work behaviors and activities. In this study majority (n = 51) workers reported to have back pain were in the range of 1 to 9 years of working experience. The reason of why younger age group of workers tend to engage in risk taking behavior has been mentioned by Costa & McCrae (1988) on personality trait theory. They noted that the openness to encounter new experience decline with age so that younger workers have been more active, more anxious, onto new experiences than their older counter parts. Therefore, younger age group of workers was prone to encounter occupational related injury compare to experience workers.

The differences in individual job nature and pattern indicate that some individuals may experience a substantially higher risk for back injuries. Workers engaged in maneuver of cargo crane noted to have higher incident of back pain compared to other types of worker categories. Sitting in a leaning forward posture for more than 2 hours might be a contributing factor of back pain. Such sitting posture causing undue compression over vertebrae spine structure and lead to deterioration the load tolerance of the spine.[10,12] Furthermore excessive BMI and abdominal obesity also have an effect of back pain. An increase in abdominal circumference and BMI measurement may influence the lumbar lordosis and its mobility during forward flexion or lateral bending. Additionally excess weight may cause low back pain through increased load compression on the intervertebral discs or increased stress on the spine when bending. The finding is consistence with nature of task demonstrated by the terminal crane operator.

There are few factors that might influence the moderate outcome on attitude score, such as working environment. Such factors has been discussed and highlighted by numerous studies.[3,9,11] However working environment were not the objective of this study. Therefore an evaluation on work place should be done in order to determine its relationship to safe attitude at work place.

CONCLUSION

To enhance workers attitudes and curb the nonspecific back pain incidents, a structure preventive interventions should be introduced. The objectives of health training are to empower workers on various prevention techniques. The ultimate goal following health training is to enable them to do their work safely and efficiently without any incidents of occupational related musculoskeletal injury at work place.
Providing rehabilitation services following occupational injuries does not contribute betterment of workers condition for long term, furthermore such services is costly and the expenses need be borne by the employer. Prevention is the best intervention and known to be an effective method in equip workers with suitable prevention skills and furthermore it doesn't require high cost to implement.

ACKNOWLEDGEMENT

We thank all the employees participated in the study. We would also like to thank Mr. Shamsul Azharof Shipping Industry for his assistance in data collection.

Table 1: Individual characteristics and determinants profiles on nonspecific back pain among shipping port workers (n = 103)

	n	%	Mean	sd	Min	Max
Age (years)			31.8	±8.39	19	54
Years of working (years)			6.8	±5.38	1	18
BMI (w/m²) Waist measurement (cm)			25.3 34.5	±4.83 ±3.68	15.9 28	42.6 44
Knowledge score			7.49	±1.20	3	9
Poor (0 – 4) Moderate (5 – 7) Good (8 – 10)	3 45 55	(2.9) (43.9) (53)				
Attitude score			5.7	±1.33	2	8
Poor (0 – 4) Moderate (5 – 7) Good (8 – 10)	12 86 5	(11.7) (85.5) (4.9)				

Academic qualification						
Secondary school	75	(72)				
Technical skill Certificate	24	(23)				
Diploma	1	(1)				
Bachelor	3	(3)				
Activity contribute to back pain (Self-perceived)						
Driving and maneuver cargo crane	50	(48.5)				
Lifting heavy object	23	(22.3)				
Repetitive trunk motion	14	(13.6)				
Prolong trunk bending position	10	(9.7)				
Prolong sitting	6	(5.8)				

Table 2: The Prevalence of anatomical area of back pain among shipping port workers.

	Area of back pain									
	Upper back		Mid back		Mid back till low back		Low back		Whole back	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Job nature										
Terminal crane operator	4	(80)	4	(57)	22	(68)	25	(69)	15	(65)
Heavy vehicle driver	1	(20)	1	(14)	3	(9)	2	(5)	3	(13)
Computer work			2	(28)	1	(3)	4	(11)	2	(8)
Supervisor					1	(3)	2	(5)	2	(8)
Forklift driver					4	(12)	2	(5)	1	(4)
Maintenance					1	(3)	1	(2)		
Total	5	(5%)	7	(7%)	32	(31%)	36	(35%)	23	(22%)

Table 3: The difference between knowledge, attitude score and workers determinants with nonspecific back pain.

			Knowledge score				Attitude score			
Variable	n	(%)	mean	(sd)	*f*	*P* value	mean	(sd)	*f*	*P* value
Job nature					1.64	0.156			0.39	0.85
Terminal crane operator	70	(68)	7.47	±1.27			5.83	±1.31		
Computer work	12	(11.7)	7.08	±0.99			6.17	±0.57		
Heavy vehicle driver	10	(9.7)	8.20	±0.63			5.90	±1.96		
Supervisor	5	(4.9)	7.80	±0.83			6.17	±0.70		
Forklift driver	4	(3.9)	7.25	±1.71			5.25	±2.21		
Maintenance	2	(1.9)	6.50	±0.70			6.50	±0.70		
Academic Qualification					0.379	0.768			0.85	0.46
Secondary school	75	(72.8)	7.43	±1.18			5.67	±1.40		
Technical skill certificate	24	(23.3)	7.67	±1.34			6.25	±1.11		
Bachelor	3	(2.9)	7.67	±0.57			5.75	±5.77		
Years of working					0.329	0.804			0.45	0.713
1 – 5	51		7.49	±1.36			5.73	±1.33		
6 – 10	19		7.42	±1.07			6.11	±0.65		
11 – 15	29		7.66	±0.93			5.97	±1.52		
16 – 20	4		6.50	±1.29			5.25	±2.21		
Significant difference value *p < 0.005*; Statistical test Anova.										

REFERENCES

1. Arndt V, Rothenbacher D, Daniel U, Zschenderlein B, Schuberth S, Brenner H. Construction work and risk of occupational disability: a ten year follow up of 14,474 male workers. Occup Environ Med. 2005; 62 (8): 559-566.
2. Boyce, T. E., & Geller, E. S. An instrumented vehicle assessment of problem behavior and driving style: Do younger males really take more risks? Accident Analysis & Prevention. 2002; 34 (1): 51-64.
3. Brown, S. P., & Leigh, T. W. A new look at psychological climate and its relationship to job involvement, effort, and performance. *Journal of Applied Psychology.1996*;81(4):358-368.

4. Cleveland, J., & Shore, L.). Self- and supervisory perspectives on age and work attitudes and performance. Journal of Applied Psychology. 1992; 77(4): 469-484.
5. Costa, P. T., & McCrae, R. R. Personality in adulthood: A six-year longitudinal study of self-reports and spouse ratings on the NEO personality inventory. Journal of Personality and Social Psychology. 1988; 54(5):853-863.
6. EvangelosAlexopoulos, Dimitra Tanagra, EleniKonstantinou, Alex Burdorf. Musculoskeletal disorders in shipyard industry: Prevalence, health care use and absenteesim. Biomed central Musculoskeletal disorders. 2006; 7: 88
7. Fallentin N, Thomson JF. Risk factors in the onset of neck/shoulder pain in a prospective study of workers in industrial and service companies. Occup Environ Med. 2003; 60 (9): 649-654.
8. Izham Zain, AzrulAnuar, AsrinaAsri, ShamsulAzhar. Prevalence of work related musculoskeletal disorder among port workers: Quantitative analysis at the Physiotherapy Centre of Malaysia Shipping Industry, Selangor. Journal of occupational Safety and Health, NIOSH Malaysia. 2013; December Vol 10 (2).
9. James, L. A., & James, L. R. Integrating work environment perceptions: Explorations into the measurement of meaning. Journal of Applied Psychology. 1989; 74: 739-751.
10. Luca Vismara1, Francesco Menegoni, Fabio Zaina, Manuela Galli, , Stefano Negrini, , Paolo Capodaglio. Effect of obesity and low back pain on spinal mobility: A cross sectional study in women. Journal of NeuroEngineering and Rehabilitation. 2010; 7: 3-8
11. Morrison, D. L., Upton, D. M., &Cordery, J. Organizational climate and skill utilization. Paper presented to the 12th Annual Conference of the Society for Industrial and Organizational Psychology, St. Louis, MO. 1997.
12. Nils Fallentina, RammohanMaikalaa, Jacob Banksa, Niall Obriena and Amanda Rivarda. Specificity of back muscle response to submaximal fatiguing contractions. IOS Press. 2012; 41: 2539 – 2544
13. Punnett L, Pruss-Ustun A, Nelson DI. Estimating the global burden of low back pain attributable to combined occupational exposures. Am J Ind Med. 2005; 48(6):459–469.
14. Raouf. A. Theory of accident causes. Encyclopedia of Occupational Health and safety. International LabourOrganisation (ILO). Geneva. 2011
15. Sanaei Nasab, Ghofranipour, Kazemnejad, Khavanin, Tavakoli. Evaluation of knowledge, Attitude and Behavior of Workers towards Occupational Health and Safety. Iranian J Publ Health. 2009; 38 (2): 125-129.

Appendix:

BACK PAIN EVALUATION FORM.

This questionnaire is aimed to determine knowledge on back pain. All information provided will be treated confidential and only be used for this survey.

Section 1:

1. Employee identification number. .....
2. Department: .....
3. Nature of job: .....

   (e.g.: Forklift driver / maneuver heavy machinery (cargo crane operator) / lorry driver / performing task in front of computer / performing maintenance task on vehicle or building)
4. Job activity that contribute to back pain: .....

   (e.g. Driving , lifting heavy load, static posture for a longer period of time)
5. Academic qualification: .....

   (eg. Primary school / Secondary school / Technical skill certificate / Diploma / Bachelor)
6. Age: .....
7. Gender: .....
8. Body weight: .....
9. Height: .....
10. Working experiences: .....

Section 2:

Please read the information below and mark (X) in the respective box.

		Yes	No
1	Back pain can occur on all age categories.	☐	☐
2	Back exercise can minimizing the incident of back pain.	☐	☐
3	Vibration effects at work place are the factors that can cause back pain.	☐	☐
4	Lifting heavy load are the main factor causing back pain.	☐	☐
5	Consuming pain killer medication are the effective measure in reducing back pain.	☐	☐
6.	Back pain can reduce productivities.	☐	☐
7.	Dull aching pain and discomfort over back region are the early sign of back injury.	☐	☐
8.	Physiotherapy treatment can assist in reducing back pain symptoms.	☐	☐
9.	Obesity can cause severe back pain.	☐	☐
10.	Performing repetitive trunk motion task can lead to back injury.	☐	☐

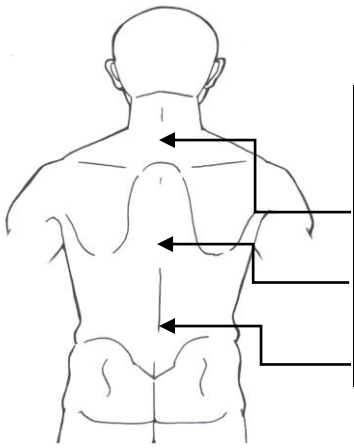
Section 3:

Please read the information below and mark (X) in the respective box.

		Not agree	Agree
1.	Due to back pain, I need to take a long rest in order to prevent it becoming worst.	☐	☐
2.	I can do my back strengthening and stretching exercise at work place.	☐	☐
3.	It is the responsibility of employees to ensure the safety at work place.	☐	☐
4.	It is my responsibility to take care the equipment and ensure it is safe to be used in order to prevent injury at work place.	☐	☐
5.	My back pain will remain unchanged throughout my life and it will be an obstacle to my success in life.	☐	☐
6.	I able to control my back pain through positive attitude at work place.	☐	☐
7.	Back exercise are the effective method in preventing back pain and it is cost effective.	☐	☐
8.	I will seek my working collogue assistance in lifting heavy load.	☐	☐
9.	It is employer responsible to ensure workers safety at work place.	☐	☐
10	I will take medical leaves for certain period of time to reduce my back pain.	☐	☐

Section 4: (Body discomfort)

Back discomfort experience for the past 1 year.
Pease mark (/) at the respective numbers.



Back area	Numbers of discomfort episode	Level of discomfort
Upper back	1 2 3 4	1 2 3 4
Mid back	1 2 3 4	1 2 3 4
Low back	1 2 3 4	1 2 3 4

Notes:

Numbers of discomfort episode	1 = 1- 3 times a year. 2 = 1 - 3 times in a month. 3 = 1- 3 kali times in a week. 4 = Everyday
Level of discomfort	1 = Minimal discomfort. 2 = Moderate discomfort and it not disturbing my daily activities. 3 = Strong discomfort and it limit my movement. 4 = Severe discomfort and require medical leaves.

Citation
Zain, I., & Mohamad, F. (2015). AN ANALYSIS ON KNOWLEDGE AND ATTITUDE OF SHIPPING PORT WORKERS TOWARD NONSPECIFIC BACK PAIN. *International Journal of Physiotherapy*, 2(4), 594-601.