Factors Related to Stress Among Workers in Small Garment Factories Center Areas, Vientiane Capital, Lao PDR.

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Abstract

Stress was recognized as world-wide a major challenge to worker's health and healthiness of the organizations. The consequence of stress was a deviation from the existing physical and psychological condition on human life. Stress could be brought from pressure at home and workplace. This cross-sectional research aimed to identify the factors related to stress among workers in small garment factory center areas, Vientiane Capital, Lao PDR. 180 workers from 10 factories were cluster sampling of this study. The workers were interviewed to stress assessment by Thai standards stress test. Demographic factors were collected and analyzed to determine an association with the stress level. The study showed that mostly of workers for studied were females 93.9% and lower than 20 years old 52.2%, Long hour of the work per day, overtime working were 47.2% and the study found that stress were moderate level 88.9%. The stress of workers were significantly associated with working hours, exercise and sitting hours per day ($p = 0.014$, $p = 0.013$ and $p = 0.009$, respectively). Moreover the stress of workers were significantly associated with foot rest under desk, comfortable working position and shoulder pain problem ($p < 0.001$, $p < 0.001$ and $p = 0.015$, respectively). This research can be used to improved garment workplace design on the development of work-related stress and study guideline for setting up policy or strategy, regulations for occupational health and safety monitoring.

Keywords: Stress/Small Garment Factory/ Lao PDR.

Introduction

Stress harmfully impacts the human lives, including workers. The consequence of stress is a

deviation from the existing physical and psychological condition of human life. The almost of people's has to cope with those adjusts, not only individuals, but the organizations and governments sectors as well. Anand Chand (2006) defied that cause of work stress the main physical health problem faced by work. The study was found that workers in the high stress group were dissatisfied with their work and reported poorer mental than the workers of the low stress group. The word "stress" is one of the most frequently used words today, because the human has to do necessary work speedily without maintaining balance in physical and psychological status. (Braaten Den J., 2000).

Stress result of assessment it was found that don't sleep well, not feeling well, don't like doing anything, not good feeling, done like to meet any one, headache, unhappy, always worry more and more, cannot concentration and feeling tire. Existing garment factories 103 factories total 30,000 workers in the years 2011, the Association of the Lao Garment industry has submitted the plan to develop garment industry from 30,000 workers to 60,000 workers by the years 2015 (Ministry of Industry report, 2011). According report key informant interviews in the Lao Garment Sector Survey (GSS, 2011) coordinated by the World Bank. For many workers, the reality of factory work is very different from their expectations: hard work and long hours compulsory overtime and poor living conditions, and insufficient income (especially when first starting) to cover basic living expenses. In particular, demands of industrial working routines and pressure from managers was completely new and very difficult for many working condition and difficult and demanding, often dirty and poorly paid, some cases, complained of being subjected to harsh treatment by supervisors and most choose to continue working in the garment. However, Lao garment factories were lack of information on occupational safety and health, related to health hazard injuries and lack of research or survey on this field, especially, the field of stress. Therefore, this study sought to investigate workplace related to stress in garment factories. The result of this study will be useful and benefit to improve working condition and manage to prevent of stress health hazard for employers, employees, or all stakeholder to be aware of policy, regulations and planning to solve and plan for prevention in the future.

Material and Methods

Population and samples

This study was a cross-sectional study. The population of this study was selected from 10 small size of garment factories, total population 955 workers and used cluster sampling selected 180 in sewing produce line. Simple random sampling method were used to select of samples from 3 factories: Factory No. 6 was taking all of 90 workers; Factory No. 3 was selected only 50 workers from 110 workers; Factory No. 9 was selected only 40 workers from of 80 workers and The first reason a small size of garment factories all of each look like similar situation and located at enter area Vientiane, Lao PDR and others reason during in this time workers not coming to worked, because they did not have more work.

Research instruments

There were two instruments in the study consisted of (a) questionnaire was used to interview the factors such as demographics, history of work, health behavior and working posture. (b) Thai standard stress test for stress assessment. Reference scores level of assessment with Never = 1, Sometime = 2, Fairly = 3, Very often = 4.

Ethics

Initial approval was obtained from the Human Research Committee of Burapha University and before initial approval about research ethic was obtained from Lao country.

Data collection

Data collection was started from 1st to 28th August, 2012. Initial approval about research ethic was obtained from country. Before interviews data collection was done training for team. To find exactly the content and experts review the coverage and compliance objectives before using. Stress assessment data collection was done by Thai Stress Test. Timing for interview was done after they were finished their work 5 - 7 pm, and weekend 9 - 12 am. Because during the daily working process and at that time factories owner did not allow to take interview. The main reason was that it was inconvenient for them to give an interview during their working hours.

Data analysis

The data were analyzed by using descriptive statistics to analysis demographic factors, history of work, illness, health behaviors and working posture and stress. Chi-square test was used for analysis relationship between history of work, health behavior, work position and stress.

Result

1. Demographic factors showed that in small garment factories mostly were female (93.9%) and aged less than 21 years (52.2%), Body Mass Index (BMI) for female and male were normal (69.8%), and (72.7%), respectively. Education at primary school (67.8%), Marital status showed single (90.6%), and income per month between 500,000 - 1,000,000 kips (87.2%). Data are shown in Table 1.

Table 1 Number and Percentage of sews workers classified by demographic factor.

Demographic factors	Number	Percentage
Total	180	100.0
Sex		
Male	11	6.1
Female	169	93.9
Age (years)		
≤ 20	94	52.2
21 - 25	59	32.8
26 - 30	24	13.3
≥ 31	3	1.7
BMI (Female) (n = 169)		
Under weight	48	28.4
Normal	118	69.8
Over weight	2	1.2
BMI (Male) (n = 11)		
Under weight	2	18.2
Normal	8	72.7
Over weight	1	9.1
Education		
Illiteracy	3	1.7
Primary school	122	67.8
Secondary school	9	5.0
High school	44	24.4
Certificate	2	1.1
Marital status		
Single	163	90.6
Married	15	8.3
Divorce	2	1.1
Income (in kips)		
≤ 300,000	1	0.6
300,001 - 500,000	20	11.1
500,001 - 1,000,000	157	87.2
≥ 1,000,0001	2	1.1

Mean = 770,000 S.D. = 164,401 Min. = 300,000 kips Max. = 1,200,000 kips

2. History of work factors showed that worker had working with another tasks before (72.2%), working with this tasks for 1 years (42.8%), hours for the working per day from 11 - 12 hours at (47.2%), any problem in the work 90.0%. Data are shown in Table 2.

3. Health behavior factors showed that all of workers no smoking (100.0%), no drinking alcohol (66.1%), exercise (35.0%), and frequency for excises in sometime (71.4%). Data are shown in Table 2.

4. Working posture factors showed that no had any feet rest (13.3%), chair was not had arm and back support 99.4% following chair did don't had height adjustable 99.4%, kind of chair and desk design mostly making by wood (100.0%). Chair and desk not comfortable for workers to work (26.1%), not had any foots rest under desk (85.6%), and no comfortable for working position (73.3%), hours sitting per day for working from 11 - 12 hours (47.2%), pain or problem about as neck, back, shoulder, knees, legs, feet with in sometime (23.9%, 80.0%, 71.7%, 17.8%, 8.3%), and feet (3.9%). Data are shown in Table 2.

Table 2 Number and Percentage of sewing workers classified by history of work, health behaviors and working posture.

Factors	Number	Percentage
Total	180	100.0
History of work		
Working with any task before		
Yes	50	72.2
No	130	27.8
Working with this tasks (years)		
1	77	42.8
2 - 3	53	29.5
4 - 5	22	12.2
6 - 7	15	8.3
≥ 8	13	7.2
Hour for the work per day and working overtime (hours)		
≤ 8	20	11.1
9 - 10	59	32.8
11 - 12	85	47.2
≥ 13	16	8.9
Any problem in the work		
Yes	18	10.0
No	162	90.0

Table 2 (continue)

Factors	Number	Percentage
Health behaviors		
Smoking		
Yes	0	0.0
No	180	100.0
Alcohol		
Yes	61	33.9
No	119	66.1
Exercise		
Yes	63	35.0
No	117	65.0
In case yes (n = 63)		
Morning	53	84.1
Daily	0	0.0
Afternoon	10	15.9
In case of frequency of excises (n = 63)		
Every day	3	4.8
Sometime	45	71.4
Occasional	15	23.8
Excises problem		
Yes	13	20.6
No	50	79.4
Working posture		
Sitting have any feet rest		
Yes	24	86.7
No	156	13.3
Chair are has arm and back support		
Yes	1	0.6
No	179	99.4
Chair can be adjustable		
Yes	1	0.6
No	179	99.4
Kind of chair and desk design		
By wood	180	100.0
Chair and desk comfortable for your work		
Yes	47	73.9
No	133	26.1

Table 2 (continue)

Factors	Number	Percentage
Have any foots rest desk?		
Yes	26	14.4
No	154	85.6
Comfortable in your working position		
Yes	48	26.7
No	132	73.3
Hours sitting per day for working		
≤ 8	20	11.1
9 - 10	59	32.8
11 - 12	85	47.2
Working posture		
≥ 13	16	8.9
Any pain or problem about neck		
Never	136	75.6
Sometime	43	23.9
Always	1	0.6
Any pain or problem about back		
Never	34	18.9
Sometime	144	80.0
Always	2	1.1
Any pain or problem about shoulder		
Never	50	27.8
Sometime	129	71.7
Always	1	0.6
Any pain or problem about knees		
Never	148	82.2
Sometime	32	17.8
Always	1	0.6
Any pain or problem about legs		
Never	165	91.7
Sometime	15	8.3
Any pain or problem about feet		
Never	173	96.1
Sometime	7	3.9

Stress assessment

Result of stress assessment, it was found that don't sleep well, not feeling well, don't like doing anything, not good feeling, don't like to meet any one, headache, unhappy, always worry more and more, cannot concentration, feeling tire, happen within same time (64.4%, 68.3%, 65.0%, 69.4%, 75.5%, 60.6%, 61.1%, 69.4%), and (61.1%). Data are shown in Table 3.

Table 3 Number and Percentage of sewing workers classified by stress assessment.

Feeling or action	Never		Sometime		Fairly often		Very often	
	n	%	n	%	n	%	n	%
1. Don't sleeps well, because over thinking and worry	53	29.4	116	64.4	9	5.0	2	1.1
2. Not feeling well and boring always	43	23.9	123	68.3	9	5.0	5	2.8
3. Don't like doing anything, because feeling upset	48	26.7	117	65.0	10	5.6	5	2.8
4. Not good feeling	41	22.8	125	69.4	12	6.7	2	1.1
5. Don't like to meet any one	68	37.8	98	54.4	10	5.6	4	2.2
6. Headache for half or both of them	29	16.1	135	75.0	8	4.4	8	4.4
7. Feeling bed and unhappy	55	30.6	109	60.6	12	6.7	4	2.2
8. Hopeless in my life	85	47.2	74	41.1	11	6.1	10	5.6
9. Feeling own myself-is not importance	84	46.7	86	47.8	4	2.2	6	3.3
10. Always worry more and more	59	32.8	108	60.0	11	6.1	2	1.1
11. Cannot concentration by myself	59	32.8	110	61.1	9	5.0	2	1.1
12. Feeling tire and don like to do anything	36	20.0	125	69.4	10	5.6	9	5.0
13. Feeling for to hate don like to do any more	54	30.0	110	61.1	13	7.2	3	1.7
14. Sound, mouse or vocalize repeatedly when don like something	63	35.0	104	57.8	12	6.7	1	0.6
15. Not ability to do anything and worry not correctly.	37	20.6	113	62.8	13	7.2	17	9.4

Table 3 (continue)

Feeling or action	Never		Sometime		Fairly often		Very often	
	n	%	n	%	n	%	n	%
16. Back, shoulder and muscle's pain	38	21.1	112	62.2	14	7.8	16	8.9
17. Easly, excited when nd to use that new anything will happen occur	53	29.4	111	61.7	14	7.8	2	1.1
18. Stomachaches	67	37.2	105	58.3	7	3.9	1	0.6
19. Decrease sex driven	127	70.6	46	25.6	5	2.8	2	1.1

Level of scores of stress assessments it was found that almost moderate 88.9%. Data shown in Table 4.

Table 4 Level of scores of stress assessments.

Level of scores of stress assessments	Number	Percentage
Low	20	11.1
Moderate	160	88.9
High	0	0.0

Association between history of work and stress

The study found that there was related between working with hours, hours sitting per day and stress at statically significant level of 0.014, and 0.009 respectively. However, there were no association between income, BMI, working with tasks per year and stress. Data are shown in Table 5.

Table 5 Pearsons correlations coefficient between demographic factors, (including income, BMI), history of work, working posture (Hours sitting per day) and stress.

Factors	R	p
Demographic factors		
Income	0.104	0.104
BMI	0.47	0.527
History of work and stress		
Working with hours per day	0.182	0.014
Working with tasks per year	0.096	0.199
Working posture		
Hours sitting per day	0.195	0.009

Association between health behavior and stress

The study found that there were relationship between did exercise and stress at statically significant level of 0.05 ($p = 0.013$) and no significant relationship between alcohol, time for exercise, frequency did exercise and had problems with muscle cramping during exercise. Data are show in Table 6.

Table 6 Association between health behavior and stress.

Factors	Stress assessment				χ^2	P
	Low		Moderate			
	n	%	N	%		
Alcohol						
Yes	3	4.9	58	95.1	3.583	0.058
No	17	14.3	102	85.7		
Exercise						
Yes	12	19.0	51	81.0	6.181	0.013
No	8	6.8	109	93.2		

Remark: *using Fisher's Exact test

Relationship between health behavior, working posture, position and stress

The study it was found that there were related between chair and desk, had foot rest under, working position was comfortable, any pain or problem about shoulder and stress at statically significant level of 0.05 ($p < 0.001$, $p < 0.001$ and $p = 0.015$, respectively). However, there were no relationship between feet rest, sitting, chair, arm and back support, chair height adjustable, problem about neck and back. Data are shown in Table 7.

Table 7 Association between working position and stress.

Factors	Stress assessment				χ^2	P
	Low		Moderate			
	n	%	n	%		
Sitting, have any feet rest						
Yes	4	16.7	20	83.3	0.865	0.352
No	16	10.3	140	89.7		
Have chair are has arm and back support						
Yes	0	0.0	1	100.0	0.126*	1.000
No	20	11.2	159	88.8		
Chair can be adjustable						
Yes	0	0.0	1	100.0	0.126*	1.000
No	20	11.2	159	88.8		
Have foots rest under desk						
Yes	10	38.5	16	61.5	23.017	< 0.001
No	10	6.5	144	93.5		
Working position is comfortable						
Yes	13	27.1	35	72.9	16.907	< 0.001
No	7	5.3	125	94.7		
Any pain or problem about neck						
Never	18	13.2	118	86.8	2.563*	0.260
Sometime	2	4.7	41	95.3		
Any pain or problem about back						
Never	6	17.6	28	82.4	2.002	0.368
Sometime	14	9.7	130	90.3		
Any pain or problem about shoulder						
Never	11	22.0	39	78.0	8.360	0.015
Sometime	9	7.0	120	93.3		

Remark: *using Fisher's Exact test

Discussion

1. Relationship between demographic factors and stress.

Demographic, sex, age, marital status, education of workers it not was found that significant, not similar previous studied by Naseer, N & Deibageh, F. (1997), defied that significant level is only between age and marital status from one side and stress sources from other side. Because workers working in small factories was young aged and not married . Body Mass Index not significantly similar previous studies by Stice, Presnell, et al. (2005), Storch,Milsom, et al. (2007), almost women workers they were young and take care their body. Income it was also not found that significant and not similar previous studied by Human Ergol, J. (2006), because they had enough of wage.

2. Relationship between history of work and stress.

The study found that there was related between working with hours per day and stress at statically significant level of 0.05 ($p = 0.014$). However, there were no association between working with tasks per year and stress, similar previous study indicated by Abdel Megeid Z.M. (2010), long hours per day of working high risk associated with stress.

3. Relationship between health behavior and stress.

The study found that there were relationship between exercise and stress at statically significant level of 0.05 ($p = 0.013$). However, there were no relationship between alcohol, time to exercise, frequency for exercise, had problems with muscle cramping during exercise or workouts and stress and similar previously studies defied by Petrillo. De & McDonough, (1997 - 2007).

4. Relationship between working posture and stress.

The study found that there was related between sitting hours per day and stress at statically significant of level 0.05 ($p = 0.009$), similar previous study indicated by Metgud, D.C. 2008, because workers sitting for long time not had free time for rest and during of sewing of process they were more worry and try to access the quantity of produced.

5. Relationship between working position and stress.

The study it was found that there were related between chair and desk, had foot rest under, comfortable working position any pain or problem about shoulder and stress at statically significant level of 0.05 ($p < 0.001$, $p < 0.001$ and $p = 0.015$, respectively). Similarly, previous studied by Tim Springer, Dr. (2010), Spinger (2008), Vink et al. (2007), because chair and desk used at workplace not appropriate and comfortable for workers high risk to ergonomics problem and stress.

Conclusion

The garment factories in Lao PDR, suffers from poor efficiency of workers performance at work, as a result of using inappropriate design of sewing table, seat, poor workspace condition and work line produced management and long hours per day for working. The research target was to improve the performance of this factories by applying ergonomic human engineering which was interested in raising the efficiency of labour and improve the working environment conditions by preventing to stress causing of occupational diseases. I chose to used that a field study method in this research study which showed clearly how

the workers face many health problems due to inappropriate equipment's in performing of the garment factories sewing process.

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References

Abdel Megeid, Z.M. (2011). A Study of the Application of Ergonomics in Ready-made Garments Factories in Egypt, Faculty of Applied Arts, Industrial Design. Department. (3) Text Consolidation Fund. *Journal of American Science,* 2011: 7 (3), *z_algory@yahoo.com

Ahmed, F.A. (2001). Strategic Human Resource Management: Linking Human Resource Management with Corporate Strategy. *Journal of Business Studies,* 12 (1).

Anand Chand. (2006). Physical and Psychological Health Problem of Garment Workers Marzia Fontana[1], in the Fiji.

Becker, B.E. and Huselid, M.A. (1998). High-Performance Work Systems and Firm Performance: a Synthesis of Research and Managerial Implications. Research in Personnel and Human Resource Management, (6th ed.). Greenwich, CT: JAI Press.

Braaten Denm, J. (2000). "Occupational Stress in Mental Health Counselors". The Graduate College, University of WisconsinStout, Menomonie, Wisconsin 547.

Human, J., Ergol. (2006). The University of Texas at Arlington, Arlington, TX 76019, USA *E-mail: bsarder@hotmail.com2 Industrial Engineering Department. The Hashemite University, Zarqa 13115, Jordan J. Human Ergol., 35: 45 - 51, 2006, Received for publication September 13, 2006, page 45 - 46.

Marzia Fontana[1], Stephanie Kuttner[2], Kabmanivanh Phouxay[3] and Richard Record[4]. (2011). Labour practices and productivity in the Lao garment sector - perspectives from management and workers.

Metgud, D.C., Subhash Khatri, M.G., Mokashi, P.N., Saha. (2008). Department of Physiotherapy, KLES Institute of Physiotherapy, Nehru Nagar, Belgaum - 590 010, India, page 17.

Naseer, N. and Deibageh, F. (1997). The Sources of work stress: a field study of the sources of work stress of emergency doctors at public hospitals in the Northern.

Paolo DePetrillo, M.D. and Mark McDonough M.Ed. (1997 - 2007). "The AlcholWithdrawal Treatment Manual," by DePetrillo & McDonough, http://www.sagetalk.com

Springer, T.J. (2008). "Workplace Performance" in Minds at Work. Kimball Office. Jasper, Indiana. pp. 142 - 148.

Stice, E., Presnell, K., Shaw, H., & Rohde, P. (2005). Psychological and behavioral risk factors for obesity onset in adolescent girls a prospective study. *Journal of consulting and clinic psychology,* 73 (2), 195 - 202.

Storch, E.A., Milsom, V.A., DeBraganza, N., Lewin, A.B., Geffken, G.R., & Silverstein, J.H. (2007). Victimization, psychosocial adjustment, and physical activity in overweight and at risk for overweight youth. *Journal of Pediatric Psychology.*

Tim Spinger Dr. (2010). The Future of Ergonomic Office Seating Knoll, Inc. 2010.

Vink, P., Porcar-Seder, R., Page de Pozo, A., Krause, F. (2007). "Office chairs are often not adjusted by end users". Proceedings of The Human factors And Ergonomics Society 51st Annual Meeting. Santa Monica, California: HFES. pp. 1015 - 1019.

Wright. et al. (2003). The Impact of HR Practices on the Performance of Business Units. Human Resource Management Journal, 13 (3): 21 - 36, http://dx.doi.org/10.1111/j.1748-8583.2003.tb00096.x