MINISTRY OF EDUCATION & TRAINING
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THE REAL SITUATION OF ENVIRONMENT, HEALTH, DISEASES IN THAINGUYEN GARMENT WORKERS AND EFFECT OF INETRVENTION

Speciality: Social Hygiene and Health Organization

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SUMMARY OF PhD DISSERTATION

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The work was completed in:
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The dissertation will be protected in Dissertation Committee in National Level held in College of Medicine & Phrmacy - TNU

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The information from this dissertation can be found at:

- National Library
- Learning Resource Center - Thai Nguyen University
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LIST OF REPORTED WORKS RELATED TO DISSETATION

1. Hoang Thi Thuy Ha, Nguyen Van Son, Do Ham (2013),*“* The real situation of lung function on Thainguyen garment workers*”*, *Labor protection review,* No 8/224, pp: 27-29.

2. Hoang Thi Thuy Ha, Do Ham, *Phan Bich Hoa* (2013), *“The health and relative factors on Thainguyen garment workers”, Labor protection review,* No217+218. 1+2, pp. 88-91.

3. Hoang Thi Thuy Ha, Nguyen Van Son, Do Ham (2015),*“The real situation of diseases on respiratory track and effect of interventions in Thai Nguyen garment workers”*, Vietnam Journal of Medicine*,* No 1/4, pp: 12-16

INTRODUCTION

Weave and Garment are formed and developed from earlier. How ever, up to now, working condition have been existed risk factors to workr's health. Researchs of specialists from all over the world show that: working environment and worker's health in weave and garment industry have characteristic in compare to others. The researchs of Bianna D, Ganer A, Boha S; Denis Hadjiliadis ... (2013-2014) on weave and garment workers in Bangladesh and Pennsylvania, Philadelphia (USA) are acknowledged that: disadvantageous environmental microclimate, dust polluted.. and the rate of many diseases are increasing, especially respiratory disease.

Researchs in Vietnam are acknowledged many related diseases to weave and garment workers, especially respiratory disease (60 to 80%).

Have no perfect and systematical researchs in Thainguyen are conducted on working place, occupational safety and health on garment workers. Intervention researchs for health care, prevention to related diseases on garment worker had been no ever. So that we have been conducted the theme: "The real situation of environment, health, diseases in Thainguyen garment workers and effect of intervention " aiming at:

1. Describe the status of environment, health, diseases in Thainguyen garment workers in year 2012.

2. Analyses relative factors to health and diseases on Thainguyen garment workers

3. Evaluate the effectiveness of intervention for occupational safety and health in Thainguyen garment workers.

NEW CONTRIBUTIONS OF THE DISSERTATION

1. The dissertation has identified the real disadvantageous situation of Thainguyen garment workers's working environment: some environmental factors exceeded permissible exposure limits (PEL) such as 30-50% of temperature samples; 20-30 of dust samples. The rate of good knowledge, attitude and practice on occupational heath and safety of workers are low (61-75%).

Thainguyen garment workers's health not good: The rate of weak health is high (4.6%); The high rate of nose- throath (TN) diseases was found (67.69% to 76.20%); The rate of bronchitis is: 4.23% to 9.6%; The rate of bysinosis is: 2.31% to 2.92%).

Some relative factors to Thainguyen garment workers's health and diseases were found: occupational ages, practice on occupational heath and safety, dust polluted and using mask.

2. Solutions for intervention have been proposed for worker's health care, making high effect: diseases on repiratory tract in Thainguyen garment workers are decreasing:

- The rate of good knowledge, attitude and practice on occupational heath and safety of workers about prevention for diseases on repiratory tract is increasing; Effect of Interventions to knowledge is 52.7%, to attitude is 61.94%, to practice is 76.96% .

- Interventions made decreasing brochitis; The incident rate of acute repiratory tract infection is decreasing.

- The model of intervention have been received supporting and cooperating from communities (Employers and employees), maintained and enhanced in garment industry.

STRUCTURE OF DISSERTATION

The key part of the dissertation is 110 pages, including the following parts:

Introduction: 2 pages

Chapter 1. Literature review: 27 pages

Chapter 2. Subjects and method: 19 pages

Chapter 3. Results: 29 pages

Chapter 4. Discussion: 20 pages

Conclusions and recommendations: 3 pages

The dissertation has 106 references, including 76 Vietnamese and 30 documents in English. The dissertation includes 38 tables, 7 diagrams on quantitive results and 7 boxes for qualitative results.The appendix includes 8 subappendices with 14 pages.

Chapter 1. LITERATURE REVIEW

1.1. Environment, health and diseases of workers

About the environment, health and diseases of worker were conducted by many researchs. However the problem of unshakcable development and occupational safety and health of enterprises become very importance. USA industry is in the first ranges of the world, but have being disadvantageous working environment, for example dust polluted, many factors exceeded permissible exposure limits. Working environment of weave and Garment workers in Asia were polluted by mix compound (organic and nonorganic) dust, disadvantageous microclimate. It's risk factors for worker's health. Results of some resarchs showed: 60% of weave and Garment workers exposed to risk factors (with forced position) suffering disease in muscle, bone and rheumatic.

By Nguyen Huy Dan, Nguyen Duy Bao (National Institute of Occupational and Environmental Health) in year 2012, pollution by ocotton dust in working place and surrounded areas of weave and garment enterprises always risky and must be concerned. How to resolve? Need to be intervention by solutions how to decreasing environmental pollution, health care and preventing occupational disease of workers.

1.2. Affective factors to health and disease of worker

Earlier from XVIII century, while the light industry had been developed in European, many researchs concerning about time of exposure to occupational risk factors and diseases in Engglish's weave and garment industry. Especially in the first half of XX cetury, while the weave and garment industry had been developed, many relative risk factors affect to worker's health and relative, occupational diseases had been determimed.

In last ten years at XX cetury, many researchs about impact of working environment, physiology, biochemistry, clinical occupational disease have been conducted. Researchs in other fields were developed but have non matching suitability, therefore it is low effect for solutions to protect harmfulness, health care and preventing the occupational diseases of worker in many countries.

1.3. Intervention research for decreasing the harmfulness, protect and enhancement of worker's health, preventing the occupational accident and disease

From the last of XX cetury scientists in over the world have been researched focus to 2 orientations: environmental impact assessment and intervention for environmental improve and health protection.

Asia-Pacific Occupational Safety and Health Organization (APOSHO) have been orienting the health care of worker in the first half of XXI century is preciding Occupational Safety and Health,

health care, preventing accident, occupational disease of workers by any ways, how to coincide to eco-social condition of the each country (The 23Th of APOSHO council's resolutions, year 2007 in Singapore). Research about labor and health care on garment worker in Bangladesh (2013), Me Huq, MR Rahman, S Shermin, et all showed that: 93% workers being tired, so that leading to exhaust after work. Authors recommended about solutions for improvement of working environment and primary health care to workers, especially solutions how to make up for health's losses, enegy's restablish.

It was not many of researchs concerning to garment worker's health care in our country, especially intervention studies. About solutions for worker's health care in general, in particular of garment worker, Scientists and employers show that: It is very important for combinative suitable solutions from communication, health care, technic for occupational safety and health.

Chapter 2. SUBJECTS AND METHODS

2.1. Study subjects

2.1.1. Enterprises: Describe about working environment

Active choice 03 garment companies, enterprises have characteristic engineering processing of Thainguyen garment industry. Garment, cut, accomplish worshops of enterprises were chosen.

2.1.2. Employers and employees

Garment workers direct - exposing to relative, risk factors were chosen. Group of wokers doing in characteristic environment and occupation, garment relative factors are being chosen.

For intervention study to health protection and health care:

- Intervention group: Garment workers are doing direct exposure to engineering processing of TDT Company.

- Control group: Garment workers are doing direct exposure to engineering processing of Chienthang garment enterprise.

2.2. Study setting and duration

2.2.1. Study setting 03 garment company, enterprises were chosen: Thainguyen garment company; Garment TDT Company and Chienthang garment enterprise. In which, workers of Garment TDT Company for intervention and workers of Chienthang garment enterprise for control.

2.2.2. Study duration: From february 2012 to october 2014

2.3. Methodology

2.3.1. Study method and Design

There are two methods were applied in our research:

- Design of cross-sectional descriptive study: The study used for describe the real situation of working environment, health, diseases of workers, KAP about occupational health and health and to determine related factors for health, disease (For 1 and 2 study subjects, before the intervention).

- Intervention study: Before - after intervention design with a control group.

- Quantative study combined with qualitative study.

Qualitative design with In-depth interviews and focus group discussions.

2.3.2. Sampling chosing method

2.3.2.1. Sampling method for descriptive study

** Sample size for a descriptive study:* Calculated by the following formula:

$$n = Z^2_{(1-\alpha/2)} \frac{p.q}{d^2}$$

Where: p = 0.3 (Proportion of nose and throat acute infection) taken from the study by Nguyen Dinh Dung (31.7%), d = 0.03, $\alpha = 0.05$.

Substituting these into the formula and giving a value for n of 897 and is rounded up = 1000.

Sampling procedures: Active some workshops in choice 03 garment company. Workers were selected from lists of all by single random method, how to fit 1000:

Thainguyen garment company: 500 workers

Garment TDT Company: 260 workers

Chienthang garment enterprise: 240 workers

** Sample size for environmental study and lung function testing:* Calculated by the following formula:

$$n = Z^2_{1-\alpha/2} \frac{s^2}{(\overline{X}\varepsilon)^2}$$

Substituting into the formula and giving a value for *n* of lung function testing is 76. In practice, grand total have 281 workers; *n* of environmental study is 28 and in practice, grand total have 30 samples.

** Sampling method for intervention study*

- Sample size for a intervention study: Calculated by the following formula:

$$n = (Z_{1-\alpha/2} + Z_{1-\beta})^2 \frac{p_1 q_1 + p_2 q_2}{(p_1 - p_2)^2}$$

Where $Z_{(1-\alpha/2)}$ = 1.96, α=0.05, $Z_{(1-\beta)}$ = 2.8, sample power is 80%, p_1 = 0.32 (Proportion of nose and throat acute infection) taken from the study by Nguyen Dinh Dung (31.7%). p_2: Proportion of nose and throat acute infection after intervention decreasing additional 15%, so p_2= 0.15. Substituting these into the formula and *n* is 94 and is rounded up = 100 for both two groups. This sample size is the same for KAP of occupational health and safety research and diseases.

Sampling procedures:

- Intervention group: 100 workers of garment TDT Company

- Control group: 100 workers of Chienthang garment enterprise.

2.4.2.2. Sampling method for a qualitative study

In-depth interviews and focus group discussions were conducted 02 times before and after the intervention as follows:

- In-depth interviews: 3 in-depth interviews (02 before and 01 after the intervention).

- Group discussion: 04 Group discussions (02 before and 02 after the intervention).

2.4.3. Content of intervention

2.4.3.1. Organizable operation

Making the Directive committee of occupational health and safety and prevention for respiratory diseases. Directive committee was managed by Board of Directors and making active contents. Health section chief and occupational safety persons are activist. Director taking the responsibility president of labor protection council is head of committee. Health section chief is sub-head of committee, having responsibility being on duty and assistant board of Directors all problems of occupational health and safety and prevention for respiratory diseases inworkers.

2.4.3.2. Content of intervention

- Training and health communication of occupational safety and health, health care, prevention occupational and relative diseases, especially respiratory diseases of workers.

- Inspecting and guide workers in practice of using how to rightly, permanently, effectively of personal protection. Guide workers about improving and care of working environment.

- Using mask was putting in the first important position and having permanent inspection.

- Combination with local committee, branch inspecting of industrial medicine in oder to improve the intervention effect and permanent preservation all intervention results in lasting.

- Periodic and non-periodic inspecting permanently on actions of occupational health and safety and prevention for respiratory diseases to garment workers in oder to find out mistakes and having the plan to overcome in time. Members in Directive committee are divided doing by turns the inspecting monthly.

2.4.5. Technique of data collection and processing

2.4.5.1. Technique of data collection

* Environmental examinations were coducted in two seasons every years (winters and summers), how to assess exactly working environment.

* Direct interview study subjects about individual information, knowledge, attitude, practice of preventing respiratory diseases by survey chek lists, had been designing by occupational health experts.

* Clinical examination for total by expert doctors (Medical Specialists of I degree or medical masters) in each departments by special means and instruments: stethoscope, nose – throat illuminable lamp, reflective hammer…

* Determinative dignose for respiratory diseases: base on standards of VN Ministry of health, was published in year 2002 and ICD_{10}.

* Quanlitative study: Direct interview by printed survey chek lists up to study object. Focus group discussions: by groups of objects on understand, concern and realization of solutions for preventing respiratory diseases on garment workers. Quanlitative data was analysed by process of explaination and converge, so that focus to main problems.

2.4.5.2. Data processing and analyzing

Data were processed and analyzed by using Epi-info 6.04 and SPSS13.0.

To evaluate an intervention efficiency index and efficiency index (EI) to compare indice before and after intervention in intervention group.

Chapter 3. STUDY RESULTS

3.1. Real situation of working environment, knowledge, attitude, practice of garment worker

***Table 3.1. The rate of samples about working environmental temperature exceeded Permissible Exposure Limits** (PEL)*

Index / ***Enterprises***	***Season***	***Temperature exceeded** PEL*		
		Numbers of test	*Quantity*	*%*
Chien Thang	Hot	30	14	*46.67*
	Cold	30	12	40.0
TĐT	Hot	30	13	43.3
	Cold	30	10	33.3
TNG	Hot	30	15	50.0
	Cold	30	11	36.67
Total		*180*	*75*	*41.67*
Vietnam Standard (VNS): 5508-1991				

The rate of samples about working environmental temperature exceeded PEL was high (*41.67%*). There are different rates in every enterprises, shaking from 33% to 50%. It is characteristice, very necessary in garment working environmental care.

Table 3.2. The rate of samples about effective temperature (Webb) exceeded PEL

Index / ***Enterprises***	***Season***	***Webb exceeded** PEL*		
		Numbers of test	*Quantity*	*%*
Chien Thang	Hot	30	12	40.0
	Cold	30	11	36.7
TĐT	Hot	30	11	36.7
	Cold	30	10	33.3
TNG	Hot	30	13	43.3
	Cold	30	11	36.7
Total		*180*	*68*	*37.8*
VNS: 5508-1991= (23^0 - 25^0)				

The rate of samples about working environmental effective temperature exceeded PEL was high (*37.8%*). The disadvantageous microclimate made bad affect in harmony of body temperature.

Table 3.3. The rate of samples about concentrated dust exceeded PEL

Index / ***Enterprises***	***Season***	***Concentrated dust exceeded*** *PEL*		
		Numbers of test	*Quantity*	*%*
Chien Thang	Hot	30	9	30,00
	Cold	30	7	23,33
TĐT	Hot	30	8	26,67
	Cold	30	6	20,00
TNG	Hot	30	8	26,67
	Cold	30	7	23,33
Total		*180*	*45*	*25.00*
VNS: ≤ 1 mg/m^3				

The rate of samples about concentrated dust in all enterprises exceeded PEL was high (*25.00%*). The disadvantageous microclimate made bad affect in harmony of body temperature. Samples tests in hot season at all enterprises, exceeded PEL rate are always higher than cold season (3% – 7%).

Box 3.1. The remarks of Trade-union organization about working environment and health care for workers

In the interview with enterprise's trade-union leader about working environment and health care for workers. Mr. Do Ngoc T – President of the Garment TDT Company Trade-union said that:

- Company Trade-union had known about dust polluted in working environment is needs to concern. It is the risk factors to spiratory diseases.
- Company Trade-union had known about the roles myself but not enough doing in this field.
- Company Trade-union had concerned only to doing, resting regime... had non to occupational saferty and health.

Table 3.4. Training of occupational saferty and health to workers

Training / ***Enterprises***	***In begining***		***Periodic***	
	Quantity	*%*	*Quantity*	*%*
Viet Thai (500)	217	43.40	203	40.60
Chien Thang (240)	96	40.00	91	37.92
TĐT (260)	113	43.46	105	40.38
***Total** (1000)*	***426***	***42.60***	***399***	***39.90***

The rate of training only having 40%-43%, especially periodic training having 39,9%. Compare on demand from ministry of labor, it is not good rate.

Box 3.2. The role of occupational safety and medical cadres about OSH, health care, preventing diseases for workers.

In group discussions meeting about the role of occupational safety and health, health care and solutions for occupational safety and health and preventing diseases for garment workers, all opinions are focusing to some problems:

- All occupational safety and medical cadres of company had learned about disadvantageous working environment, occupational safety and health must be improve.
- Occupational safety and health not meet the needs by many subjective and objective reasons, both from employees and employers.
- About speciality, occupational saferty and health, medical cadre in company said that: their knowledge and skill not enough for worker's health care and respond to occupational safety and health.

3.3. Real situation of health, diseases and relative factors of Thainguyen garment worker

Table 3.5. Categories of worker's health (*Quantity/ Q-tity and %****)***

Health / ***Enterprises***	***Category 1 &2***		***Category 3***		***Category 4 & 5***	
	Q-tity	*%*	*Q-tity*	*%*	*Q-tity*	*%*
Viet Thai (500)	279	55.80	192	38.40	29	5.80
Chien Thang (240)	157	65.42	68	28.33	15	6.25
TĐT (260)	151	58.08	107	41.15	2	0.77
***Total** (1000)*	587	58.70	367	36.70	46	4.60

The rate of good health (Categories I&II) in garment workers is 58.7%, not good health (Categories IV&V) is 4.6%. Tran Danh Phuong's research on Tuynel workers was similar to our (3.7%). By different authors, the normal rate of categories IV&V is 1.5 to 2.8%. That's why, the rate of categories IV&V in Thainguyen garment workers is high.

Table 3.6. The rate of common diseases in workers

Enterprises / ***Diseases***	***Viet Thai*** *(500)*		***Chien Thang*** *(240)*		***TĐT*** *(260)*		***Total*** *(1000)*	
	Q-tity	*%*	*Q-tity*	*%*	*Q-tity*	*%*	*Q-tity*	*%*
In nose	171	34.20	82	34.17	87	33.46	*340*	*34.00*
In throat	184	36.8	87	36.25	79	30.38	*350*	*35.00*
Total of nose and throat diseases	381	76.2	175	72.92	176	67.69	*732*	*73.20*
Bronchitic	48	9.60	22	9.17	11	4.23	*81*	*8.10*
Hypetention	31	6.20	16	6.67	15	5.77	*62*	*6.20*
Bone and joint	38	7.60	18	7.50	14	5.38	*70*	*7.00*
In skin	37	7.40	16	5.83	19	7.31	*72*	*7.20*
In digestive	14	2.80	6	2.50	8	3.08	*28*	*2.80*
Bysinosis	13	2.60	7	2.92	6	2.31	*26*	*2.60*

The rate of diseases in nose is 34.0% (33.46% - 34.20%), Bronchitic is 8.1% (4.23-9.6%), Bysinosis is 2.6% (2.31-2.92%). In compare with results of diseases in nose, throat and bronchitic, researching by authors in Vietnam Weave and Garment Company it is similar. It is difference to others industrial brands (At the same time). On Tuynel workers, researching by Tran Danh Phuong: these rates are about 48.2%.

Table 3.7. The rate of diseases in nose

Enterprises / ***Diseases***	***Viet Thai*** *(500)*		***Chien Thang*** *(240)*		***TĐT*** *(260)*		***Total*** *(1000)*	
	Q-tity	*%*	*Q-tity*	*%*	*Q-tity*	*%*	*Q-tity*	*%*
Allergy	94	18.80	51	21.25	48	18.46	193	19.3
Acute infection	86	17.20	44	18.33	41	15.77	171	17.1
Chronical infection	27	5.40	15	6.25	13	5.00	55	5.5
Others	28	5.60	14	5.83	17	6.54	59	5.9

The rate of diseases in nose was high (5.5% to 19.3%), especially allergy and acute infection (17.1% to 19.3%). It is higher to others researchs (At the same time). On Phuha leather and shoes workers, researching by Nguyen Duc Trong, Nguyen Dinh Dung, Vu Thi Ai: these rates are about 16%.

Table 3.8. The rate of diseases in brochia and lung to years of work

Diseases / ***Year of work***	***Numbers of workers***	***Disease***	
		Q-tity	*%*
2 - < 3 years (1)	*273*	5	1.83
From 3 - <5 years (2)	*447*	53	11.86
From 5 - 7 years (3)	*280*	49	17.5
Total	***1000***	***107***	***10,70***
p	$p_{(1\&2)} < 0.05$; $p_{(1\&3)} < 0,05$; $p_{(2\&3)} < 0.05$		

The rate of diseases in brochia and lung of Thainguyen garment workers is clear increasing by years of work. It is similar to others researchs (By reports of domestic and foreign scientific conferences). The rate of diseases to year of work in garment workers is the same.

Table 3.9. The rate of lung function disorder

Lung function / ***Enterprises***	***Numbers of test***	***Lung function disorder***	
		Q-tity	*%*
TĐT	144	19	13.19
Chien Thang	137	18	13.14
Total	*281*	*37*	*13.17*

The rate of lung function disorder is high (13.1%). It is similar in two enterprises (13.14% - 13.19%). Lung function disorder is the consequyent of diseases in respiratory track. So that, by our opinion: it is the urgent problems, must be cocerning. Nowadays, intervention studies for worker's health care in practice of many industrial branchs, protecting lung function is index of effective assessment.

Table 3.10. Relation of practice on occupational saferty and health to lung function disorder *(281 workers)*

Disorder / ***Practice***	***Having***		***Not***	
	Q-tity	*%*	*Q-tity*	*%*
Not good (179)	27	15.08	152	84.92
Good (102)	10	9.80	92	90.20
Total	*p< 0,05*			

Bad practice on occupational saferty and health made increasing the rate of lung function disorder, statistically significant (p<0.05).

Table 3.11. Relation of using standard mask *(U.St Mask)* ***to diseases in nose and throat*** *(732 patients)*

Diseases / ***U.St Mask***	***Diseases*** *(+)*		***Diseases*** *(-)*	
	Q-tity	*%*	*Q-tity*	*%*
Non- U.St Mask (157)	139	88.54	18	11.46
U.St Mask (843)	593	70.34	250	29.66
p	*< 0,05*			

There are differeces about the rates of diseases in nose and throat betwen two groups of using standard mask and non-standard mask, statistically significant (p<0.05).

***Table 3.12. Relation of using standard mask** (U.St Mask) **to diseases in brochia and lung** (107 patients)*

Diseases / ***U.St Mask***	***Diseases** (+)*		***Diseases** (-)*	
	Q-tity	*%*	*Q-tity*	*%*
Non- U.St Mask (157)	28	17.83	129	82.17
U.St Mask (843)	79	9.37	764	90.63
p	*< 0,05*			

There are differeces about the rates of diseases in brochia and lung betwen two groups of using standard mask and non-standard mask, statistically significant (p<0.05). This relation is similar of diseases in nose and throat in Thainguyen garment Workers. These relations have been agreeableness and proposing for strict, perfect using of this personal protective means.

***Table 3.13. Relation of practice on occupational saferty and health to diseases in nose and throat** (732 patients)*

Diseases / ***Practice***	***Diseases** (+)*		***Diseases** (-)*	
	Q-tity	*%*	*Q-tity*	*%*
Not good (719)	621	86.37	98	13.63
Good (281)	111	39.50	170	60.50
p	*< 0,05*			

There are differeces about the rates of diseases in nose and throat betwen two groups of good pratice and not good pratice, statistically significant (p<0.05). The rate of diseases in nose and throat in good pratice group is 39.5%, in not good pratice group is 86.37%.

***Table 3.14. Relation of practice on occupational saferty and health to diseases in brochia and lung** (107 patients)*

Diseases / ***Practice***	***Diseases** (+)*		***Diseases** (-)*	
	Q-tity	*%*	*Q-tity*	*%*
Not good (719)	83	11,54	636	88,46
Good (281)	24	8,54	257	91,46
p	*< 0,05*			

There are differeces about the rates of diseases in brochia and lung betwen two groups of good pratice and not good pratice, statistically significant (p<0.05).

Table 3.15. Relation of dust pollution to diseases in nose and throat *(732 patients)*

Diseases / ***Dust pollution***	***Diseases*** *(+)*		***Diseases*** *(-)*	
	Q-tity	*%*	*Q-tity*	*%*
exceeded PEL *(278)*	237	82,25	41	14,75
Not exceeded PEL *(722)*	495	68,56	227	31,44
p	*< 0,05*			

There are differeces about the rates of diseases in nose and throat betwen two groups of good pratice and not good pratice, statistically significant (p<0.05).

Table 3.16. Relation of dust pollution to diseases in brochia and lung *(107 patients)*

Diseases / ***Dust pollution***	***Diseases*** *(+)*		***Diseases*** *(-)*	
	Q-tity	*%*	*Q-tity*	*%*
Exceeded PEL *(278)*	38	13,67	240	86,33
Not exceeded PEL *(722)*	69	9,56	653	90,44
p	*< 0,05*			

There are differeces about the rates of diseases in brochia and lung betwen two groups of good pratice and not good pratice, statistically significant (p<0.05).

3.4. Efficiency of solutions, intervention for occupational saferty and health and health care on Thainguyen garment workers

Box 3.4. Assessment of Garment TDT Company Trade-union about efficiency of solutions

Mr Do Ngoc T – President of Garment TDT Company Trade-union assessing about intervention for occupational saferty and health and preventing respiratory track diseases in interviews that:

- Occupational saferty and health and preventing respiratory track diseases for garment worker were conducted perfectly, suitable to need of company's practice by Directive committee.

- The time of doing with Directive committee, he more had realized Trade-union's roles and training rounds about occupational saferty and health conducting befor were not

enough, no suitable to need of company's practice, especially have non solutions for preventing respiratory track diseases.

- After the advice and having effects of intervention from Theme's manager board, executive committee of Company Trade-union and Director will be close joining for health care and good occupational saferty and health.

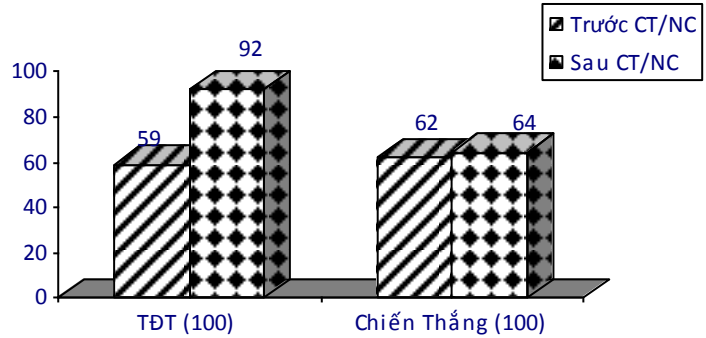


Figure 3.1. Knowledge of occupational saferty and health after the intervention(Effective Index and Intervention Effect/EI and IE *)*

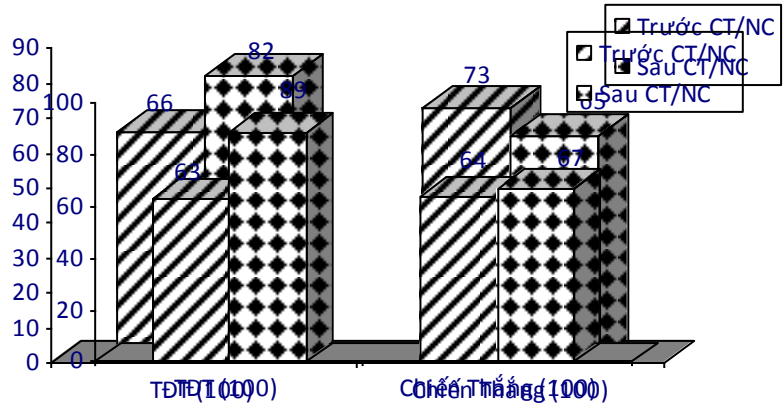
- EI of TĐT: 55.93%; EI of Chien Thang:3.23%; IE: 52.7%

Figure 3.2. Attitude of occupational saferty and health after the intervention

- EI of TĐT: 70.27%; EI of Chien Thang:8.33%; IE: 61.94%

Figure 3.3. Practice of occupational saferty and health after the intervention

EI of TĐT: 47.06%; EI of Chien Thang:-29.63%; IE: 76.99%



Box 3.5. Assessment of occupational safety and medical cadres group about efficiency of intervention to occupational safety and preventing diseases

Group of cadres had been understanding many problems, received useful documentaries, training.

Usually, timely make health care, supervise occupational saferty and health were knowed in all cadres.

All occupational safety and medical cadres of Thainguyen garment company had learned that: Knowledge and behaviour of occupational saferty and health were improved. Actions had been becoming effectiveness.

Table 3.17. Effect of intervention to acute infection in nose

Disease / ***Enterprise***	***Befor of intervention*** *(Q-tity)*	***After of intervention*** *(Q-tity)*	EI ***(%)***
TĐT (100)	18	14	22.22
Chien Thang (100)	16	17	-6.25
IE	***28.47%***		

After the intervention, acute infections in nose are decreasing in intervention group, EI = 22.2. Acute infections in nose are n't decreasing in control group. Intervention effect is 28.4%.

Table 3.18. Effect of intervention to the incident rate of infection in nose

Disease / ***Enterprise***	***Befor of intervention*** *(Q-tity)*	***After of intervention*** *(Q-tity)*	EI ***(%)***
TĐT (100)	3	1	66.67
Chien Thang (100)	2	3	-50

IE	***116.6%***

Effect of intervention to the incident rate of infection in nose is clearing Intervention effect is 116.67%.

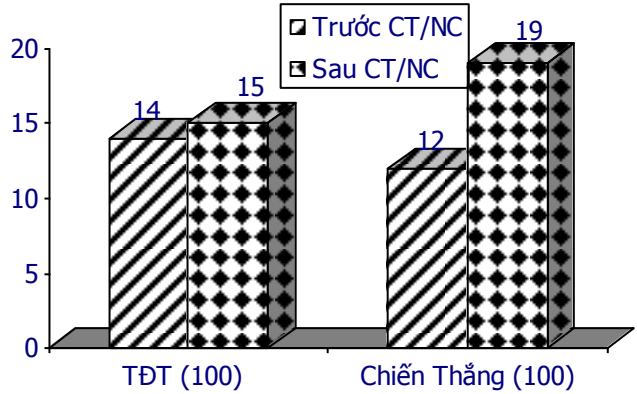


Figure 3.4. Effect of intervention to the rate of chronic infection in nose

EI of TĐT: -7.12%; EI of Chien Thang:-58.33%; IE: 51.11%

Table 3.19. Effect of intervention to bronchitis

Disease / ***Enterprise***	***Befor of inter/ research*** *(Q-tity)*	***After of inter/ research*** *(Q-tity)*	EI ***(%)***
TĐT (100)	6	5	16.67
Chien Thang (100)	9	10	-11.11
IE	***27.78%***		

Effect of intervention to bronchitis is clearing. Intervention effect is 27.78%.

Table 3.20. Effect of intervention to chronic bronchitis

Disease / ***Enterprise***	***Befor of intervention*** *(Q-tity)*	***After of interventio n*** *(Q-tity)*	***EI (%)***
TĐT (100)	2/6	0/5	33.33
Chien Thang (100)	3/9	4/10	-6.67

IE	***40%***

Effect of intervention to chronic bronchitis is clearing. Intervention effect is 40%.

Table 3.21. Effect of intervention to bysinosis
(By Schilling R.S.F /1981)

Enterprise / ***Index***	***TĐT***		***Chien Thang***	
	TCT	*SCT*	*TNC*	*SNC*
Q-tity of Bysinosis	3	3	2	3
Q-tity C_1 category	2	2	2	2
Q-tity of F_1 Lung function disorder	2	1	2	2

Have 01 case of Bysinosis in control group. The rate of category C_1 Bysinosis is similar in both two groups (After the intervention). Lung function is improving in intervention group.

Box 3.6. Assessment of employees group about efficiency of intervention to occupational safety and preventing diseases

- Training and guiding occupational safety and health for workers are effectiveness. Group of employee had been understanding that, traning of occupational safety and preventing diseases is very important, they must be attend more often and seriously.

- Employees clear understanding of occupational safety and health, preventing diseases, how to make health care themselves, after training and helping from researching group.

- Employees have proposed about maintenance this model, training often, providing perfect personal protection, periodic examining worker's health accompanying with lung function testing.

CONCLUSION

1. Real situation of working environment, knowledge, attitude, practice of garment worker

1.1. Working environment and knowledge, attitude and practice on occupational safety and heath of workers are not good:

- Effective temperature index exceeded PEL, 37.8%, in both 3 enterprise, from 33 to 43%.
- 25% of dust samples exceeded PEL.
- The rate of good knowledge, attitude and practice on occupational safety and heath of workers was high: by order/ 61-63%; 63-66%; 68-75%.

1.2. Health, disease of Thainguyen garment workers are not good:

- The rate of 4&5 categories is 4.6%, 3 category is 36.7%, 1&2 categories is 58.7%.
- The rate of throat and nose acute infection is high (73.20%); The rate of nose disease is 34%; The rate of throat disease is 35%.
- The rate of disease in bronchia is 8.1%.
- The rate of bysinosis is 2.6%.
- The rate of lung function disorder is 13.17%.

2. Relative factors to health and disease on Thainguyen garment workers

- The rate of disease in throat and nose, bronchia and lung and is increasing by years of work.
- The rate of lung function disorder is increasing by year of work.
- The rate of disease in throat and nose, bronchia, lung and lung function disorder have clear relation to occupational safety and heath, training, using perfect mask, statistically significant ($p<0.05$).

- The rate of disease in throat and nose, bronchia in Thainguyen garment workers have clear relation to dust polluted, statistically significant ($p<0.05$).

- The rate of disease in respiratory track in Thainguyen garment workers have clear relation to using perfect mask, good knowledge, attitude and practice on occupational safety and heath, statistically significant ($p<0.05$).

3. Efficiency of solutions in intervention for occupational saferty and health and health care on Thainguyen garment workers

- Diretive committee for occupational safety and heath, preventing disease in respiratory track in Thainguyen garment workers had been established and effective actively.

- Knowledge, attitude and practice on occupational safety and heath, preventing disease in respiratory track in garment workers are increasing after the intervention: intervention effect to knowledge is 52.7%; to attitude is 61.94% and to practice is 76.96%.

- Effect of Interventions to respiratory diseases is clear high: respiratory diseases in Thainguyen garment workers are decreasing: 28.44% for acute infection in nose; 116,67% for incident infection in nose; 51.11% for chronic infection in nose and 40% for acute series of chronic bronchis.

- The model of intervention have been received supporting and cooperating from employees and employers, maintained and enhanced in garment industry.

RECOMMENDATIONS

From the results obtained, we make some recommendation:

1. Enterprises need to implement for improving the micromate, decreasing dust polluted and good practice on occupational safety and heath.

2. Implementing more often training, communication on occupational safety and heath, preventing disease in respiratory in garment workers, include (Beginning and periodic training). Strengthening specialistic capacity in health care, decreasing disease, especially respiratory disease in employees.

3. To cotinue implement in wide, synchronious solutions for worker's health care, more decreasng the rate of relative, occupational diseases, increasing the good health in workers.