

**THAI NGUYEN UNIVERSITY
UNIVERSITY OF MEDICINE AND PHARMACY**



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**CURRENT SITUATION AND INTERVENTION SOLUTIONS
TO REDUCE SOME COMMON SKIN DISEASES
AMONG TAY ETHNIC AGRICULTURAL WORKERS
IN THAI NGUYEN**

Speciality: Public health

Code: 9.72.07.01

THE ABSTRACT OF MEDICAL DISSERTATION

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INTRODUCTION

In agricultural production, people have to come into contact with organic fertilizers, chemical fertilizers, toxic chemicals, and lack of personal protective equipment, so the chance of contracting Skin diseases is very high, etc. The living and working environment of the Tay people in some mountainous districts of Thai Nguyen province is relatively humid and hotter than urban areas. Therefore, this is a condition that can increase skin diseases, especially fungal Skin diseases in workers as well as in the whole community. The living and farming habits of the Tay people here are often humid, they rarely use labor protection, and they live water-savingly... On the other hand, studies on the current state of skin diseases and intervention solutions to care for and improve the health of the Tay ethnic community have not been reported with due attention. Phu Luong and Dai Tu are mountainous districts, located in the North of Thai Nguyen province, with a high proportion of Tay ethnic people living there, accounting for 18.6% and 12.7% of the total Tay people in the province. The communes in the district have a Tay population of 70-80%. The climate here is hot and humid, with a lot of rain; the Tay people have very special living, farming and agricultural practices: the farming environment is often humid, little use of labor protection, saving water... and the agricultural working environment is easily contaminated with chemicals, physical and biological substances that cause skin diseases. Research on skin diseases among Tay ethnic workers in mountainous areas has not received due attention. Therefore, we chose to research the thesis topic: **"Current situation and intervention solutions to reduce some common skin diseases among Tay ethnic agricultural workers in Thai Nguyen"** with the aims of:

1. Describe the current status of some skin diseases in Tay ethnic agricultural workers in some communes of Thai Nguyen province in 2017 - 2018.
2. Identify some factors related to skin diseases in agricultural workers of the Tay ethnic group in Thai Nguyen.
3. Evaluate the effectiveness of some intervention solutions to reduce common skin diseases among Tay ethnic agricultural workers in Phu Luong district, Thai Nguyen province.

THE NEW CONTRIBUTIONS OF DISSERTATION

This is the first research project on appropriate and effective intervention solutions to improve skin diseases and KAP to prevent skin diseases in Tay ethnic agricultural workers.

In the communes in the study area, the incidence of skin diseases is still quite high with a relatively diverse structure of skin diseases, in which the disease groups with a large proportion are skin fungus, urticaria and atopic dermatitis. There is a statistically significant relationship between a number of factors and the incidence of skin diseases among agricultural workers such as: low age, unstable housing, unsanitary water sources and livestock barns; poor knowledge, poor attitude, poor practice in preventing skin diseases.

After implementing a number of appropriate interventions such as health education communication, improving living and working environment, and improving treatment effectiveness, the rate of good knowledge, good attitude and good practice in preventing skin diseases among agricultural workers in the intervention group increased significantly. The rate of people with skin diseases decreased from 64.9% to 24.2%, with intervention effectiveness reaching 59.4%.

THE STRUCTURE OF DISSERTATION

The dissertation had 125 pages, include: introduction (2 pages), overview (38 pages), subject and research methods (24 pages), research results (29 pages), discussion (29 pages), conclusion (2 pages), recommendation (1 page). The dissertation have 26 tables, 7 charts and 10 boxes, 120 references (57 Vietnamese and 63 English).

ABBREVIATIONS

AGWs:	Agricultural workers.
EI:	Effectiveness index
HEC:	Health Education Communication
IE:	Intervention effectiveness
KAP:	Knowledge, attitudes, practices
SKS :	Skin diseases

Chapter 1

OVERVIEW

1.1. Concepts, structure and physiological function of the skin

The structure of the skin consists of 3 layers: epidermis, dermis and hypodermis. The skin is the largest organ of the human body; it performs many functions such as protection, absorption, storage, metabolism, sebum excretion, detoxification, sensory reception, body temperature regulation, homeostasis and immunity.

1.2. Some common skin diseases in the community

Some common SKS in the community include: SKS caused by fungi and other parasites, SKS caused by bacteria, viruses, allergic SKS, atopic SKS and other physical, biological, chemical agents, etc.

1.3. Some factors related to skin diseases

Some factors related to SKS include: Skin surface environment, skin surface pH, skin stratum corneum quality, skin temperature and humidity, immune deficiency, external environmental factors.

1.4. Current status of skin diseases in the world and in Vietnam

1.4.1. Current status of skin diseases in the world

According to research by many authors in the world, SKS are always common in the community of foreign workers in many different regions of the world. Each different occupation with related factors affects, SKS also have different opportunities to develop. There are many types of SKS studied in the community, especially in farmers and agricultural workers (AGWs).

1.4.2. Current status of skin diseases in Vietnam

Vietnam is a tropical country with a hot climate and high humidity, which is very favorable for the development of SKS, common from over 10% to over 40-50%, of which common skin fungus accounts for about 27-37.3%. The structure of common SKS in AGWs is skin fungus, intertrigo, pruritus, urticaria, allergic and irritant contact dermatitis, skin pigmentation, etc. SKS are chronic, causing deterioration of health, physical and mental health, and reduced work efficiency. It is extremely necessary to develop appropriate intervention solutions to prevent and treat SKS, care for and improve the health of AGWs and the community.

1.5. Methods of preventing skin diseases in the community

1.5.1. Background for developing methods to prevent skin diseases

To prevent SKS in agricultural workers, there needs to be a comprehensive solution on health, socio-economics, integrated with other health education programs and the support and companionship of the whole community.

1.5.1.1. Improving hygiene measures

Implementing good personal hygiene measures and cleaning the living and working environment will limit the density of pathogenic microorganisms on the skin and in the external environment, thereby limiting the invasion and causing disease in the body.

1.5.1.2. Controlling the spread of disease

Controlling the routes of disease transmission, effective treatment, disposal of waste, personal items, protective gear, etc. will prevent the spread of pathogens to the community and surrounding environment.

1.5.1.3. Thoroughly treating infected people to proactively prevent disease

Early detection of people with the disease and timely and correct treatment are proactive measures to prevent the development of SKS and skin pathogens from spreading to the community and the external environment.

1.5.2. Studies on intervention solutions to prevent Skin diseases in agricultural workers

Many studies in the world and in Vietnam have proposed and implemented a number of intervention solutions to prevent SKS, treat and improve the health of AGWs with certain effectiveness. The groups of solutions focus mainly on health education to improve knowledge, attitudes, and practices in occupational hygiene and safety, prevent SKS; conduction periodic health checks; improving treatment effectiveness; providing appropriate health care services; strengthening monitoring and inspection of occupational hygiene and safety; providing advanced professional training for medical staff, health communication and education for farmers, the community, etc.

Chapter 2

SUBJECTS AND METHODS

2.1. Subjects of research

The subjects of this research are AGWs of the Tay ethnic group in two districts of Phu Luong and Dai Tu, Thai Nguyen province.

Selection criteria for studying subjects

- Being an agricultural worker, Tay ethnic group living in the area of 02 districts for at least 5 years.
- Agreeing to participate in the study.
- Being the main laborer with at least 02 years of specialized time in rice, tea, or flower cultivation.

2.2. Location and time of research

- Research location: The research was carried out in Phu Ly and Hop Thanh communes (Phu Luong district), Phuc Luong commune (Dai Tu district), Thai Nguyen province.

Phu Luong district has a tropical monsoon climate, hot and humid, with heavy rain; the economy is mainly agricultural production, rice cultivation, tea, crops, and forestry, which play an important role. Ethnic minorities such as the Tay people in the research communes account for 75-80% of the total population of the commune. The cultural identity and living habits of the Tay people are water-saving, and the actual working, farming, and livestock conditions are exposed to the wet, humid environment of rice fields, contaminated with pathogenic microorganisms such as fungi, bacteria, chemicals such as pesticides, herbicides, etc. and other physical agents. These are favorable conditions that cause SKS for AGWs. This is a public health issue that needs to be studied and appropriate intervention solutions to protect and care for the health of AGWs in general and the Tay people in particular to achieve better results.

- Research period: From April 2017 to March 2020.

2.3. Methods of research

2.3.1. Research methods and research design

The study was conducted using a descriptive cross-sectional design, combined with community intervention, with a pre- and post-

control approach. Research data collection combined quantitative and qualitative methods.

2.3.2. Sample size and sampling method

2.3.2.1. Sample size and sampling method for descriptive research

*** Sample size**

Sample size is calculated according to the formula

$$n = z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

In which:

n: Minimum sample size.

$z_{1-\alpha/2}$: Confidence coefficient (looking up from table z: with statistical significance level $\alpha=5\%$, then $z_{1-\alpha/2} = 1,96$).

$p = 0,3$: According to the results of a study by Do Ham et al., the rate of common SKS in mountainous people in Thai Nguyen province is 36.7%, people aged 20 - 60 are 32.9 to 33.7%.

d: Desired precision (taking $d = 0,03$).

Substituting into the formula, we have $n = 897$ Tay people of working age. When conducting the research, we collected data that met the statistical and analysis conditions of 970 people.

*** Sample selection method**

Select communes: Purposefully selected 03 communes: Hop Thanh, Phu Ly, Phuc Luong in 02 districts, Phu Luong and Dai Tu, Thai Nguyen province.

Select individuals for the research sample: Based on the estimated sample size, we selected in Hop Thanh: 310 people, Phu Ly: 302 people and Phuc Luong: 358 people. Sampling was done by simple random method.

2.3.2.2. Sample size and sampling for intervention studies

We randomly selected 2 communes by drawing lots and determined Phu Ly for intervention one, Hop Thanh as control one.

Intervention sample size:

Based on the descriptive study sample size, to ensure research ethics, we intervened on all people who were examined and diagnosed with the disease at the beginning. In fact, the sample size of the intervention group (Phu Ly) was 302 people, the control group (Hop Thanh) was 310 people.

2.3.2.3. Sample size and sampling for qualitative research

- Sample size and sample selection for in-depth interview research: Conducted 04 interviews (Before intervention: 02 interviews; after intervention: 02 interviews).

- Sample size and sample selection for group discussion research: Conducted 06 meetings (Before intervention: 03 sessions; after intervention: 03 sessions), each group from 7 to 10 people.

2.4. Content of the intervention

2.4.1. Identify problems that require intervention

Select two priority intervention issues:

- Poor SKS prevention behavior.
- Weak SKS management at commune health stations.

Intervention contents include:

+ Communication on health education about knowledge about diseases, prevention, and treatment of SKS.

+ Intervention in health education and communication to improve living environment, working environment, personal hygiene behavior, labor hygiene, etc.

+ Examination, testing to detect SKS, timely treatment and re-examination. Training to improve capacity for prevention, treatment, and management of SKS.

2.4.2. Identify specific intervention activities

*** Activity 1**

- Training human resources on intervention methods: Health education communication (HEC) skills on prevention and management of SKS.

- Professional training on SKS, treatment regimens, and prevention plans for medical staffs.

*** Activity 2: Health education communication**

Organize monthly radio communication on commune loudspeakers. Organize monthly health talks and HEC at home.

*** Activity 3:** Monitor and supervise the implementation of intervention solutions.

2.5. Indicators of the research

2.5.1. Indicators for objective 1

- Demographic characteristics: age, gender, level of education.
- Rate of SKS of study subjects.

- Distribution of SKS of study subjects.

2.5.2. Indicators for objective 2

- KAP for SKS prevention of the study subjects.
- Relationship between demographic characteristics and SKS incidence.
- Relationship between specialized farming groups, housing, water sources, livestock barns and SKS incidence.
- Relationship between KAP of the study subjects and SKS incidence.

2.5.3. Indicators for objective 3

- Intervention effectiveness (IE) to improve KAP to prevent SKS of Tay ethnic AGWs.
- IE in reducing the rate of SKS in the community.

2.6. Toolkit and methods for evaluating research indicators

The research toolkit consists of 3 parts:

- Part 1 - General information of the research subjects: Including age, gender, education level, housing, water source, sanitation facilities, livestock barns, etc.
- Part 2 - Research medical records: including information on SKS examination results, test results (if any).
- Part 3 - KAP for SKS prevention of the research subjects.

The KAP assessment toolkit on SKS prevention includes 3 parts: knowledge, attitude, and practice. KAP classification: good $\geq 80\%$ of the total score, average $> 60\% - < 80.0\%$ of the total score and weak $\leq 60.0\%$ of the total score.

2.7. Techniques for data collection

2.7.1. Qualitative data collection techniques

In qualitative research design, we use two methods: in-depth interviews and group discussions.

2.7.2. Quantitative data collection techniques

- Step 1: Collect data before intervention (describe).
- Step 2: Conduct intervention and monitor intervention.
- Step 3: Collect data after intervention.

2.8. Data processing techniques

After collection, data was cleaned, coded and entered into the computer using EpiData 3.1 software. Data analysis was performed using SPSS 16.0 software.

2.9. Errors and remedies

- The research subjects are AGWs and ethnic minorities, which may not be favorable for cooperation. Solutions: clearly explain the meaning of the research, the questions must be easy to understand, explained carefully, and understood so that people can feel closeness, sharing and full cooperation.

- Information error: Due to the crowded time of examination and investigation, the research subjects may answer vaguely and be afraid of communication, so their symptoms cannot be exploited. Solutions: Choose highly qualified doctors and researchers with good interviewing skills to collect accurate information.

2.10. Ethics in medical research

The study was approved by the Ethics Council in Medical Research of the University of Medicine and Pharmacy, Thai Nguyen University, and by the competent authorities of the districts and communes in the research area.

Chapter 3

RESULTS

3.1. Current status of some skin diseases in Tay ethnic agricultural workers in Thai Nguyen

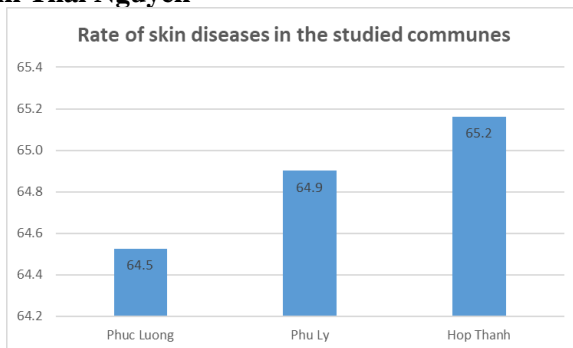


Chart 3.1. Rate of skin diseases in the studied communes

Comment: The average SKS incidence rate in all 3 communes is 64.8%. In Phuc Luong it is 64.5%; Phu Ly is 64.9% and Hop Thanh is 65.2%.

Table 3.3. Distribution of skin diseases in 3 study communes

Commune \ Skin diseases	Phuc Luong		Phu Ly		Hop Thanh		Total	
	N	%	N	%	N	%	N	%
Skin fungus	97	27,1	71	23,5	50	16,1	218	22,4
Itchy rash, hives	74	20,7	75	24,8	46	14,8	195	20,1
Atopic dermatitis	39	10,9	35	11,6	50	16,1	124	12,8
Contact dermatitis	8	2,2	12	4,0	34	11,0	54	5,6
Folliculitis, seborrheic dermatitis	7	2,0	3	1,0	16	5,2	26	2,7
Allergy dermatitis	6	1,7	0	0	6	1,9	12	1,2
Melasma	4	1,1	7	2,3	5	1,6	16	1,6
No disease	127	35,5	106	35,1	108	34,8	341	35,2
Total	358	36,9	302	31,1	310	32,0	970	100

Note: Some people had suffered from more than one disease.

Comment: The overall incidence of skin fungus was relatively high at 22.4%; itchy rash and hives accounted for 20.1%; atopic dermatitis was 12.8%.

Table 3.4. Distribution of skin fungus in 3 study communes

Commune \ Skin fungus	Phuc Luong		Phu Ly		Hop Thanh		Total	
	N	%	N	%	N	%	N	%
Body fungus	28	7,8	24	7,9	28	9,0	80	8,2
Nail fungus	25	7,0	38	12,6	9	2,9	72	7,4
Athlete's foot and similar fungus	43	12,0	6	2,0	9	2,9	58	6,0
Hair fungus	1	0,3	3	1,0	4	1,3	8	0,8
Total	97	27,1	71	23,5	50	16,1	218	22,4

Note: Some people had suffered from more than one disease.

Comment: The total number of people with skin fungus was relatively high: 22.4%. Of which, body fungus was 8.2%; nail fungus was 7.4%; Athlete's foot and similar fungus was 6%.

Table 3.6. Distribution of skin diseases rates by specialized occupation

Skin diseases Specialized	Disease		No disease		P
	N	%	N	%	
Rice and crops (364)	257	70,6	107	29,4	$P_{1,3}$
Tea (489)	318	65,0	171	35,0	$<0,05$
Tea and rice (117)	54	46,1	63	53,9	$P_{2,3}$ $<0,05$
Total (970)	629	64,8	341	35,2	

Comments: In 2017, the rate of people with SKS was highest in the group specializing in growing rice and other food crops (accounting for 70.6%), tea growing was 65.0%; growing both tea and rice was 46.1%. The difference was statistically significant with $P_{1,3} < 0.05$ and $P_{2,3} < 0.05$.

3.2. Some factors related to the incidence of skin diseases in Tay ethnic AGWs

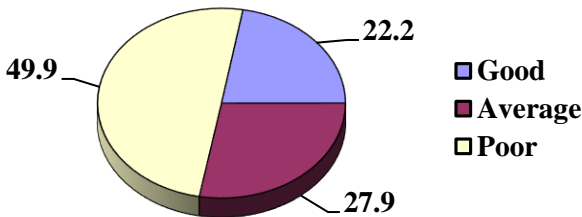


Chart 3.5. General knowledge about skin diseases prevention of research subjects

Comments: The proportion of people with good, average and poor general knowledge about SKS prevention was 22.2%, 27.9% and 49.9% respectively.

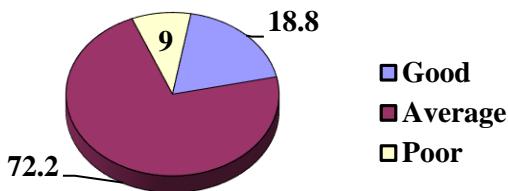


Chart 3.6. General attitude about Skin diseases prevention of research subjects

Comments: The proportion of people with good, average and poor attitude about SKS prevention was 18.8%, 72.2% and 9.0% respectively.

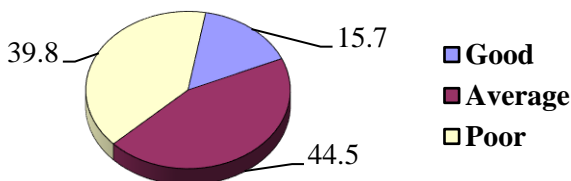


Chart 3.7. General practice about Skin diseases prevention of research subjects

Comments: The proportion of people with good, average and poor practice about SKS prevention was 15.7%, 44.5% and 39.8% respectively.

Table 3.11. Relationship between age, gender and skin diseases

Diseases indicators \ Skin		Disease		No disease		P
		N	%	N	%	
Age	< 30 (141)	97	68,8	44	31,2	$P_{1,3} < 0,05$
	30-49 (408)	284	69,6	124	30,4	$P_{2,3} < 0,05$
	≥ 50 (421)	248	58,9	173	41,1	$P_{1,2\&3} < 0,05$
Gender	Male (368)	243	66,0	125	34,0	$P > 0,05$
	Female (602)	386	64,1	216	35,9	
Total		629	64,8	341	35,2	

Comments: The groups under 30 years old and 30-49 years old had SKS rates of 68.8% and 69.6%, respectively, higher than the group over 50 years old (58.9%), the difference was statistically significant ($p < 0.05$).

Table 3.13. Relationship between specialized agricultural occupation and skin diseases

Specialized SKS	Disease		No disease		P
	N	%	N	%	
Rice and crops (364)	257	70,6	107	29,4	P _{1,3} <0,05 P _{2,3} <0,05
Tea (489)	318	65,0	171	35,0	
Tea and rice (117)	54	46,1	63	53,9	
Total	629	64,8	341	35,2	

Comments: There was a statistically significant association between agricultural occupation groups and skin diseases ($p < 0.05$). The prevalence of SKS in rice and other food crop growers (70.6%) was higher than that in tea and rice growers (46.1%) ($P_{1,3} < 0.05$); the prevalence of SKS in tea growers (65.0%) was higher than that in both tea and rice growers (46.1%) ($P_{2,3} < 0.05$).

Table 3.15. Relationship between sanitary facilities and skin diseases

Indicators Skin diseases		Disease		No disease		P
		N	%	N	%	
Water source	Unhygienic (149)	108	72,5	41	27,5	< 0,05
	Hygienic (821)	521	63,5	300	36,5	
Livestock barn	Unhygienic (202)	169	83,7	33	16,3	< 0,05
	Hygienic (768)	460	59,9	308	40,1	
Total		629	64,8	341	35,2	

Comments: The prevalence of SKS in households with unhygienic water sources and livestock barns (72.5% and 83.7%) was higher than that in households with hygienic water sources and livestock barns (63.5% and 59.9%), with $p < 0.05$.

Table 3.18. Relationship between disease prevention practices and skin diseases

Skin diseases Practices	Disease		No disease		P
	N	%	N	%	
Good (818)	543	66,4	275	33,6	< 0,05
Not good (152)	86	56,6	66	43,4	
Total	629	64,8	341	35,2	

Comment: The rate of SKS in the group with poor practice (66.4%) was higher than that in the group with good practice (56.6%), the relationship was statistically significant with $p < 0.05$.

Table 3.19. Summary of factors related to skin diseases

Related factors	OR single variable (95%CI)
Age: <30	1,6(1,2-2,1)
Gender: Male	1,1(0,8-1,4)
Level of Education: < High school	0,96(0,7-1,3)
Housing: Not solid and unstable	1,5(1,1-2,1)*
Water sources: Unhygienic	1,5(1,03-2,23)*
Livestock barn: Unhygienic	3,4(2,3-5,1)**
Knowledge about SKS prevention: Not good	1,4(1,01-1,9)*
Attitude about SKS prevention: Not good	1,5(1,05-2,02)*
Practices about SKS prevention: Not good	1,5(1,07-2,15)*

Comments: The related factors that may increase the incidence of SKS were unsanitary livestock barn and water sources, KAP for preventing SKS were related factors that should be noted (OR=1.4-1.5).

3.3. Effectiveness of some intervention solutions to reduce SKS in agricultural workers of the Tay ethnic group in Phu Luong district, Thai Nguyen province

Table 3.20. Training results for intervention participants

Knowledge about SKS prevention	Time		Post-training		p
	Pre-training				
	N	%	N	%	
Good	8	18,6	33	76,7	< 0,05
Average	23	53,5	5	11,6	
Poor	12	27,9	5	11,6	
Total	43	100,0	43	100,0	

Comments: After training, knowledge of SKS prevention increased significantly compared to before intervention (from 18.6% to 76.7%, with $p < 0.05$).

Table 3.23. Results of changes in knowledge of skin diseases prevention in intervention commune and control one

Commune Knowledge	Control commune (Hop Thanh) (n= 310)				Intervention commune (Phu Ly) (n= 302)				Effect
	Baseline		Post		Pre-		Post-		
	N	%	N	%	N	%	N	%	
Good	22	7,1	32	10,3	86	28,5	259	85,8	156
Not good	288	92,9	278	89,7	216	71,5	43	14,2	
EI	45,1				201,1				
p	> 0,05				< 0,05				

Comments: After the intervention, the rate of good knowledge about skin disease prevention among AGWs increased from 28.5% to 85.8%, with an EI of 201.1%. The effectiveness of the intervention in improving knowledge about skin disease prevention was 156% ($p < 0.05$).

Table 3.24. Results of changes in attitude of skin diseases prevention in intervention commune and control one

Commune Attitudes	Control commune (Hop Thanh) (n= 310)				Intervention commune (Phu Ly) (n= 302)				Effect
	Baseline		Post		Pre-		Post-		
	N	%	N	%	N	%	N	%	
Good	55	17,7	63	20,3	70	23,2	256	84,8	250,8
Not good	255	82,3	247	79,7	232	76,8	46	15,2	
EI	14,7				265,5				
p	> 0,05				< 0,05				

Comments: After the intervention, the rate of good attitude about skin disease prevention among AGWs increased from 23.2% to 84.8%, with an EI of 265.5%. The IE in improving attitudes about skin disease prevention was 250.8% ($p < 0.05$).

Table 3.25. Results of changes in practice of skin diseases prevention in intervention commune and control one

Commune Practice	Control commune (Hop Thanh) (n= 310)				Intervention commune (Phu Ly) (n= 302)				Effect
	Baseline		Post		Baseline		Post		
	N	%	N	%	N	%	N	%	
Good	67	21,6	75	24,2	49	16,2	251	83,1	400,9
Not good	243	78,4	235	75,8	253	83,8	51	16,9	
EI	12,0				412,9				
p	> 0,05				< 0,05				

Comments: After the intervention, the rate of good practices about skin disease prevention among AGWs increased significantly from 16.2% to 83.1%, with an EI of 412,9%. The effectiveness of the intervention in improving practices about skin disease prevention was 400,9% ($p < 0.05$).

Table 3.26. Results of changes in RATES OF skin diseases prevention in intervention commune and control one

Commune Skin diseases	Control commune (Hop Thanh) (n= 310)				Intervention commune (Phu Ly) (n= 302)				Effect
	Baseline		Post		Baseline		Post		
	N	%	N	%	N	%	N	%	
Disease	202	65,2	195	62,9	196	64,9	73	24,2	59,4
No disease	108	34,8	115	37,1	106	35,1	229	75,8	
EI	3,5				62,7				
P	> 0,05				< 0,05				

Comment: After intervention, in the intervention group, the proportion of people with SKS decreased from 64.9% to 24.2%, with an EI of 62.7%, $p < 0.05$. IE in reducing the rate of SKS among AGWs reached 59.4%.

Chapter 4.

DISCUSSION

4.1. Current status of some skin diseases in Tay ethnic agricultural workers in Thai Nguyen

4.1.1. Characteristics of study subjects

The characteristics of the study subjects showed diversity in terms of gender, age, education level, and hygiene conditions. These results are important, providing detailed information about the study population and providing a basis for analyzing their KAP study results for SKS related to agricultural labor.

4.1.2. Current status of some skin diseases in Tay ethnic agricultural workers in Thai Nguyen

The results showed that the average rate of SKS in 03 communes was up to 64.8%, of which Phuc Luong commune was 64.5%, Phu Ly was 64.9% and Hop Thanh was 65.2%. This was a public health problem related to the occupation that AGWs have to face. In the working environment, they are often exposed to many chemical, physical and microbial agents that are harmful to health, creating conditions for SKS. Inadequate personal protective equipment; polluted, humid environment, sunlight radiation, etc. also contributed to the relatively high rate of SKS.

The rate of SKS in our study is similar to some research results in the northern mountainous region of our country. Research by Do Thuy Trang and colleagues on rice farmers in Nam Dinh showed that the rate of SKS in this group was 21%. Author Nguyen Hoang Quynh evaluated the disease in AGWs specializing in lychee cultivation in Bac Giang and found that the rate of dermatitis was 18.3%. Do Ham's study also explained that the reason for the high rate of skin fungus (69.3%) in ethnic minorities in the mountainous region could be due to the unfavorable microclimate of the households (high temperature and humidity, and circling wind).

Distribution of some diagnosed SKS: dermatophytosis 22.4%; itchy rash, hives 20.1%; allergic dermatitis 12.8%. Skin fungus rate: Body fungus 8.2%; nail fungus 7.4%; foot fungus and similar fungi 6%. These results are similar to the results of Chen et al., in which occupational dermatitis symptoms in AGWs such as itching (27.2%),

chapped skin (15.5%), erythema (12.9%) and psoriasis (9.1%) are the most common manifestations.

The rate of SKS in rice and crops growers was the highest (70.6%), in tea growers, tea and rice growers were rather high (65.0% and 46.1%). Shiva S.'s study on rice-growing workers in India showed that the rate of SKS is also quite high (23.5%). Tea growers are also often exposed to related adverse factors such as pesticides, pathogenic microorganisms, physical factors, etc. Rice and crops farmers are often exposed to pesticides, polluted environments, pathogenic microorganisms, solar radiation, heat and humidity, etc. Therefore, the rate of SKS in this group tends to be higher than in other specialized agricultural occupations.

4.2. Factors related to the incidence of SKS in Tay ethnic agricultural workers in Thai Nguyen

4.2.1. Knowledge, attitudes, and practices in preventing SKS

*** Knowledge in preventing SKS**

The rate of people who can name some common SKS was 56.0%; only 8.1% understood the causes of SKS; 77.2% knew that skin fungus was contagious; 44.3% knew the symptoms of the disease; 11.3% knew the harmful effects of skin fungus; the level of understanding about disease prevention was 43.5%. The results showed that it is necessary to strengthen health education, knowledge about the causes, symptoms, and consequences of the disease, to improve awareness about prevention and treatment of SKS in AGWs.

The rates of general knowledge on skin disease prevention at good, average and poor levels were 22.2%, 27.9% and 49.9% respectively. The current situation showed that it was necessary to strengthen health education and communication work, knowledge on skin disease prevention in the agricultural labor community, focusing on providing basic knowledge on SKS, causes, symptoms, harms and preventive measures.

Our results were higher than that of Morowatisharifabad M.A. et al, in which the rate of good knowledge was 1.0%, average 34.0% and poor 65.0%. This may be due to the difference in the sample and study area.

*** Attitudes in preventing skin diseases**

The results of the survey showed that there was a positive awareness of skin disease prevention among the study subjects. However, there were still some opinions showing low attitudes and awareness towards this issue: Only 39.7% thought that SKS were chronic, recurrent and difficult to cure; 70.6% acknowledged the need for regular health check-ups and skin disease examinations. Therefore, it is necessary to communicate and educate health to increase awareness of regular health check-ups and timely treatment, apply effective preventive measures to reduce the risk of SKS in the community.

*** Practices in preventing skin diseases**

The results of the research on the practice of preventing SKS showed some strengths and weaknesses in people's attitudes and behaviors. The rate of going to medical facilities for treatment when having SKS was 50.4%, only about half of the research subjects were aware of the importance and had the behavior of seeking specialized medical care. The rate of not sharing personal belongings with others was only 38.7%; the rate of not living and working in hot, humid and dusty environments was only 41.8%.

Although there was awareness and practice of some good habits, it is necessary to improve the attitude and behavior of implementing preventive measures for SKS for the majority of the population. Therefore, to promote positive behavior, research and improvement of both knowledge and attitude are needed. There is a need for health education programs, improving knowledge and changing attitudes of the people, thereby encouraging effective implementation of preventive and treatment behaviors for SKS.

4.2.2. Factors related to the incidence of SKS in Tay ethnic agricultural workers in Thai Nguyen

*** Relationship between age, gender and skin diseases**

Regarding the relationship between age and skin diseases, there was a significant difference between the two age groups < 50 and ≥ 50 . The age group < 50 accounted for a higher proportion of people with SKS (69.4%) than the age group ≥ 50 (58.9%). This proportion was statistically significant with $p < 0.05$, indicating that younger people had a higher risk of SKS than the older group. People under

50 years old are the main laborers, often working directly in the fields and exposed to adverse factors that cause SKS such as chemicals, heat, high humidity, pathogenic microorganisms, etc., so the risk of disease is higher. A study on the risk of SKS among rice farmers in the Hanoi area showed similar results: the age group from 30 to 44 years old had a higher risk (OR = 3.44, 95% CI 1.32—9.00) than the age group from 45 years old and above (OR = 2.64, 95% CI 0.98—7.12).

*** The relationship between agricultural occupations and skin diseases**

The study results showed that there was a statistically significant association between the agricultural group and SKS ($p < 0.05$). The rate of SKS in the group of AGWs growing rice and other crops (70.6%) is much higher than the group of workers growing tea (65.0%) and the group of workers growing both rice and tea (46.1%).

The results of this study showed that it was possible that due to the characteristics of rice and other crop growers who have to regularly work in the fields, exposed to many harmful physical, chemical, and biological factors, the rate of SKS was higher than other agricultural labor groups. In addition, tea growers, forestry workers, etc. were also frequently exposed to environments contaminated with chemicals, physical factors, and harmful microorganisms, causing SKS. The results of our study were similar to Do Thuy Trang's study on a group of rice farmers in Nam Dinh, in which there was skin disease rate of 21%. Some authors in the world have emphasized the clear correlation between the rate of SKS and the occupation of AGWs.

*** The relationship between environmental hygiene factors and skin diseases**

The results of the study showed that there was a relationship between unsanitary water sources, unsanitary livestock pens, and unsecured housing with skin diseases in the study subjects ($p < 0.05$). The rate of SKS in people with solid housing, hygienic water sources, and unsanitary livestock pens was 63.1%, 63.5%, and 59.9%, respectively, lower than in people with unsanitary water sources and livestock pens (rates of 71.7%, 72.5%, and 83.7%, respectively).

Overall, these results provide important information on the relationship between environmental sanitation factors (water sources, unsanitary animal pens, and unstable housing) and skin disease

incidence. This helps us to better understand the factors associated with skin disease and to develop effective prevention and intervention measures to protect the health of AGWs.

*** Relationship between KAP for skin diseases prevention and disease incidence**

There was a relationship between attitudes and practices of skin disease prevention and disease prevalence ($p < 0.05$). The prevalence of skin disease was lower in those with good KAP than in those with poor KAP ($p < 0.05$).

Our results were completely consistent with the results of the groups Mazloomy M.S. and Hobbs C. when they found a positive correlation between good knowledge, good attitudes and good practices. These research results are consistent with the thesis of Behavioral Science - Health Education. This is the premise for future community intervention studies, and is also an important scientific basis for choosing KAP as a priority in the intervention content to prevent SKS for local AGWs.

4.3. Effectiveness of intervention in improving skin disease incidence and knowledge, attitudes, and practices on skin disease prevention among Tay ethnic agricultural workers

4.3.1. Improving knowledge on prevention of skin diseases

After applying intervention measures and HEC on skin disease prevention for AGWs, the results were very significant: The rate of good knowledge on skin disease prevention of subjects in the intervention group increased significantly from 28.5% to 85.8%, with an EI of 201.1%. Meanwhile, the rate of good knowledge in the control group increased from 7.1% to 10.3%. The IE in improving knowledge on skin disease prevention was 156% ($p < 0.05$).

We had synchronously and continuously deployed health education and communication interventions for AGWs on knowledge and skills in occupational safety and hygiene, disease prevention in general and skin diseases in particular, effective use of personal protective equipment, ensuring environmental hygiene and occupational safety and hygiene. The solution was implemented based on households, commune authorities, farmers' associations, women, commune health stations, village heads, village health workers, etc.,

helping people to be regularly updated. and accumulate knowledge about SKS prevention.

Our results were similar to that of Nguyen Hoang Quynh in 2021 when applying a HEC solution to litchi growers on measures to ensure occupational safety and hygiene and disease prevention: After the intervention, the proportion of subjects in the intervention group with knowledge of occupational safety and hygiene increased from 15.8% to 63.5% ($p < 0.05$, the EI reached 56.7%, the IE reached 47.6%).

4.3.2. Improving attitudes towards preventing skin diseases

After the intervention, the rate of good attitude towards skin disease prevention among AGWs in the intervention group increased significantly from 23.2% to 84.8%, with an EI of 256.5%. Meanwhile, the rate of good attitude in the control group increased from 17.7% to 20.3%. The effectiveness of the intervention in improving attitudes towards skin disease prevention was 250.8% ($p < 0.05$).

The results of our study are similar to Nguyen Hoang Quynh's 2021 study on lychee growers in Bac Giang. The proportion of lychee growers with a good attitude towards occupational safety and hygiene increased from 71.9% to 87.9% ($p < 0.05$, the EI reached 56.9%, the improvement efficiency reached 41.4%).

Our results are similar to that of Damalas C.A. et al. in 2017 (Greece) who applied a training program for farmers on the use of pesticides: The average score of attitude towards the safe use of pesticides in the intervention group was 7.14 points, significantly higher than that of the control group (3.84 points) ($p < 0.001$).

4.3.3. Improving skin disease prevention practices

Our results after intervention showed that: The rate of good practice in preventing SKS of AGWs in the intervention group increased significantly from 16.2% to 83.1%, with an EI of 412.9%. Meanwhile, the rate of good practice in the control group increased from 21.6% to 24.2%. The effectiveness of the intervention in improving skin disease prevention practices was 400.9%, $p < 0.05$.

This result was achieved thanks to the regular implementation of HEC content. Every week, village health workers and farmers' associations, village chiefs, and medical staff in the villages visited households, guided and supervised people's practices in preventing SKS, and improved occupational safety and hygiene conditions.

4.3.4. Effectiveness of intervention in reducing the incidence of SKS among Tay ethnic agricultural workers

The results after intervention showed that: In the intervention group, the rate of people with SKS decreased from 64.9% to 24.2% (EI reached 62.7%, $p < 0.05$, IE reached 59.4%).

This was because when intervening, we had strengthened training for the grassroots medical staff on knowledge and skills in prevention, diagnosis and treatment of SKS. At the same time, we conducted examinations and treatments for people with diseases, and provided drugs periodically once a month to the commune health station to intervene to treat SKS for the people.

The activities of examining and treating SKS for local people not only directly reduced the incidence of SKS among AGWs in the intervention area, but also helped local people see the clear benefits of the implemented intervention model. At the same time, activities to improve the capacity of examining and treating SKS for local health workers also helped maintain the effectiveness and sustainability of the intervention model.

CONCLUSSIONS

1. Current status of some SKS in Tay ethnic agricultural workers in Thai Nguyen in 2017 - 2018

- The rate of SKS in the communes in the study area was still quite high: The rate of disease in Phuc Luong commune was 64.5%; Phu Ly commune was 64.9% and Hop Thanh commune was 65.2%. The average rate of SKS in the 3 communes was 64.8%.

- The structure of SKS is relatively diverse. In which, the rate of common skin fungus was the highest (accounting for 22.4%), the rate of urticaria is 20.1%, atopic dermatitis was 12.8%, the rest were other types of dermatitis such as allergic contact dermatitis, irritation, hyperpigmentation, etc.

2. Some related factors to SKS in Tay ethnic agricultural workers in Thai Nguyen

- There was a statistically significant relationship between some factors and the rate of SKS among agricultural workers (low age, unstable housing, unsanitary water sources and livestock pens; poor knowledge, poor attitude, poor practice in preventing skin diseases) and the rate of SKS among the study subjects ($p < 0.05$).

- The rates of good, average and poor general knowledge on skin disease prevention were 22.2%, 27.9% and 49.9%, respectively. The rates of good, average and poor general attitudes on skin disease prevention were 18.8%, 72.2% and 9.0%, respectively. The rates of good, average and poor general practices on skin disease prevention were 15.7%, 44.5% and 39.8%, respectively.

3. The effectiveness of some intervention solutions to reduce SKS in Tay ethnic agricultural workers in Phu Luong district, Thai Nguyen province

- After the intervention, the rate of good knowledge about skin disease prevention of agricultural workers in the intervention group increased significantly from 28.5% to 85.8, the IE reached 156%, $p < 0.05$.

- The rate of good attitude towards skin disease prevention among agricultural workers in the intervention group increased significantly from 23.2% to 84.8%, the IE reached 250.8%, $p < 0.05$.

- The rate of good practice in skin disease prevention among agricultural workers in the intervention group increased significantly from 16.2% to 83.1%, the IE reached 400.9%, $p < 0.05$.

- The proportion of people with SKS decreased from 64.9% to 24.2%, with an intervention effect of 59.4%, $p < 0.05$.

PROPOSALS

- Skin disease prevention work needs to be carried out on a large scale, with social and community characteristics; must be integrated with other social health programs such as the National Nutrition Program, maternal and child health care, clean water and environmental sanitation, etc.

- SKS have the risk of becoming chronic and difficult to treat, so prevention work must be regular and continuous over a long period of time to be effective.

- Skin disease prevention must have a key focus, focusing on high-risk areas with high infection rates, high-risk subjects such as agricultural workers growing rice, crops, tea, forests, etc.

- Replicating models of skin disease prevention interventions to contribute to improving the effectiveness of health care for people, agricultural workers, especially ethnic minorities in mountainous areas is extremely necessary.

LIST OF PUBLISHED WORKS RELATED TO THE THESIS

1. Nong Phuc Thang, Nguyen Quy Thai, Do Van Ham, Tran The Hoang, Pham Thi Thuy (2020). *“The current status of some intestinal parasitic diseases and skin diseases in people in some mountainous communes of Thai Nguyen province”*. Vietnam Medical Journal, volume 488, March, No. 01, pp. 138-142.
2. Nong Phuc Thang, Nguyen Quy Thai, Do Van Ham, Dao Trong Quan (2023). *“Knowledge, attitude, and practice of preventing skin diseases among agricultural workers in some mountainous communes of Thai Nguyen province”*. Journal of Science & Technology, Thai Nguyen University, vol. 13, no. 228, pp. 483-489.