Factors Associated with Child Labor in Cultivation and Production of Tobacco among Burley Farmers in Lower Northern Thailand

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Abstract

Background
Many tobacco-growing countries are facing the issue of child labor in tobacco farming and production, which involve a high risk of various adverse health effects. Thailand has limited information about these circumstances. Accordingly, we aimed to examine the prevalence and factors related to child labor in tobacco farming among the Burley growers in Thailand.

Materials and Methods: This cross-sectional study was done with 720 Burley tobacco farmers in lower Northern Thailand, selected using a systematic random sampling technique. A structured questionnaire, designed by the researchers, was used to assess demographic characteristics, knowledge, and attitudes. SPSS software version 17.0 was applied for data analysis, involving the use of descriptive statistics, Chi-square test, and multivariable logistic regression.

Results: Eighty-three households (12.4%) employed underage youth in tobacco cultivation. The most common process involving child labor was that of tobacco leaf collection, harvest, and drying. In multivariable analysis, child labor has never been investigated)ORAdj: 5.62; 95% CI: 3.17-9.97; p = 0.046); having a low level of knowledge about negative health consequences on child workers)OR$_{Adj}$: 2.11, 95% CI: 1.29-3.44, p = 0.001); and having a high level of positive attitudes towards child labor)OR$_{Adj}$: 1.69; 95% CI 1.01-2.84; p = 0.003) were associated with child labor behavior.

Conclusion
Based on the results, underage youths were still employed in tobacco agriculture. The farmers who had not been inspected for child labor, had poor knowledge about health risks, and high positive attitudes towards child labor were more likely to employ this young group. It is important to systematically monitor the potential health impacts on these child workers in the cultivation of tobacco.

Key Words: Child labor, Tobacco cultivation and production, Tobacco farmers, Thailand.

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1- INTRODUCTION

Worldwide, approximately 152 million youths under the age of 18 are still in labor, and of these, 73 million are exposed to the worst forms of work that can contribute to unsafe conditions and negative health consequences (1). Child workers are more vulnerable to involve occupational hazards, physical and psychological harm, and drug abuse than adults (2-6). The most commonly reported region for child labor is that of Africa, accounting for 19.6%, followed by Asia and Pacific (7.4%), and 70.9% of child workers are in agriculture (1).

Tobacco cultivation and production is one of the agricultural industries that are experiencing the issue of the employment of underage youths, particularly in underdeveloped and developing countries (7). Most child workers who are involved in these processes have to work in extreme temperature conditions, which can result in dehydration (8). They are also at high risk of exposure to chemical hazards from pesticides used in the process of tobacco farming, which can lead to itching rash, eye irritation, nerve damage, and respiratory disorders (9).

Additionally, exposure to skin-penetrating nicotine poisoning may cause green tobacco sickness (10). This is in line with a survey of children working in tobacco farming in Indonesia (11) which revealed that more than half of the children suffered from headache, dizziness, nausea, skin rash, difficulty breathing, and eye and mouth irritation (12). Besides, children who worked in tobacco farming were at higher risk of injury and work-related accidents than those who were not involved in such cultivation (12). Protection of children against tobacco-related hazards and from working in tobacco crops is requested in Article 18 of the WHO Framework Convention on Tobacco Control (FCTC), regarding the protection of the environment and the health of persons (13). This framework is an international treaty calling on the member states to comply with the requirements. Thailand, one of the 180 members, therefore, needs to take responsibility for the treaty by acting in achieving the goals set. Nevertheless, according to the summary assessment report of the implementation of the Thailand Convention on Tobacco Control in 2016, a total of 16 out of 18 articles in the framework had overall operating results at an adequate level in most of the measures, whereas the performance of the article 18 was the lowest (14). This result reflects the lack of emphasis on both conductions of relevant research and transition from policy to action. Thailand is one of the countries where tobacco is grown commercially. Burley is the most common type of tobacco, which is very popular in the lower northern region. The majority of raw tobacco from the farms will be supplied to the Tobacco Authority of Thailand and companies import some private tobacco, to produce tobacco products that are sold both domestically and internationally.

As reported by a previous survey, children are still employed in the process of tobacco growing and production in their household as unpaid employees, representing 7.8% (15). However, this study was conducted with only 53 households, and therefore it is unlikely to refer to a broader range of tobacco farmers. Besides, information and knowledge about the situations of the employment of children in tobacco farming and factors determining this issue are still limited. Accordingly, the researchers aimed to examine the prevalence and factors associated with child labor in tobacco cultivation and production among Burley tobacco farmers in the lower Northern Thailand. The results of this research should be used as policy proposals and concrete approaches

to reduce the problem of child labor in the farming and production of tobacco in Thailand.

2- MATERIALS AND METHODS

2-1. Study design and population

This cross-sectional study was carried out in the period from July to October 2020. The target population was 5,826 Burley tobacco-farming households in the lower Northern Thailand. A random sample of 720 farmers was determined by calculating the ratio between the number of the independent variables (12 variables), and the population at 1:50 (16). We added 20% of the calculated sample to deal with the issue of non-response and incomplete responses. The researchers randomly selected the sample from two provinces, Phetchabun and Sukhothai, where Burley tobaccos were grown the most in Thailand.

The sample size for each province was determined according to the population proportion. A systematic random sampling technique was then employed using the list of the tobacco-growing farmers as a random number account. The initial number was random, and the sampling interval was calculated by dividing the population (N) by the samples (n).

2-2. Inclusion criteria

The inclusion criteria included Burley tobacco farmers who have registered with the Tobacco Stations in Sukhothai and Phetchabun Province in 2019, have awareness, are able to speak well, listen, and understand Thai language, and voluntarily answer the questionnaire.

2-3. Measuring tools

The research instrument was a structured questionnaire with close-ended questions, designed by the researchers, for the heads of the Burley tobacco-farming households. The questionnaire included the following four sections:

Section 1. Demographic information, consisting of nine short and checklist questions: gender (male/female); age (below 60 years/over 60 years); educational level (no education/primary or less education/secondary or higher education); having debt (yes/no), farm size ($\leq$ 10 rai/>10 rai); having a family member under the age of 18 (yes/no); land ownership (owned land/rented land); tobacco purchaser (public agency/private agency); and having experience of being inspected for child labor from a government or private institution in the past year (yes/no).

Section 2. Knowledge about impacts of child labor, consisting of five right/wrong questions: employing underage youth in tobacco cultivation is illegal; child workers who have contact with tobacco leaves are being exposed to dermally absorbed pesticides; the nicotine from tobacco leaves can penetrate the skin of children; the nicotine in tobacco can cause dizziness and nausea/vomiting in children; and children who work with tobacco are more likely to smoke than children in general.

Section 3. Positive attitudes towards child labor, consisting of five Likert scale questions (strongly agree, agree, uncertain, disagree, strongly disagree): employing your children in tobacco cultivation is normal; assistance of your children in tobacco cultivation represents gratefulness; employing children in tobacco cultivation is the same as a professional training; child workers yield greater and faster results than adults; and employing children in tobacco cultivation is considered as income generation.

Section 4. Child labor behavior in growing and producing tobacco, consisting of two checklist questions: 1) did you employ youth under the age of 18 in tobacco cultivation in your household? (yes/no); and 2) in which steps of tobacco cultivation did you employ youth under the age of 18? (able to answer more than 1

item: seeding/transplanting/spraying chemicals/harvesting leaves/collecting leaves /curing leaves/ drying leaves/wrapping leaves for delivery to the factory) (question 2 was used for only the participants who are involved in child labor). All questions had the Index of Item-Objective Congruence (IOC) ranging from 0.7 to 1.0, and section 2 and 3 had Cronbach's alpha coefficient at 0.73 and 0.76, respectively.

2-4. Ethical consideration

This study was granted ethics approval from the Human Research Ethics Committee of Naresuan University (ID-code: 0109/61). Prior to data collection, the participants signed informed consent and were explained about the study's objectives and procedures and were assured of the confidentiality of their information.

2-5. Data collection

Data were collected by the researchers. The questionnaire was distributed to all participants. For those who were illegible, the researchers read the questions and let them answer themselves. It took around 40-60 minutes to complete the questionnaire.

2-6. Data analysis

The data were entered into and analyzed using statistical software, SPSS version 17.0. Descriptive analyses, using number, percentage, mean, and standard deviation, were applied to elucidate the farmers' the characteristics. Chi-square test was used to primarily examine the association between the independent and dependent variables. The paired variables that had a p-value lower than 0.05 were then analyzed by a multivariable logistic regression model to explore the determinants of child labor in tobacco farming and production. In this process, the continuous variables were divided into two groups depending on their mean. There were three continuous variables in this analysis, including the size of tobacco land (more or less than 7 rai), knowledge score about impacts on child labor (greater or less than 3 points), and positive attitude score towards child labor (greater or less than 3.3 points). These categorized variables were then imported to the initial model together with all the group variables. After that, the crude analysis was performed by analyzing the association between independent and dependent variables individually and the variables that had a p-value less than 0.05 were selected for the initial model and were analyzed by multivariable logistic regression with the Enter approach to control the power of confounding variables. We considered presenting Crude Odds Ratio, Adjusted Odds Ratio, 95% Confidence interval (CI), and p-value.

3- RESULTS

3-1. Characterization of the study subjects

A total of 674 questionnaires were completed, representing a response rate of 93.6%. Similar proportion of the respondents' gender was observed - males (50.7%), and females (49.3%). The majority of them were aged younger than 60 years (80.3%) and had a primary education (79.5%). Most tobacco farmers in the survey had a household member under the age of 18 (60.8%); had tobacco-farming land less than 7 rai (50.4%); and had debt (68.1%). Additionally, nearly 89% of these farmers reported being inspected for child labor involvement by a public or private leaf-buying firm.

3-2. Knowledge about impacts of child labor

Sixty-one percent of the participants were knowledgeable about health impacts on child laborers with a high level. Whereas just below 40% had a low level of such knowledge. The question that the participants answered most correctly was

that child workers who have contact with tobacco leaves are being exposed to dermally absorbed pesticides, representing 88.2%. This was followed by questions including: the nicotine from tobacco leaves can penetrate children's skin (82.0%), and employing underage youth in tobacco cultivation is illegal (69.4%). The questions with the least correct answers were: the nicotine in tobacco can cause dizziness and nausea/vomiting in children (45.3%), and children who work with tobacco are more likely to smoke than children in general (43.0%), respectively.

3-3. Attitudes towards child labor

The proportion of the participants who had positive attitudes towards child labor between a low level (50.4%), and a high level (49.6%) was similar. Considering each question, the question that the participants agreed (agree - strongly agree) with the most (50.5%) was that employing children in tobacco cultivation is normal. The followed-by questions were that assistance of your children in tobacco cultivation represents gratefulness (46.1%), and employing children in tobacco cultivation is the same as a professional training (40.2%). The lowest percentage of the questions that the participants agreed with was that child workers yield greater and faster results than adults and employing children in tobacco cultivation is considered as income generation with the same percentage of 31.6.

3-4. Child labor behavior in growing and producing tobacco

Eighty-three households (12.4%) employed children under the age of 18 to grow and produce tobacco. The most common process involving child labor was tobacco leaf collection (100.0%), followed by leaf harvest (73.5%). For the other processes, 42.2% of the households employed child labor to dry tobacco leaves, 40.9% to cure tobacco, 37.4% to transplant tobacco in the field, 27.7% to seed tobacco, and 24.1% to spray pesticides.

3-5. Factors associated with child labor in tobacco cultivation and production

The results from the Chi-square test showed that three out of nine independent variables were associated with child labor in tobacco growing and production: being inspected for child labor by a public or private purchasing tobacco agency (p-value < 0.001), knowledge about health impacts on children (p-value < 0.001), and positive attitudes towards child labor (p-value < 0.001). The results are presented in **Table.1**. These three variables were imported to a multivariable logistic regression model and the result showed that all of them were associated with child labor in growing and producing tobacco.

The farmers who had not been inspected for child labor in tobacco cultivation cultivation were almost six times more likely to employ children working in farms as those who had undergone such inspection (OR_{Adj}: 5.62; 95% CI: 3.17-9.97; p-value $= 0.046$). The farmers who were knowledgeable about health impacts on children at a low level were two times more likely to employ child workers in tobacco cultivation than those who had better knowledge (OR_{Adj}: 2.11; 95% CI: 1.29-3.44; p-value < 0.001). Likewise, the participants who had a high level of positive attitudes towards child labor were almost two times more likely to employ children (OR_{Adj}: 1.69; 95% CI: 1.01-2.84; p-value $= 0.003$). More information is presented in **Table.2**.

Table-1: Prevalence of child labor in tobacco growing and production among Burley tobacco-growing farmers in lower norther Thailand.

Factors	All farmers		Non-use of child labor		Use of child labor		Chi-square	P-value
	Number	%	Number	%	Number	%		
Gender (n=672)							2.605	0.107
Male	341	50.7	292	85.6	49	14.1		
Female	331	49.3	297	89.7	34	10.3		
Age (years) (n=674)							0.34	0.855
< 60	541	80.3	475	87.8	66	12.2		
≥ 60	133	19.7	116	87.2	17	12.8		
Education level (n=672)							2.988	0.084
Primary school	534	79.5	474	88.8	60	11.4		
Secondary school	138	20.5	115	83.3	23	16.7		
Having any household members under the age of 15)n=671)							0.299	0.585
No	263	39.2	229	87.1	34	12.9		
Yes	408	60.8	361	88.5	47	11.5		
Size of cultivated land (n=673)							2.108	0.147
≤ 7 rai	339	50.4	291	85.8	48	14.2		
>7 rai	334	49.6	299	89.5	35	10.5		
Having debt (n=674)							0.764	0.382
Yes	459	68.1	399	86.9	60	13.1		
No	215	31.9	192	89.3	23	10.7		
Being inspected by private/public sector (n=674)							48.919	<0.001
Yes	75	11.1	47	62.7	28	37.3		
No	599	88.9	554	90.8	55	9.2		
Knowledge about health impact on child labor)n=664)							12.379	<0.001
Low	259	39.0	212	81.9	47	18.1		
High	405	61.0	369	91.1	36	8.9		
Positive attitudes towards child labor (n=670)							11.474	0.001
Low	338	50.4	311	92.0	27	8.0		
High	332	49.6	277	83.4	55	16.6		

Note: 1 Rai is equal to 1600 square meters or 0.395 acres.

Table-2: Factors associated with child labor in tobacco cultivation and production among the Burley tobacco farmers in lower Northern Thailand.

Factors	Crude OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Being inspected by public/private sector				
Yes [R]	1		1	
No	5.89 (3.42-10.15)	<0.001*	5.62 (3.17-9.97)	0.046*
Knowledge about health impacts on child labor				
Poor [R]	1		1	
Good	2.27 (1.43-3.62)	0.001*	2.11 (1.29-3.44)	<0.001*
Positive attitudes towards child Labor				
Low [R]	1		1	
High	1.97 (1.22-3.17)	0.005*	1.69 (1.01-2.84)	0.003*

R = Reference group, * P-value < 0.05, OR: Odds ratio, 95% CI: 95% Confidence level.

4- DISCUSSION

This study aims to examine the prevalence and factors related to child labor in tobacco cultivation and production. In this study, approximately 12% of the Burley tobacco farmers in Thailand employ child labor in farming, particularly for the process of leaf collection, harvesting, and drying. These tobacco-related tasks can involve the risk of wet and dry leaf exposures through the skin and respiratory tract. According to the literature from other tobacco-farming underdeveloped and developing countries (8-12), it could be implied that children working on tobacco farms are at high risk of pesticide contact, nicotine exposure causing Green Tobacco Sickness, occupational injuries, and becoming smokers. However, it is necessary for Thailand to research the surveillance and monitoring of any other possible health and relevant impacts on child labor in tobacco farming and production. Being inspected for the employment of children by governmental or nongovernmental agencies in the past year and levels of knowledge about health impacts on child workers were associated with child labor in tobacco farms. This result is in line with a previous study (17) which found that most Burley tobacco farmers in Thailand had been inspected for such circumstances by either the public or private sector in the last year, and only 11% of the farmers had never undergone this inspection. This study also indicated that these non-inspected farmers were six times more likely to employ children in their tobacco field than those who had been checked (17). Being uninspected may result in a lack of awareness of regulations or legal rules about restrictions on child labor and risks of health impacts on children working on tobacco cultivation and production. Likewise, regarding knowledge about health impacts on children working in tobacco farms, it was found that the majority of the tobacco growers (61.0%) were highly knowledgeable and these farmers showed a very small proportion of employing child labor in the processes of tobacco growing and production. However, another 39.0% of these had a low level of such knowledge. It is imperative that relevant agencies increase the communication of health impacts to be more inclusive and continuous to tobacco growers. Positive attitudes towards child labor in this agricultural industry is one of the contributing factors related to this behavior of interest. In this research, we suggest that the tobacco farmers who had a high level of the positive attitudes were two times more likely to employ children in tobacco farms than those with a low level, consistent with a previous study (18). This tobacco-related child labor is a very sensitive issue in Thai society since the cultural foundation that has been built upon the belief that using children to assist with household tasks represents appropriate and valuable performance. This assistance not only expresses gratitude to their parents, but also shows spending time productively and practicing professional skills. This notion is reflected in the result of this study, which indicates that nearly half of the tobacco farmers had positive attitudes towards child labor, for example, employing children to work on tobacco-related tasks is a common practice among the households, and this enhances professional skills. Besides, some farmers have a cost-effective and profitable attitude towards child labor as children are able to work more cost-effectively and quickly than adults and child labor in households, reduces expenses, and increases incomes. Relevant agencies need to expedite measures to prevent and reduce the employment of children that are effective and appropriate to the social and cultural contexts of tobacco farmers in Thailand.

4-1. Study Limitations

There are two important limitations in this current research. First, this research only collected data from a sample of Burley tobacco growers, thus, it could not be used to refer to those who cultivate other types of tobacco such as Virginia and Turkish varieties, which have different social and environmental contexts. Second, this research only sought a set of information on child labor from tobacco growers; thus, the findings could not provide relevant information about the impact on children working in tobacco planting and production. Research in farmers who plant other types of tobacco should, therefore, be required. Also, studying the health impacts on children working in tobacco agricultural industries should be undertaken. The required information should be used to propose a policy recommendation and concrete approach to reduce the issue of child labor in the growing and production of tobacco in Thailand. These are likely to be concrete efforts that correspond to the Article 18 of the FCTC regarding protection of the environment and the health of persons.

5- CONCLUSION

In conclusion, some (12%) Burley tobacco farmers in Thailand employed underage youth, particularly those who had not been inspected for child labor, had poor knowledge and had higher positive attitudes towards child labor in tobacco cultivation and production. Based on our findings, we suggest that the relevant departments should develop communication strategies to educate tobacco farmers on health impacts on child workers. Also, campaigns to correct farmers' attitudes, measures to inspect and monitor child labor, and research on monitoring health risks on children working in tobacco-related tasks should be systematically emphasized.

7- CONFLICT OF INTEREST: None.

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