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THE DOUBLE BURDEN OF NUTRITION AND ASSOCIATED FACTORS IN HIGH SCHOOLS STUDENTS IN LONG XUYEN CITY, AN GIANG PROVINCE

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ABSTRACT

The study was conducted to determine the double nutritional burden status among high school students and some related factors. This study was designed as a cross-sectional study with 384 high school students in Long Xuyen city, An Giang province. Students were measured weight and height by anthropometric methods and collected information, eating habits through questionnaires. The research results show that the stunting, wasting, and overweight/ obesity rate was 8.3%, 7.8%, and 6.2%, respectively. The percentage of high school students who ate fatty, snacking, and sweet foods were high, at 60.7%, 79.4% and 68.5%, respectively. The percentage of students who have a habit of eating at night after 9 pm was 22.1%. Average family income over 10 million VND/month, fatty and sweet eating habits were factors contributing to reducing the risk of stunting and wasting, but increasing the risk of being overweight/obesity.

Keywords: Double burden, malnutrition, overweight/obesity, high school students, Long Xuyen city - An Giang.

I. INTRODUCTION

In An Giang, research on the nutritional status of high school students is still limited. Therefore, to facilitate the implementation of national and local strategic action plans on nutrition, this study was conducted to determine the double nutritional burden and related factors of high school students in Long Xuyen city, An Giang province. The results of this paper will provide evidence to inform the policies and practices that aim to improve status.

II. METHODS

Research subjects: Students in grades 10, 11 and 12 at high schools in Long Xuyen city, An Giang province.

Research design: A cross-sectional community-based study was conducted from September 2018 to May 2019.

Sample size: The sample size for this survey is calculated based on the formula for prevalence studies.

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

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With the following assumptions: p-value (highest population proportion prevalence) = 50% (due to during the literature review, there were no previous studies in the area), 95% confidence interval (standard normal probability = 1.96); margin of error (d) = 0.05, z = the standard normal tabulated value, and α = level of significance. Therefore, the total sample size was 384.

Sampling: The multistage sampling technique was employed to select the study participants. First, conduct purposefully selected Long Xuyen city, An Giang province, to participate in the study. Second, of nine high schools, three schools were selected using the Simple Random Sampling Method. Then, a list of all students at these three high schools was created. Finally, high schools students were selected by using a systematic random sampling method. If a selected student refused to participate in the study, it was ignored, and the next student will be taken immediately after the student was selected in the list. Continued to select the sample until the number of students was enough, then stop.

Data collection

Data were collected through interviews by questionnaire in the combination of measuring weight and height by anthropometric methods. Weight was measured using Tanita scales with an accuracy of 0.1kg, while height was measured using UNICEF's wooden rulers.

Classification of nutritional status was determined based on the 2007 WHO Z-Score classification table for children aged 10 to 19 years, including Assessment of height-for-age Z-Score (H/A Z-Score) and assessment of the BMI Z-Score by age (BMI/A Z-Score). To be more specific, H/A Z-Score was divided into three types: Severe stunting, Moderate stunting, and Normal nutritional status. BMI/A Z-Score was classified into five categories: Severely wasting, Moderate wasting, Normal nutritional status, Overweight, and Obesity.

Data analysis

The data were checked for completeness and consistency before entry. Then data entry and cleaning were conducted using Epi-Data 3.1 software. The H/A Z-Score and BMI/A Z-Score indicators were calculated using the WHO AnthroPlus software. All data were analysed using SPSS 20.0 software.

III. RESULTS AND DISCUSSION

Table 1. Socio-demographic characteristics of respondents (n=384)

Characteristics		Frequency	Percent
Gender	Male	169	44.0
	Female	215	56.0
Age	16	109	28.4
	17	199	51.8
	18	74	19.3
	19	2	0.5
Grade	10	118	30.7
	11	201	52.3
	12	65	16.9
Ethnicity	Kinh	372	96.9
	Others	12	3.1
Average family income per month (million VND)	≤ 5.0	51	13.3
	5.1 - 10.0	268	69.8
	10.1 - 15.0	45	11.7
	> 15.0	20	5.2

Table 1 shows that the sample selected for the study had a higher percentage of females than males (56.0% compared with 44.0%), age 17 means that grade 11 accounted for more than 50.0%. In addition, nearly 97.0% of the study population was from the Kinh ethnic group, with approximately 70% of households having an income between 5.1 and 10.0 million VND/month.

Table 2. Anthropometric indicators and nutritional status by education level and gender (Mean ± SD)

	Grade 10		Grade 11		Grade 12		Total in gender		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Height (cm)	165,7 ± 4,7**	157,9 ± 4,5**	166,8 ± 7,2**	157,2 ± 5,7**	170,4 ± 5,7**	158,5 ± 5,1**	167,0 ± 6,4**	157,6 ± 5,3**	161,8 ± 7,4
Weight (kg)	56,8 ± 10,7**	47,4 ± 5,5**	58,8 ± 11,6**	46,9 ± 7,7**	59,4 ± 6,9**	47,9 ± 6,2**	58,2 ± 10,7**	47,2 ± 6,9**	52,1 ±10,3
H/A Z-Score	-0.94 ± 0,66	-0,71 ± 0,70	-1,08 ± 0,92	-0,85 ± 0,85	-0,77 ± 0,77	-0,68 ± 0,77	-0,98 ± 0,82*	-0,78 ± 0,79*	-0,87 ± 0,81
BMI/A Z-Score	-0,19 ± 1,15**	-0,72 ± 0,82**	-0,25 ± 1,21**	-0,90 ± 1,02**	-0,60 ± 0,97	-0,90 ± 0,84	-0,28 ± 1,16**	-0,85 ± 0,94**	-0,60 ± 1,08

**p<0,05; **p<0,01; T test*

Table 2 shows the distribution of anthropometric indicators of high school students in this study by education level and gender. The results show that the average height, weight, H/A Z-Score and BMI/A Z-Score of high school students in Long Xuyen city were 161.8 ± 7.4; 52.1 ±10.3; -0.87 ± 0.81, and -0.60 ± 1.08, respectively. In which the height, weight and BMI/A Z-Score of male students (167.0 ± 6.4; 58.2 ± 10.7 and -0.28 ± 1.16) were higher than females, there was a statistically significant difference (p<0.01). Meanwhile, the H/A Z-Score in the group of female students (-0.78 ± 0.79) was higher than that of male students (-0.98 ± 0.82); there was a statistically significant difference (p<0.05).

The results of this study are similar to those of Ngo Hong Nhung et al. in Thai Nguyen [6], Tran Thi Minh Hanh in Ho Chi Minh City [10], and Le Tran Tuan Anh et al. [5] in Hai Phong. All these studies showed that the average weight and height of male students were higher than female students.

Figure 1. Distribution of nutritional status by level

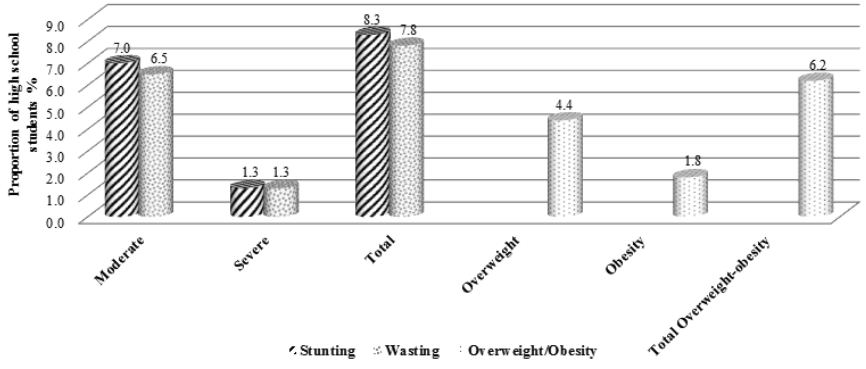

Figure 1 shows the distribution of nutritional status by level among high school students in Long Xuyen city. The prevalence of stunting and moderate wasting was 7.0% and 6.5%, respectively. In addition, approximately 1.3% of students suffered from severe stunting as well as wasting. On the other hand, the percentage of students who were overweight and obese was 4.4% and 1.8%, respectively.

In this study, the percentage of students suffering from stunting is higher than that of Le Tran Tuan Anh et al. [5] in Hai Phong (8.3% compared to 6.4%). Nonetheless, this result is lower than the study of Ngo Hong Nhung et al. [6] in Thai Nguyen and Tran Thi Minh Hanh in Ho Chi Minh City [10]. The prevalence of stunting in these two studies were 12.7% and 10.7%, respectively. In addition, the percentage of wasting in this study is higher than that of Nguyen Nhat Cam et al. [7] and Ngo Hong Nhung et al. [6], but the difference is not significant (7.59% and 6.9%, respectively). However, this result is much lower than the study of Bui Duc Van [8](25.8%). The reason is that the research by Bui Duc Van [8] was conducted in a rural district (Cai Nuoc district, Ca Mau province). Meanwhile, other studies, including this study, were principally carried out in cities. Otherwise, the percentage of overweight/obesity in this study is 6.2%, which is much lower when compared to the study of Ngo Hong Nhung et al. [6], and Nguyen Thi Tham et al. [9] (13.8% and 17.3%, respectively), but higher than that of Bui Duc Van [8] (5.99%).

Table 3. Stunted nutritional status (height/age) of students by education level and gender

Grade	Gender	Stunted nutritional status				
		Normal	Moderate	Severe	Total	p
		n (%)	n (%)	n (%)	n (%)	
10	Male	55 (46.6)	3 (2.6)	0 (0.0)	58 (49.2)	p>0.05
	Female	57 (48.3)	3 (2.5)	0 (0.0)	60 (50.8)	
	Total	112 (94.9)	6 (5.1)	0 (0.0)	118 (100.0)	
11	Male	73 (36.3)	7 (3.5)	5 (2.5)	85 (42.3)	p<0.05
	Female	106 (52.7)	10 (5.0)	0 (0.0)	116 (57.7)	
	Total	179 (89.1)	17 (8.5)	5 (2.5)	201 (100.0)	
12	Male	24 (36.9)	2 (3.1)	0 (0.0)	26 (40.0)	p>0.05
	Female	37 (56.9)	2 (3.1)	0 (0.0)	39 (60.0)	
	Total	61 (93.8)	4 (6.2)	0 (0.0)	65 (100.0)	

Table 3 shows the distribution of high school students' stunted nutritional status (height/age) in this study by education level and gender. The results show that moderate stunting rates between males and females are relatively equal in grades 10 and 12; there is no statistically significant difference (p>0.05). Nonetheless, in grade 11, the prevalence of moderate stunting among females is higher than males (5.0% compared to 3.5%), but only male students have severe stunting; there is a statistically significant difference (p<0.05). The percentage of severe stunting in 11th-grade male students is possible due to childhood malnutrition, genetic factors or nutritional needs in the past period only met the need for weight gain, not accommodate height growth. The result of stunting prevalence in this study is consistent with those of Ngo Hong Nhung et al. [6] and Le Tran Tuan Anh et al. [5] when there is no statistically significant difference in the prevalence of malnutrition between the gender in grade 10 (p>0.05).

Table 4. Classification of nutritional status based on BMI by education level and gender of students

Grade	Gender	Nutritional status						
		Severe wasting	Moderate wasting	Normal	Overweight	Obesity	Total	p
		n (%)	n (%)	n (%)	n (%)	n (%)	(n, %)	
10	Male	1 (0.8)	1 (0.8)	49 (41.5)	5 (4.2)	2 (1.7)	58 (49.2)	p>0.05
	Female	0 (0.0)	3 (2.5)	56 (47.5)	1 (0.8)	0 (0.0)	60 (50.8)	
	Total	1 (0.8)	4 (3.4)	105 (89.0)	6 (5.1)	2 (1.7)	118 (100.0)	
11	Male	1 (0.5)	4 (2.0)	68 (33.8)	8 (4.0)	4 (2.0)	85 (42.3)	p<0.01
	Female	2 (1.0)	14 (7.0)	98 (48.8)	1 (0.5)	1 (0.5)	116 (57.7)	
	Total	3 (1.5)	18 (9.0)	166 (82.6)	9 (4.5)	5 (2.5)	201 (100.0)	
12	Male	1 (1.5)	1 (1.5)	23 (35.4)	1 (1.6)	0 (0.0)	26 (40.0)	p>0.05
	Female	0 (0.0)	2 (3.1)	36 (55.4)	1 (1.5)	0 (0.0)	39 (60.0)	
	Total	1 (1.5)	3 (4.6)	59 (90.8)	2 (3.1)	0 (0.0)	65 (100.0)	

Table 4 shows the distribution of nutritional status of students based on BMI by education level and gender. The results show that the rate of severe wasting of male students in grades 10 and 12 is higher than that of female students (0.8% compared to 0,0%). Meanwhile, in moderate wasting, female students tend to be higher than male students. Analogous to severe wasting, the percentage of overweight/obesity in male students tends to be higher than that of females in grades 10 and 12. However, the difference in nutritional status is based on BMI indicators was no statistically significant difference between these two grades (p>0.05). Otherwise, in grade 11, there was a difference based on wasting or overweight/obesity by gender with statistically significant (p<0.01). The proportion of female students with moderate and severe wasting was higher than that of male students (7.0% and 1.0% compared to 2.0% and 0.5% respectively). In contrast, male students were more likely to be overweight/obese than female students (6.0% compared to 1.0%). This result is consistent with the study of Ngo Hong Nhung et al. [6] and Nguyen Thi Tham et al. [9] when the overweight/obesity rate among male students is higher than that of female students (17.9% versus 10.6% and 25.2% versus 11.1%, respectively).

Table 5. High school students' eating habits

		Frequency (n=384)	Percent
Fatty eating habit	Yes	233	60.7
	No	151	39.3
Snacking eating habit	Yes	305	79.4
	No	79	20.6
Sweet eating habit	Yes	263	68.5
	No	121	31.5
The habit of eating at night after 9 o'clock	Yes	87	22.7
	No	297	77.3

Table 5 shows the eating habits of high school students in Long Xuyen city. The results show that students who have fatty and snacking eating habits were 60.7% and 79.4%, respectively. This can be explained by the high speed of urbanization and the increasing appearance of fast food stores or sidewalk shops in Long Xuyen city in recent years, resulting in easy access for students to these foods. This reason can also lead to an increased tendency to use sweet foods, for example, cakes, milk tea.., which are frequently used with snacks or burgers in fast food stores or sidewalk shops. The result of this study demonstrates that about 68.5% of students had sweet eating habits. In addition, the percentage of high school students who have a habit of eating at night after 9 am in this study was 22.1%.

Table 6. Some factors related to nutritional status

Related factors		Stunting (%)			Wasting (%)			Overweight/obesity (%)		
		Yes	No	OR	Yes	No	OR	Yes	No	OR
Gender	Male	10.1	89.9	1.49	5.3	94.7	0.52	11.8	88.2	7.08***
	Female	7.0	93.0		9.8	90.2		1.9	98.1	
Average family income per month (million VND)	> 10	1.5	98.5	0.15*	1.5	98.5	0.16*	18.5	81.5	5.79***
	≤ 10	9.7	90.3		9.1	90.9		3.8	96.2	
Fatty eating habit	Yes	3.9	96.1	0.22***	2.1	97.9	0.11***	9.0	91.0	4.89**
	No	15.2	84.8		16.6	83.4		2.0	98.0	
Snacking eating habit	Yes	4.9	95.1	0.19***	4.3	95.7	0.16***	5.9	94.1	0.76
	No	21.5	78.5		21.5	78.5		7.6	92.4	
Sweet eating habit	Yes	4.2	95.8	0.21***	1.5	98.5	0.06***	8.0	92.0	3.41*
	No	17.4	82.6		21.5	78.5		2.5	97.5	
The habit of eating at night after 9 o'clock	Yes	8.0	92.0	0.95	2.3	97.7	0.23*	11.5	88.5	2.63*
	No	8.4	91.6		9.4	90.6		4.7	95.3	

**p<0.05; **p<0.01; ***p<0.001*

Table 6 shows some factors related to malnutrition and overweight/obesity among high school students in Long Xuyen city. Male students were 7.08 times more likely to be overweight/obese than female students regarding gender-related factors. This difference was statistically significant with p<0.001. This result is similar to the study of Nguyen Thi Tham et al. [9] when male students have a higher risk of obesity (OR= 2.86; p < 0.01). The household economic factor reflects whether student's nutritional needs are met the requirement or not. This study shows that the group of students living in families with an average monthly income of over 10 million had a lower risk of stunting and wasting than families with an income of 10 million or less (OR 0.15 and 0.16), respectively. This difference was statistically significant with p<0.05. In contrast, the overweight/obesity rate in students with a family income of over 10 million was 5.79 times higher than the other group (p<0.001). Several factors related to students' eating habits (fatty, snacking, and sweet eating) reduced the risk of stunting and stunting (p<0.001) but also increased the risk of overweight/obesity, except for snacking habits (p>0.05). Therefore, it is necessary to strictly manage high school students' eating habits and behaviours to limit the possibility of being overweight/obese. Otherwise, the habit of eating at night after 9 pm also reduced the risk of wasting (OR=0.23; p<0.05). Nonetheless, this habit also caused an increased risk of overweight/obesity by 2.63 times (p<0.05). No association was found between the habit of eating at night after 9 pm with the stunting rate.

IV. CONCLUSION

The percentage of high school students in Long Xuyen

city suffered from stunting, accounting for 8.3%, of which moderate level accounted for 7.0%, severe degree 1.3%. Likewise, the rate of wasting accounted for 7.8%, in which female students with moderate and severe wasting were higher than male students in grade 11 (7.0% and 1.0% compared to 2.0% and 0.5%) ($p<0.01$). Otherwise, the proportion of overweight/obesity accounted for 6.2%, of which in grade 11, male students tend to be overweight/obese higher than female students (6.0% compared to 1.0%); $p<0.01$). The percentage of students with fatty, snacking, and sweet eating habits was high, at 60.7%, 79.4%, and 68.5%, respectively. In addition, the proportion of students who had a habit of eating at night after 9 pm was 22.1%. Average family income over 10 million VND/month, fatty and sweet eating habits were factors contributing to reducing the risk of stunting and wasting, but increasing the risk of being overweight/obesity

V. RECOMMENDATIONS

Scientists, nutritionists, and local preventive medicine centres need to develop a balanced and reasonable diet to ensure an adequate supply of necessary nutrients and limit the use of fats, sweets for high school students.

Schools need to promote education and campaign to raise awareness about the adverse effects of unhealthy eating habits and behaviours on students' health.

Families need to strengthen supervision, adjust students' diets at home and limit students to eat at night after 9 pm.

The authorities need to strengthen supervision and promulgate policies to early detect students at risk of malnutrition or overweight/obesity to take timely intervention measures.

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ATTITUDES TOWARDS COVID-19 VACCINE OF VIETNAMESE ON ONLINE NEWSPAPERS IN 2020

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ABSTRACT

Currently the epidemic caused by Coronavirus (COVID-19) has adversely affected many countries, facilitating the vaccination program worldwide. However, whether or not to vaccinate is still controversial, including Vietnam. We recognize that the different attitudes of people after reading the information regarding the COVID vaccine may partly influence the decision to use the vaccine in the future. This study aims to investigate the attitudes of Vietnamese people on the Internet by 2020. We searched for articles on mainstream media online newspapers in Vietnam. Then proceed to collect and classify comments from electronic articles based on the set criteria. Articles containing information regarding the COVID-19 vaccine from early January to early December 2020 in Vietnam. There were 273 articles including 8711 comments related to COVID-19 vaccines compiled. The percentage of supportive comments related to vaccines was 14,3%, which was 6 times higher than the proportion of negative comments (2,4%). The topic with the most supportive comments is the results of the vaccine (20.3%). In the topic of articles, the highest proportion of agreeable comments was in the results of vaccines (20.3%) and the second-highest was in the process of vaccines (17.1%). The percentage of unagreeable comments in the origin of vaccines was higher than that in the process of vaccines with 2.8% and 2.6% each. The proportion of unagreeable comments in the results of vaccines was the lowest at 1.3%. Our research has shown evidence of the attitudes of Vietnamese about the COVID 19 vaccine through electronic articles.

Keywords: COVID-19 vaccine, comment, electronic articles.

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I. INTRODUCTION

COVID-19 pandemic has demonstrated its social, health, and economic devastations worldwide [1]Hubei province, China. Affected patients were geographically linked with a local wet market as a potential source. No data on person-to-person or nosocomial transmission have been published to date.\nMETHODS: In this study, we report the epidemiological, clinical, laboratory, radiological, and microbiological findings of five patients in a family cluster who presented with unexplained pneumonia after returning to Shenzhen, Guangdong province, China, after a visit to Wuhan, and an additional family member who did not travel to Wuhan. Phylogenetic analysis of genetic sequences from these patients were done.\nFINDINGS: From Jan 10, 2020, we enrolled a family of six patients who travelled to Wuhan from Shenzhen between Dec 29, 2019 and Jan 4, 2020. Of six family members who travelled to Wuhan, five were identified as infected with the novel coronavirus. Additionally, one family member, who did not travel to Wuhan, became infected with the virus after several days of contact with four of the family members. None of the family members had contacts with Wuhan markets or animals, although two had visited a Wuhan hospital. Five family members (aged 36-66 years [2]. Since its emergence in November 2019, Coronavirus disease (COVID-19) has spread to 188 countries and 25 territories around the globe, despite elaborate efforts by WHO and Governments to contain the infection [3]The current COVID-19 pandemic has urged the scientific community internationally to find answers in terms of therapeutics and vaccines to control SARS-CoV-2. Published investigations mostly on SARS-CoV and to some extent on MERS has taught lessons on vaccination strategies to this novel coronavirus. This is attributed to the fact that SARS-CoV-2 uses the same receptor as SARS-CoV on the host cell i.e. human Angiotensin Converting Enzyme 2 (hACE2. Due to the detrimental effects of the pandemic on not only human health but also on various aspects of the society, enormous efforts have been made to facilitate the development and implementation of COVID-19 vaccine in an attempt to effectively prevent the disease from spreading more widely. By 24 September 2020, a staggering number of vaccines (more than 200) had started preclinical development, of which 43 had entered clinical trials, including some approaches that have not previously been licensed for human vaccines [4]the cause of COVID-19 has triggered a tidal wave of vaccine development. In the first 9 months since the virus emerged over 200 vaccines have begun pre-clinical development, 36 of which have entered clinical trials. This review will cover the platforms under assessment, the immune responses underpinning the vaccines, the results so far and the considerations for the next steps.\n, Since the emergence of COVID-19, caused by the SARS-CoV-2 virus at the end of 2019, there has been an explosion of vaccine development. By 24 September 2020, a staggering number of vaccines (more than 200. So far, many potential vaccines have received much expectation, such as the Sputnik V vaccine of Russia, the one belongs to Oxford university, and the Covid-19 vaccine of Vietnam may begin clinical trials in December 2020.

Although immunization saves 2-3 million people from death every year and vaccine has demonstrated its vital role in protecting people's health, whether to receive COVID-19 vaccine or not remains a controversial topic in many countries, including Vietnam [5]. Since the beginning of COVID-19 pandemic, Vietnam has been globally recognized as an example of a successful story in containing the disease, in which health communication makes a significant contribution.

While most residents in Vietnam generally agree and carefully follow the preventive measures of COVID-19, opinions on COVID-19 vaccine vary widely in Vietnam, which can be observed from the comments and discussion on various social media.

Given the matter that Vietnam is still at risk of recurring COVID-19 pandemic [6]. Understanding the perceptions and attitudes of the community toward comments is critically important for maintaining the success of Vietnam in controlling the epidemic. Therefore, in order to examine attitudes of people towards COVID-19 vaccine, we conducted a study entitled "Attitudes towards COVID-19 Vaccine of Vietnamese residents on online newspapers in 2020 to:

Describe attitude of Vietnamese related to vaccine COVID-19 on electronic newspapers.

II. SUBJECT AND METHODS

2.1. Study design

This was the cross-sectional study to assess the attitudes

of Vietnamese people through comments with text data.

2.2. Research subjects

All comments in the responses to the COVID-19 vaccine-related electronic articles. The articles published from January 1, 2020 to December 4, 2020 were found by searching keywords on the websites of 4 official newspapers of Vietnam. Duration of the study from November 20th 2020 to December 1st 2020. Research planning process and data analysis duration in 2 weeks. Data collection duration in 2 weeks

2.3. Search methods for identification of articles

We utilized 3 keywords "Vaccine COVID 19", "Vắc xin COVID 19" and " COVID 19 Vaccine" and performed search on search on newspaper web search bar. Specifically, the research team has selected 4 websites with a large number of viewers, including: Vietnam Express, Dan tri, Tuoi tre, Vietnamnet.

2.4. Data collection and management process

The study was performed following a five-step process:

1- Search for articles using keywords on the websites.

2- Make a list of the articles found and assign an ID number for each article.

3- A member of the research team received the data with an ID number for each article.

4- Download and save comments according to the ID of each corresponding article as an excel file by Data Miner.

5- Cross-check the results of downloads with the ID codes in the list against the results of each person in the assigned research group. In case the result is wrong, we conducted a review check to re-number or redeem.

2.5. Process of word extraction and evaluation

The research team collected 8777 comments from 273 electronic articles from 4 online newspapers according to 3 keyword phrases. After screening the comments to remove the duplicate and missing comments, there were 8711 comments left. The research team then classified electronic articles and comments based on meaningful keywords and criteria, keywords, these criteria are subjective of the researcher.

2.5.1. Categorize articles by topics

The research team classified the articles into four main topics: the process of vaccine, the price of vaccine, the results of vaccine, and the source of vaccine because of the articles' content. In addition, articles with content not included in the topics assessed will be classified in another category.

Topic about the process of vaccine includes progress of the production stages of vaccones and Process and technology of vaccine production. Topic about the price of vaccine inludes estimated prices of vaccines. Topic about the results of vaccine includes test results according to the vaccine stages. Topic about the source of vaccine includes place of production, companies are responsible for research and production of vaccines.

2.5.2. Sort comments by content.

Based on the keywords the team divided the comments into the following groups: the attitude of Vietnamese about vaccine, worries about vaccines, the price of vaccines, the safety of vaccines.

According to our research team: Agreeable comments are the comments that mentioned: "happiness, joyful receiving new progess of vaccines" and "willing to be vaccinated". Unageeable comments are the comments that mentioned: "do not believe in the result of vaccines", "not willing to be vaccinated". Neutral comments are the comments mentioned: "hesitation" and not relevant to the topics.

[The attitude of Vietnamese about vaccines consist of Agreeable, Disagreeable and Neutral. Agreeable comments contains the keywords: "hy vọng", "tin tưởng", "ủng hộ", "tin mừng". Disagreeable comments contains the keywords: "không ủng hộ", "không tin tưởng", "hậu quả xấu". Neutral comments contains the keywords: "phân vân", "không chắc chắn". The comments that reffered to worries about vaccines contains the keywords: "lo ngại", "lo lắng", "sợ hãi". Other comments that mentioned the price of vaccines contains the keywords: "giá mắc", "giá đắt", "giá phù hợp", "giá nào cũng mua"].

2.6. Statistical analysis

Our research uses the following software: making a list of search results using Excel software and analyzing and processing data using R software. Descriptive statistics: Make a table describing the frequency, average value, median and ratio. Average value, standard deviation for the standard distribution quantitative variable. Median value, quartile interval for quantitative variables without a normal distribution.

2.7. Ethics in research.

Research is approved by Institute of Preventive Medicine and Public Health's ethic council.

III. RESULTS

3.1 General information of research subjects

3.1.1. Articles

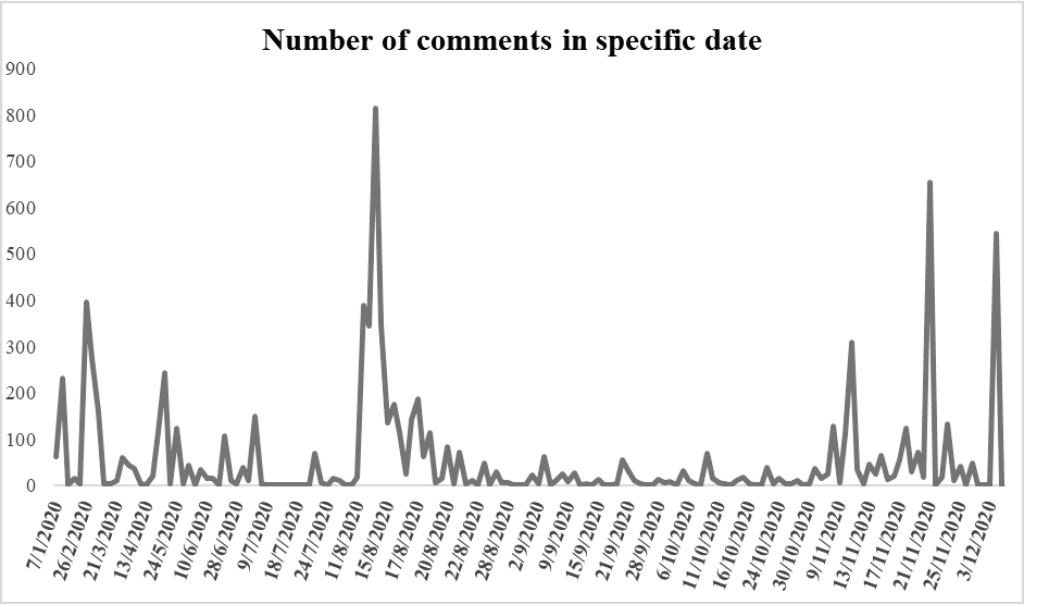
The table 3 shows general information about electronic newspapers. Firstly, the number of electronic newspapers used in this research was 273 and Vietnam Express contributed the largest proportion with 205 articles (75.09%). Secondly, the origin of vaccines was one of the most popular topics that were published in electronic newspapers with 187 newspapers (68.5%) and the least popular one was the price of vaccines with 14 newspapers (5.13%). Lastly, newspapers that mentioned the origin of vaccines included Russia (32.29%), America (29.17%), Vietnam (11.98%), China (11.46%), England (8.33%), and others (6.77%) respectively.

Table 1: General information of research subjects

	n	%
Articles (n=273)		
1. Vietnam Express	205	75.09
2. Dan tri	36	13.19
3. Tuoi Tre Online	16	5.86
4. Vietnamnet	16	5.86
Topic of articles (n=273)		
1. The process of vaccines	102	37.36
2. The price of vaccines	14	5.13
3. The results of vaccines	41	15.02
4. The origin of vaccines	187	68.50
5. Others	48	17.58
Articles that mentioned the origin of vaccine (n=192)		
1. Russia	62	32.29
2. America	56	29.17
3. China	22	11.46
4. Vietnam	23	11.98
5. England	16	8.33
6. Others	13	6.77

3.1.2 Number of comments in a specific date

Figure 1: Number of comments in specific date



The number of comments reached a peak at more than 800 comments on August 13th. This was also the period that there was an outbreak in Danang city where it recorded the largest number of deaths by COVID-19. The second-largest number of comments was around November 21st (nearly 700 comments) when Vietnam recorded new cases of infected COVID-19.

3.2 The attitude of Vietnamese about vaccine through comments on electronic newspapers

Table 2: The number of likes related to people's attitude towards vaccine COVID-19

Attitude	n (%)	Count of likes	Median	Std.dev	Max	Min
Agreeable	1243 (14.3)	1243	16	96.81	1271	0
Unagreeable	205 (2.4)	205	8	284.81	2516	0
Neutral	7263 (83.4)	7263	9	90.32	1605	0

The table illustrates the supportive comments accounted for 14.3%, which was 6 times more than negative comments (2.4%). Besides, the percentage of neutral comments was the largest at 83.4%. The reaction related to people's attitude towards vaccine COVID-19. The highest reactions to neutral comments were 7263 likes and the lowest were 205 likes to unagreeable comments. In contrast, the unagreeable comment had reached the highest reaction with 2516 likes. The total likes of agreeable vaccines' comments were higher than unagreeable vaccines' comments.

Table 3: The attitude of Vietnamese towards vaccine through comments according to articles and the topic of articles

	Agreeable		Unagreeable		Neutral	
	n=1243	%	n=205	%	n=7263	%
Articles						
1. VN Express (n =8429)	1202	14.3	204	2.4	7023	83.3
2. Dantri (n=86)	3	3.5	0	0	83	96.5
3. Tuoi Tre Online (n=152)	31	20.4	1	0.7	120	78.9
4. Vietnamnet (n=44)	7	15.9	0	0	37	84.1
Topic of articles						
1. The process of vaccines (n=3310)	566	17.1	87	2.6	2657	80.3
2. The price of vaccines (n=354)	51	14.4	7	2.0	296	83.6
3. The results of vaccines (n=1530)	311	20.3	20	1.3	1199	78.4
4. The origin of vaccines (n=6246)	901	14.4	176	2.8	5169	82.8
5. Others (n=1258)	76	6.0	15	1.2	1167	92.8

The table shows the attitude of people towards vaccines through comments on each electronic newspaper and in each topic of the electronic newspaper. According to 4 electronic newspapers, the number of agreeable comments was higher than the number of unagreeable comments. There was a large percentage of neutral comments on 4 online newspapers: Vietnam Express, Dantri, Tuoi Tre Online, Vietnamnet at 83.3%, 96.5%, 78.9% and 84.1% respectively.

According to the topic of articles, the highest proportion of agreeable comments was in the results of vaccines (20.3%) and the second highest was in the process of vaccines (17.1%). The percentage of unagreeable comments in the origin of vaccines was higher than that in the process of vaccines with 2.8% and 2.6% each. The proportion of unagreeable comments in the results of vaccines was the lowest with 1.3%. The percentage of neutral comments in the price of vaccines was the largest with 83.6%.

3.3 Other factors that mentioned in comments on electronic newspapers

Table 4: Other factors that mentioned in comments on electronic newspapers

	n	%
Worries about vaccines		
Yes	288	3.3
Not mentioned	8423	96.7
The price of vaccines		
Yes	186	2.1
Not mentioned	8525	97.9
The safety of vaccines		
Yes	336	3.85
Not mentioned	8375	96.14

Three other factors were mentioned in comments related to vaccines on online newspapers: worries about vaccines, the price of vaccines, and the safety of vaccines. The figure of comments consisting of vaccines' safety was the highest at 3.85%. Next, the comments including worries about vaccines made up 3.3%. The last one was the proportion of comments about the price of vaccines at 2.1%.

IV. DISCUSSION

The study was performed on 8711 comments on a total of 4 electronic newspapers including Vietnam Express, Dantri, Tuoi Tre Online, Vietnamnet. We chose these 4 electronic newspapers because they are official and well-known. The results showed that the number of comments on Vietnam Express was more than others. This can be explained because Vietnam Express is easier for Vietnamese to communicate and give their opinion.

To the best of our knowledge, this was the first study to systematically document the quantity, portrayal, and people's attitude towards vaccine COVID-19 through their comments on electronic newspapers in Vietnam.

We divided into 4 topics of articles related to vaccine COVID-19 on electronic newspapers consisting of the process, the price, the results, and the origin of vaccine COVID-19. Research results showed that the origin of the vaccine COVID-19 was the most popular topic that was published on electronic newspapers. Russia was the country that received the most mention on articles. This can be explained because Russia was one of the countries that release d the first batch of anti-COVID vaccines to the public.

The information about the time of comments was related to each stage of COVID-19 outbreak in Vietnam. The highest number of comments was in the period of the late in July and the early in August, which underwent hundreds of cases around the country with epidemiological factors related to Da Nang and the first death was also recorded. Moreover, the number of comments in the period between the middle of August and October was slightly fructuated. This can be explained because Vietnam has controlled successfully.

Most of the Vietnamese attitude towards COVID-19 vaccination on electronic newspapers was "neutral" with 83.4%. According to the study of Kimberly A.Fisher, 31.6% of participants were not sure about COVID-19 vaccination [7].Our results about neutral opinion doubled than Kimberly's study. Reasons for vaccine hesitancy included vaccine-specific concerns, a need for more information, anti-vaccine attitudes or beliefs, and a lack of trust [7].

14.3% of Vietnamese had a positive attitude towards vaccine COVID-19 through their comments on articles. This attitude towards COVID-19 vaccination mainly came from the belief in the results of the vaccines and willingness to be vaccinated. In comparison, we found that Chinese residents held strong beliefs about the efficacy of COVID-19 vaccination, as 89.5% thought that vaccination is an effective way to prevent and control COVID-19, even though the vaccine is still under development [8].

The percentage of negative comments related to vaccines was 2.4%, which was 6 times lower lower than the percentage of positive comments. People are mainly concerned about the process, the origin, and the safety of vaccines.

V. CONCLUSION

The number of supportive comments related to vaccines was higher than the number of negative comments. There was a large percentage of neutral comments on 4 online newspapers**.** The information about the time of comments was related to each stage of COVID-19 outbreak in Vietnam. On August 13th, there was a peak in comments related to vaccines. This was also the period that there was an outbreak in Danang city where it recorded the largest number of deaths by COVID-19. People's attitudes through each topic of articles had a moderate difference. The highest proportion of supportive comments was in the results of vaccines. The percentage of negative comments in the origin of vaccines was higher than that in the process of vaccines.

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PATTERN OF SMARTPHONE USE AND ASSOCIATED FACTORS AMONG HANOI MEDICAL UNIVERSITY AND SOME OTHER UNIVERSITIES STUDENTS DURING THE COVID-19 SOCIAL DISTANCING IN 2020

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ABSTRACT

During the COVID-19 pandemic, the internet and technology has provided people with a platform for working, schooling, and many other daily activities. Social distancing and lockdowns have resulted a change in the smartphone usage, especially among university students. The study aims to describe smartphone use habits and associated factors among students of Hanoi Medical University and some other universities in 2020. A longitudinal study was conducted on 70 students. Students were followed-up for 1 months, and the data related to the pattern of smartphone use were collected everyday. Descriptive statistics and mixed-effect linear regression model was used to describe smartphone use habits and associated factors. Screen time and the number of unlocks per day were relatively high during the COVID-19 social distancing in 2020 in Vietnam. Social media, website and game were the most common application used by participants. Screen time in weekend was significantly lower compared to weekdays. Number of times picking up the phone were significantly associated with the day in the week, relationship status, and living place.

Keywords: Smartphone usage, student, screen time.

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I. INTRODUCTION

As the society develops, smartphone has become more and more popular as an essential device. However, people can easily become addicted to their phones due to the conveniences it provides. A meta-analysis on Indian adolescents showed that the prevalence of smartphone addiction ranged from 39% to 44% [1]. Excessive use of mobile phone and smartphone addiction can lead to negative effects on younger people. Smartphones can also distract people and decrease their productivity, and lead to other psychological impact [2].

During the COVID-19 pandemic, the internet and technology has provided people with a platform for working, schooling, and many other daily activities. Social distancing and lockdowns have resulted a change in the smartphone usage [4]. In 2020, Vietnam was among the few countries that effectively control the COVID-19 pandemic. This was the result of a strict government prevention strategy, in which universities and schools were closed, and all training activities were conducted online. Students in Hanoi were not an exception, and consequently, there was a change in their smartphone use behavior.

Therefore, we conducted this study to describe the pattern of smartphone use among students at Hanoi Medical University and some other universities in Hanoi during the COVID-19 social distancing period in 2020 and analyze its associated factors.

II. METHODS

Study population

Students using iPhone with the iOS operating system of 13 or higher were included in the study. Students who didn't agree to participate in the study or who didn't provide enough data were excluded. A total of 37 eligible students at Hanoi Medical University and 33 eligible students from other universities were enrolled to study.

Study design

Longitudinal studies and repeated measurement. Students were followed-up for 1 months, and the data related to the pattern of smartphone use were collected everyday.

Time and location

The study was conducted from February 2020 to October 2020 in Hanoi. Data were collected from March 2020 to May 2020.

Sample size and Sampling method

We used sampling calculation for hypothesis testing for two population means. We conducted a pilot study with 20 participants in each university, and then used means and standard deviation of time of using smartphones in the first day and last day to calculate the sample size. Convenient sampling was used.

Variables

The pattern of smartphone usage (Total using time, total number of times to pick up the phone, time for the first touch, time to turn off and on the phone, 5 apps used the most of the day) and the associated factors of smartphone usage (Gender, age, BMI, university, accommodation, relationship status, employment status, other electronic devices).

Data collection

We collected data using online interview questionnaires and screenshots of phone usage time of study subjects. The investigators contacted the study subjects on a daily basis to obtain screenshots of screen time from their phone. Online interview questionnaires were sent to the respondents at the end of the survey.

Measurement of Smartphone Screen-time

Screen Time presents how long a user spent on certain app categories and specific apps, how many times the user picked up their iPhone in a given day or even hour. The app records screen-time continuously as the number of minutes in each hour that the screen is turned on as long as the smartphone is not in "airplane mode" and the app is not actively turned off.

Statistical analysis

Associations between average screen-time and baseline demographics were assessed in a mixed-effect linear regression model.

Control the error

Definitions and criteria were clearly specified and explained to the participants properly. Monitor and closely monitor the whole process of research.

Ethics in research

All information provided by the research subjects is kept confidential. The research subjects are well aware of the purpose, requirements, benefits of research, acceptance, voluntary participation in research and have the right to refuse participation if there is dissent.

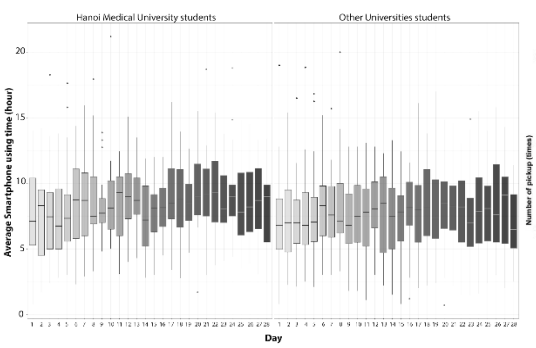
III. RESULTS

Table 1. General characteristics of the participants (n=70)

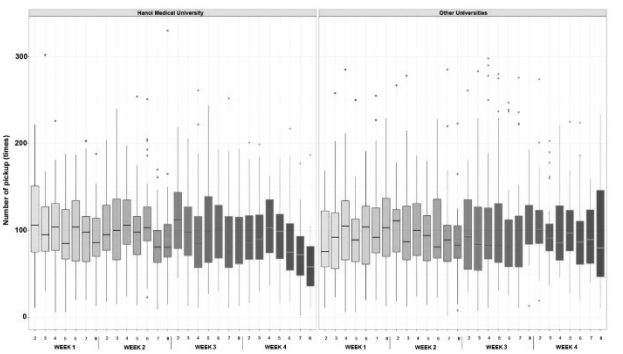
Characteristics	n	%
Gender		
Male	24	34.3
Female	46	65.7
University		
HMU	37	52.9
Non-HMU	33	47.1
BMI (mean(sd))	22 (16.4)	
Relationship		
Single	49	72.1
Not single	19	27.9
Part-time work		
Unemployed	47	71.2
Employed	19	28.8
Using other electronic devices		
Yes	13	18.6
No	57	81.4

Among 70 subjects participating in the study, men accounted for (65.7%); 57 people from Hanoi Medical University (52.9%) and 33 students from other universities (47.1%). Over 70% of participants were single and did not have a part-time job. The percentage of research subjects not using other electronic technology devices was 81.4%, and the average BMI of all subjects was 22 ±16.4.

Figure 1. (a) Smart phone daily usage and (b) Number of times to pick up the phone time per day among Hanoi Medical university students and other universities' students



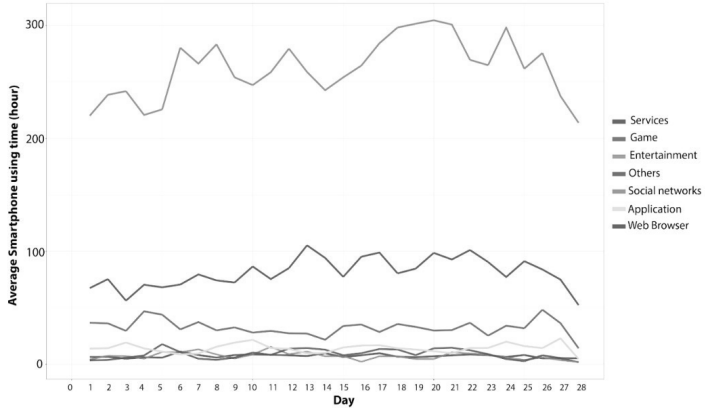
(a)



(a)

Figure 1 reveals smart phone screen time of Hanoi Medical University students and students from other universities (n = 70). Median of smart phone daily usage time in the two groups were from about 7 to 9 hour per day.

Figure 2. Smart phone daily usage time by categories among Hanoi Medical university students and other universities' students



Students spent at least 200 minutes per day on social networks (Facebook, Instagram, Tiktok, etc.), which is by far higher than other categories. The figure was followed by websites, at about 50-100 minutes/day, and playing game (about 20-50 minutes/day). Students spent the lowest amount of time on services. (Figure 2a) Figure 2b shows the number of times university students picked up their phones everyday. On the weekend, the students tended to pick up the phone less than on the weekdays.

Table 2. Linear mixed-effect regression of factors associated with smart phone daily usage time

Screen time	**Coef.**	**p-value**	**95% CI**	
Gender (Female vs Male)	.44	0.48	-.77	1.64
Average score	.07	0.51	-.13	.27
Day (Weekend vs Weekday)	-.57	0.00	-.82	-.31
Relationship (Single vs having partner)	-.94	0.10	-2.07	.19
University (Others vs HMU)	-.79	0.18	-1.95	.37
BMI	.01	0.65	-.02	.04
Living place				
Stay alone	1	1	1	1
Rent house	.05	0.62	-1.53	2.59
Stay with family	.038	0.92	-2.02	2.09
Stay at dorm	-.61	0.56	-2.67	1.45
Part-time job (job vs no job)	.34	0.53	-.73	1.41
Use other electronic devices	-.85	0.23	-2.24	.54
Random-effects	**Estimate**	**Standard Error**	**95% CI**	
Id: Indentity variance	3.97	.72	2.78	5.66
Variance of Residual	6.57	.217	6.16	7.01

The results from Table 2 showed that smart phone daily usage time were only significantly associated with the day in the week. On the weekend, the participants tend to use less time than in the weekdays (Coef=-0.57; 95%CI=-0.82, -0.31). There was no significant difference of time using phone between students at Hanoi Medical University students and other universities.

Table 3. Linear mixed-effect regression of factors associated with number of times to pick up the phone

Phone Pickup time	**Coef.**	**p-value**	**95% CI**	
Gender (Female vs Male)	9.88	0.24	-6.62	26.38
Average score	.41	0.77	-2.34	3.17
Day (Weekend vs Weekday)	-17.72	0.00	-21.69	-13.76
Relationship (Single vs having partner)	27.08	0.00	11.52	42.64
University (Others vs HMU)	-1.37	0.87	-17.32	14.58
BMI	.20	0.39	-.249	.64
Living place				
Stay alone	1	1	1	1
Rent house	22.51	0.12	-5.82	50.83
Stay with family	8.93	0.54	-19.30	37.16
Stay at dorm	36.09	0.01	7.78	64.40
Part-time job (job vs no job)	3.11	0.68	-11.55	17.76
Use other electronic devices (yes vs no)	-6.19	0.53	-25.35	12.97

Random-effects	**Estimate**	**Std. Err1**		**[95% Conf. Interval]**
Id: Indentity variance	736.42	136.04	512.72	1057.71
Variance of Residual	1588.61	52.43	1489.10	1694.77

Table 3 shows that ***number of times to pick up the phone was significantly associated with the*** day in the week, relationship status, living place. On weekend, the students tended to pick up the phone less than weekdays (coef=-17.72, 95% CI: -21.69, -13.76). People being in a relationship picked up the phone less than the single ones (coef=27.08, 95% CI: 11.52, 42.64). Students who stayed at the dorm unlock the phone more than whose stay alone (coef=36.09, 95% CI: 7.78, 64.40)

IV. DISCUSSION

The results from our study showed that 50% of participants had an average screen time of over 7 hours per day throughout the study period. This result was higher than the average phone usage per student in previous research from US (over 5 hours per day) [5], and Vietnam (3 to 4 hours per day) [1]. This can be explained by the fact that the social distancing and lockdowns limited the access to the majority of outdoor activities, thus people needed to find a substitution for their social life and increase the smartphone usage [6]. Furthermore, as the curriculum of all students in Vietnam was shifted online, it was a "must" for our participants to use electronic devices, including smartphone. This result was similar to a study at the University of Jordan, in which mobile phone was one of the most popular electronic devices due to the influence of Covid-19 [7]. In addition, Kwon M. et al. stated in

their research in 2013 that adolescents regularly use social media on smartphones for multiple aims at once: communication (free call and messenger) and gaming. It is consistent with the results of a survey where about 72 million people (73.7% of the country's population) in Vietnam were found active on social networks [8]. As of January 2021, the most social media accessed in Vietnam were Facebook, Youtube, Zalo, Facebook Messenger, and Instagram [8]. Service applications for food delivery or transportation such as Grab, Goviet, Be were not used often due to the impact of social distancing and restriction at that time.

The mixed-effects model showed that on weekend, the students tended to pick up the phone and use smartphones less than weekdays. This is in contrast to the results of a study in Korea that students spend more time on weekends playing video games, entertainment, and web surfing [9]. In the first social distancing period, students tended to use more phones and mostly for online learning. Therefore, on weekend, the time using phone was lower than during the weekdays, possibly due to the absence of online learning. People being in a relationship picked up the phone less than the single ones. A study showed that people with a good relationship were less dependent on smartphone [10]. And students who stayed in the dorm touch the phone more than those who stayed alone, but previous studies have shown that accommodation did not affect smartphone use [5]. In addition, in this study, there were no significant difference of using smartphone behavior between medical and students from other universities.

The strength of this study was the use of an accurate and objective measuring tools. Describe in detail the usage history of applications, time to turn off, turn on the phone for the first time, the total number of times using the phone, and the total time of using the phone in minutes, hours per day. Study subjects were followed for a month, so the study observed the change in smartphone behavior in each subject. The limitation of this study was that there were only students using iPhone were investigated, so these participants were not representative of students in universities in Hanoi.

V. CONCLUSION

Smart phone daily usage time and the number of times to pick up the phone per day were relatively high during the Covid-19 social distancing in 2020 in Vietnam. Social media, website and game were the most common application that the students used. Screen time was significantly higher in weekend compared to other days. Number of times to pick up the phone were significantly associated with the day in the week, relationship status, and living place.

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A NARRATIVE REVIEW OF PARTNER-INCLUSIVE PREVENTION FOR POSTPARTUM DEPRESSION

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ABSTRACT

Background: Support from partners could be a protective factor against the development of depression during the postpartum period of mothers, so that partner-inclusive interventions could be a key target that helps to prevent this mental disorder. This narrative review aims to evaluate the current evidence about partner-inclusive preventions that examined PPD as outcome.

Methods: Four online databases (PubMed, Embase, PsycINFO, Cochrane Library) were searched using terms related to pregnancy, depression, prevention and partner. Searches were limited to randomized controlled trials written in English from 2010 to 2020.

Results: 4 interventions reported in 6 articles were included; all were conducted in developed countries. The approaches were varied: psycho-educational, counseling, cognitive-behavioral therapy, and psychosomatic approach. Three interventions resulted in statistically significant improvement in reducing depressive symptoms presentation in short-term evaluation.

Conclusion: This review synthesizes positive evidence on the effectiveness of partner-inclusive approach to prevent postpartum depression, but also suggests that further research and interventions are required to provide comprehensive information for implication, especially in developing countries.

Keywords: partner-inclusive intervention, prevention, postpartum depression.

1. INTRODUCTION

Postpartum depression (PPD) is listed as major depression in the Diagnostic and Statistical Manual of Mental Disorders, with depressive symptoms develop anytime during pregnancy and up to the first year after childbirth [1]. The World Health Organization (2017) estimated that almost 16% of women in developing countries experience depressive symptoms during pregnancy, and nearly 20% experience depressive symptoms after childbirth [2]. This depressive disorder is increasingly recognized as a global public health issue.

Not only is PPD distressing and socially debilitating to the mother but also has an impact on the baby and older children; her partner and relationships. Of those

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reasons, several professional organizations, beginning with primary care settings, have raised awareness of the need to prevent and manage PPD. Many emerging postpartum depression prevention and treatment studies provide individual-level interventions that address only mothers or interventions that target maternal-infant interaction [3].

"Partner" refers to someone with whom the individual shares a romantic partnership, including de facto and same-sex relationships [4]. Evidence shows that support from partners protects against postpartum depression [5], while poor relationship functioning is associated with higher rates of depressive symptoms during pregnancy and in postpartum period [6]. Partners are in the best place to provide reliable long-term support and recognize changes in their spouse's well being. Therefore, partner-inclusive prevention strategies focusing on partners involved in the intervention or alongside other risks could be a key target for interventions that aim at preventing maternal mood disorders. In this narrative review, we aim to evaluate the existing evidence about partner-inclusive preventions that examined PPD as an outcome, to gain an understanding of the state of research in this field.

2. METHODS

A search of four online databases (PubMed, Embase, PsycINFO, Cochrane Library) was conducted up to April 2020. The search strategy included combinations of the following MeSH terms and keywords: "(postpartum or postnatal or perinatal or pregnancy) and (depressi* or distress or mood) and (prevention) and (partner or spouse or couple)". Searches were limited to randomized controlled trials written in English and published from 2010 to 2020.

Studies were obtained if they: (1) intervene adult women; (2) evaluated an intervention that aimed to prevent postpartum depression; (3) included a control group (CG) to compare with the intervention group (IG); (4) addressed partner participation or the couple relationship in the intervention; (5) measured depressive symptoms or diagnoses up to 12 months postpartum as outcome variables. All potentially relevant studies were independently read and extracted by each author. Data extracted include: characteristics of studies (author, year, location, targeted group, sample size), details of interventions (intervention type, intervention name, content and structure, duration, partner component, facilitators), outcomes of intervention (depression measures, follow-up period, depression diagnosis, effectiveness indicators). Discrepancies between findings of authors were resolved through discussion.

3. RESULTS

The results of the literature search are shown in Figure 1. Six articles representing 4 interventions met the criteria for inclusion in this narrative review [7], [12]. The studies identified for this review vary in terms of targeted population, intervention types, the settings of interventions, the outcome measures employed to estimate postpartum depression.

Figure 1. Study selection process

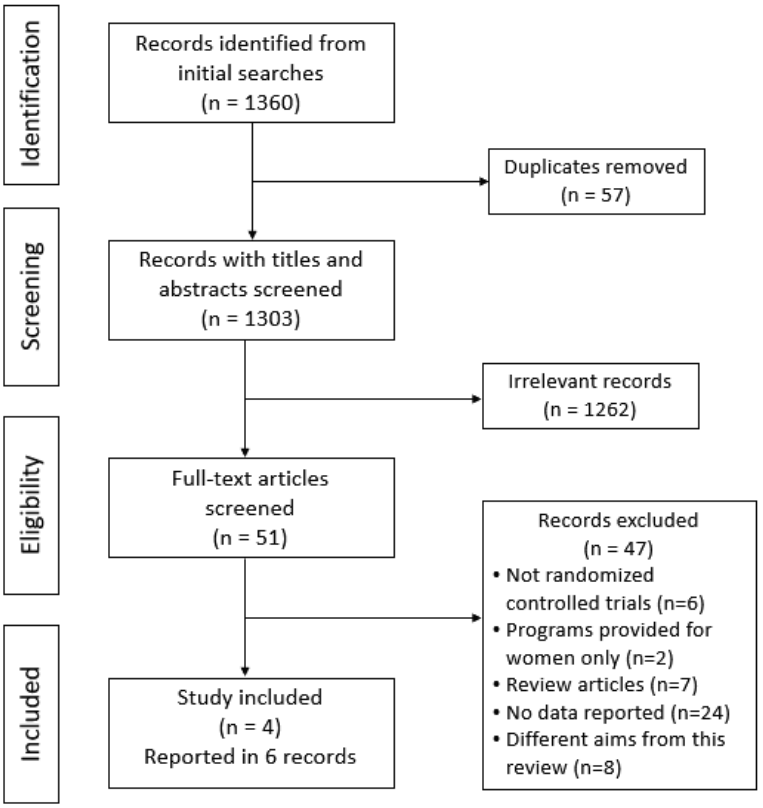

Table 1 summarizes the characteristics of studies included in this review. All studies were conducted in developed countries. They had different group targets: two studies targeted women from pregnant period and also included those that were at risk of PPD [9], [11], two others targeted women in their postpartum period [8, 10]. Ortiz Collado, in addition, paid attention to women and their partners that considered to be at other psychological risks: socioeconomic status (low-paid jobs, unemployed, with or without subsidy), low social support (migrants or those living isolated) [11].

Table 1. Summary of included studies addressing partner-inclusive prevention for postpartum depression

Author	Location	Targeted group	Sample size	Intervention type	Intervention name
Fisher (2016)	Australia	Primiparous women <6 week postpartum	IG: 204 CG: 196	Psycho-educational	What Were We Thinking
Milgrom (2011)	Australia	Women in 26–30 weeks pregnant with both high and low screening scores	IG: 71 CG: 72	Counseling and problem-solving	Towards Parenthood
Ngai (2019)	Hong Kong	First-time parents at the second or third trimester of pregnancy	IG: 134 CG: 130	Cognitive–behavioral therapy	Couple-based cognitive behavioral intervention
Ortiz Collado (2014)	Spain, France	Pregnant women at psychosocial risk: low socioeconomic status, low social support, risk of PPD	IG: 69 CG: 58	Psychosomatic approach	Antenatal psychosomatic program

The types of intervention varied from psycho-educational (teaching about the risks, causes, symptoms, treatment options, etc. of maternal mental disorders), counseling, cognitive-behavioral therapy (changing thoughts, feelings, physical sensations to overcome negative thoughts and manage mental problems), to psychosomatic approach (addressing social, psychological, and behavioral factors to modify stressors). Most of the interventions were delivered in a group format, which is additional support where the dynamics between members of the group could help identify problems and interpersonal distress.

Table 2. Details of included interventions

Intervention name	Content and structure	Duration	Partner component	Facilitators
What Were We Thinking	• Primary care from a WWWT-trained nurse • Print materials including worksheets and a book addressing the interactions among the new mother, her partner and her baby • Face-to-face seminar: About Babies, About Parents	Self-directed workbook One 6-hour seminar at 6-8 weeks postpartum	The partner participated in the whole intervention	WWWT-trained maternal and child health nurses
Towards Parenthood	• Community networking pamphlet highlighting the importance of establishing support networks and listing contacts for relevant services • A self-help workbook comprising nine units focusing on strengthening relationships of parenting and problem-solving skills for women to read and then discuss with a psychologist weekly on phone	8 units during pregnancy and 1 unit in six weeks after birth. Phone calls lasted about 30 min each week	Fathers /partners specifically took part in Unit 2: Toward fatherhood	Psychologists
Couple-based cognitive behavioral intervention	• An antenatal group session covers: (1) overview of stressors, PPD's signs and symptoms; (2) cognitive restructuring techniques to modify and challenge negative thoughts; (3) problem-solving, goal-setting, and decision-making; and (4) communication skills training • Structured phone follow-up sessions	One 3-hour antenatal group session Two 30-min telephone follow-up at 2 and 4 weeks postpartum	The partner participated in the whole intervention	Trained midwife
Antenatal psychosomatic program	• Group sessions for couples involve work individual feelings and affective bonds, and exercises that develop awareness of feelings and body sensations, their differentiation and their interrelationship • Phone calls between sessions	10 weekly sessions lasted 2h15m each, start from second term of pregnancy	The partner participated in the whole intervention	Trained nurse-midwife

The detailed content and structure of each intervention are presented in Table 2. Fisher developed a couple-based intervention – "What Were We Thinking" – based on the theory that day-to-day interactions between a woman who has recently given birth with her partner and her baby are influential in both the risk and the protection against mental health problems and are promising targets for behavioral change. This gender-informed psycho-educational program was implemented by trained maternal and child health nurses and was considered to be feasible among primiparous couples [8]. There was promising proof of

the benefit of this approach. However, the effectiveness in reducing PPD was found among subgroup receiving the full intervention (included the seminar) compared to usual care, not in the partial intervention (Table 3).

Also, the cognitive-behavioral therapy for couples implemented by Ngai et al. in their study proved a similar impact in enhancing maternal postpartum depression at 6 weeks postpartum compared with mothers who received the intervention alone or the standard care. This intervention assists couples to recognize and change negative thoughts during the parental transition, and develop strong communication and problem-solving skills that may be useful in helping couples handle new parenthood demands. The author proposed that the involvement of fathers in the intervention might help the couples to express their feelings, and provide mutual support to each other, thereby protecting the mothers from developing depression [10]. This study did not include structured clinical interviews for assessing depression outcomes, which is a drawback.

In the study of Ortiz Collado et al., they included more risk-facing women with disadvantaged socioeconomic status, which lead to a high percentage of postpartum depressive symptoms (39.34% with EPDS score ≥12) among all participating women. The risk of PPD did not decrease significantly in this study but the intervention resulted in a good outcome in the birth of participants' babies [11]. The psychosomatic approach is meant to help the mother aware of what is going on in her body and its sensations so that she can take better care of her health and the health of her baby as a result.

Table 3. Outcomes of partner-inclusive prevention for postpartum depression

Intervention name	Depression measures (cut-off score)	Follow-up period	Depression diagnosis	OR (95% CI) between IG and CG
What Were We Thinking	The Composite International Diagnostic Interview (DSM-IV diagnoses)	26 weeks postpartum	IG: 6/89 (8.4%) CG: 16/173 (9.3%)	Full intervention: 0.36 (0.14 to 0.95), p<0.05 Partial intervention: 1.38 (0.58 to 3.28), p>0.05
Towards Parenthood	The Beck Depression Inventory-II (≥14)	12 weeks postpartum	IG: 6/47 (12.8%) CG: 16/42 (38.1%)	0.33 (0.12 to 0.93), p<0.05
Couple-based cognitive behavioral intervention	The Edinburgh Postnatal Depression Scale (≥10)	6 weeks postpartum	IG: 32/133 (29.9%) CG: 61/127 (47.7%)	0.34 (0.20 to 0.58), p<0.05
		6 months postpartum	IG: 31/129 (24.1%) CG: 37/123 (29.7%)	0.74 (0.42 to 1.28), p>0.05
		12 months postpartum	IG: 33/116 (28.5%) CG: 32/107 (30.1%)	0.93 (0.52 to 1.66), p>0.05
Antenatal psychosomatic program	The Edinburgh Postnatal Depression Scale (≥12)	Between 5 and 12 weeks postpartum	IG: 24/79 (34.3%) CG: 27/58 (45.5%)	0.50 (0.25 to 1.01), p>0.05

An alternative to group sessions was investigated in the "Toward Parenthood" intervention of Milgrom et al., which used a self-help workbook in combination with regular individual telephone support to reduce the vulnerability of parents to postpartum depression, anxiety, and stress. The workbook offers problem-solving strategies to help with potential parenting and emotional health issues should they arise. This program was anticipated to be supportive not only for PPD but also for women who experience parenthood as challenging, who do not necessarily have symptoms of depression and anxiety [9]. In comparison with routine care, women who completed the intervention were significantly less likely to experience postnatal depression and anxiety symptoms at 12 weeks postpartum (Table 3).

4. DISCUSSION

Postpartum depression is one of the mental health issues of concern in postpartum women. There can be different causes of postpartum depression. Symptoms of PPD may include extreme sadness, low energy, anxiety, crying episodes, irritability, and changes in sleeping or eating patterns. Onset is typically between one week and one month following childbirth. Postpartum depression can also negatively affect the newborn child. Postpartum depression can lead to serious consequences of suicide. However, postpartum depression can be prevented and reduced risk factors, including psychological supports for patients from partners and health care workers as one of the important prevention methods [2].

The purpose of this narrative review was to synthesize the available evidence on partner-inclusive intervention impacts on reducing postpartum depression incidence. We could identify only four randomized controlled trials conducted in a 10-year period that included the women's partner in preparing for her mental health after birth. Although the importance of promoting well being during this period has been demonstrated, it could be seen that the number of appropriately designed trials on interventions in recent years is still in its infancy.

Our findings show that partner-inclusive interventions could lower the rate of PPD, with three out of four studies showed statistically significant protective effects. But none of the effects remained for over 6 months after birth. Matthey et al. also noted that the benefits of PPD prevention at 6 weeks were not sustained over time [13]. Another important factor in reducing depressive symptoms is the adherent to the intervention, or the number of sessions attended by mothers, as in Fisher's study where the effectiveness is only shown in the subgroup that attended all sessions [8].

Although all of the interventions examined contained a partner relationship aspect, a number were not provided to both mothers and fathers. Prevention efforts appear to place fathers as contributors to maternal mental illness, rather than acknowledging the father's ability to experience symptoms of depression and anxiety symptoms themselves. Indeed, Letourneau et al. advocated that PPD should be re-conceptualized as a condition of the family rather than a mother's disorder, considering its effect on the whole family and the consequences of poor partner relationship [14]. Parenthood is a major life transition and it is difficult for a substantial number of parents to navigate that period of change. Not only to mothers, research shown that mental health disorders are also prevalent among fathers during the postpartum period, and it would be better if both partners were involved in the parenthood transition discussions and interventions [15]. More innovative service delivery models should be considered in the future which enable the fathers to participate.

This current study was limited to publish articles in English and did not consider culturally relevant factors that may interact with intervention characteristics to affect outcomes. Besides, our focus on partners does not concern single parents, same-sex couples, or other family structures (e.g. multigenerational family). Future studies would need to aim at a broader scope and include articles published in other languages to provide more comprehensive views.

5. CONCLUSION

This narrative review has explored the literature about preventions for postpartum depression that included the mothers' partner in the interventions. The present findings add to the growing evidence that partner-inclusive interventions could significantly reduce postpartum depression among mothers at less than 6 months postpartum. The research on partner-inclusive interventions for the prevention of postpartum

depression is still in the early stages of development and more research, such as high-quality controlled trials, is required to establish suitable prevention for specific target groups, especially in developing countries.

6. ACKNOWLEDGEMENT

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THYROID CANCER SITUATION IN ASIA, 2010-2019

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ABSTRACT

Objective: To describe the incidence, mortality of thyroid cancer in Asia from 2010-2019.

Subjects and methods: Literature overview of studies and reports on the incidence of thyroid cancer in Asia between 2010 and 2019 have been published in English-language medical journals.

Results: The incidence and death rate from thyroid cancer is 15.5 and 0.5 per 100,000 people per year, respectively. The risk of developing thyroid cancer over a lifetime is 1.2%. The mortality rate tends to increase by 0.6% per year between 2010 and 2019. The number of thyroid cancer cases in Asia in 2019 increased by 167.0% compared to 2010; Age-adjusted prevalence tends to increase (EAPC = 1.25, 95% CI: 1.12 – 1.37) and is more pronounced in women, while age-adjusted mortality tends to decrease (EAPC =−0.15, 95% CI: −0.19 to −0.11).

Conclusions: The incidence of thyroid tumors is a significantly increased in Asian countries in the last 10 years and in the second half of the period 20-10-2019 it began to be decreased in some countries such as South Korea. The incidence of thyroid cancer in Asia tends to be increased while mortality tended to be decreased. There are more studies needed across multiple areas to have the whole picture of thyroid tumors.

Keywords: thyroid cancer, incidence, mortality rate, trends, Asia, 2010-2019.

1. INTRODUCTION

In the last 10 years, the incidence of thyroid cancer has increased significantly in many Asian countries according to IARC statistics on thyroid cancer in Asia [1], the current incidence rate is about 340,000 cases – including both sexes, more than the total of all other continents. Specifically, the total number of female cases of thyroid cancer is about 263,000 cases, while for men it was more than 77,000 cases in 2019 [2] the American Cancer Society estimates the numbers of new cancer cases and deaths that will occur in the United States and compiles the most recent data on cancer incidence, mortality, and survival. Incidence data, available through 2015, were collected by the Surveillance, Epidemiology, and End Results Program; the National Program of Cancer Registries; and the North American Association of Central Cancer Registries. Mortality data, available through 2016, were collected by the National Center for Health Statistics. In

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2019, 1,762,450 new cancer cases and 606,880 cancer deaths are projected to occur in the United States. Over the past decade of data, the cancer incidence rate (2006-2015.

However, a comprehensive epidemiological description of thyroid cancer for a long time has not been conducted in Asia. To bridge this gap, this study sought to describe and analyze the incidence and mortality trends of thyroid cancer in Asia in the period 2010-2019 based on data from Radio. Global cancer observation and Pubmed. We have reported estimated new cases and deaths, as well as their respective incidence and mortality, age-substandard rates (ASRs) and annual percentage changes (APC), which describe variations by gender, age and region. Objective of this study was to describe the incidence and mortality of thyroid cancer in Asia between 2010 and 2019.

2. SUBJECTS AND METHODS

2.1. Subjects

All kinds of articles, data and studies from all countries, published in peer-reviewed journals: incidence of raw diseases, incidence of new diseases by age. The studies were taken from large databases including Pubmed, Embase, MEDLINE, CI5, GLOBALCAN, Cochrane Systematic Reviews and Cochrane CENTRAL on the basis of a built-in search statement. The articles were all duplicated in the various databases searched. Eight of the 50 scientific articles on thyroid cancer in Asia between 2010 and 2019 were published in English-language medical journals. The search term is used to perform multiple search combinations with Boolean operators ("AND", "OR"), specifically:

Keywords: *thyroid cancer, incidence, mortality rate, trends, Asia, 2010-2019, risk factor.*

Selection criteria: Research or report data published in Vietnam and around the world in the period 2010-2019. Language used is in English. Studies and reports present data on thyroid cancer incidence according to the following results: incidence of raw disease, incidence of new disease by age.

Exclusion criteria: Studies report results in a non-population person (e.g., incidence of thyroid cancer in diabetics). Studies do not specify the population used for the standardization.

2.2. Study design: A literature review conducted from the studies conducted from the year 2010 to 2019.

2.3. Location and time of study time: This study was conducted at the School of Preventive Medicine and Public Health – Hanoi Medical University, Hanoi City, Vietnam from February 2021 to September 2021.

2.4. Collect figures described by PRISMA chart: The PRISMA 2020 checklist is included in this study [7].

2.5. Data analysis

Data collected from the results of scientific reports, scientific articles in journals calculated using Excel 2019 software, further statistical analysis is carried out with the SPSS 23.0 statistical software package (SPSS, Chicago, IL, USA). Testing with Yates' correction was applied to subgroup analysis. The P-value $\chi^2 < 0.05$ is considered statistically significant. General description of found results made as a table or graph. The characteristics of the patient are in order or classification, and they are presented as percentages in the category. Chi-square tests are used to calculate differences in demographic proportions and clinical characteristics between patients who were initially diagnosed with stage IV thyroid cancer and all other stages. The level of statistical significance is set at P <0.05. Trend graphs have been created.

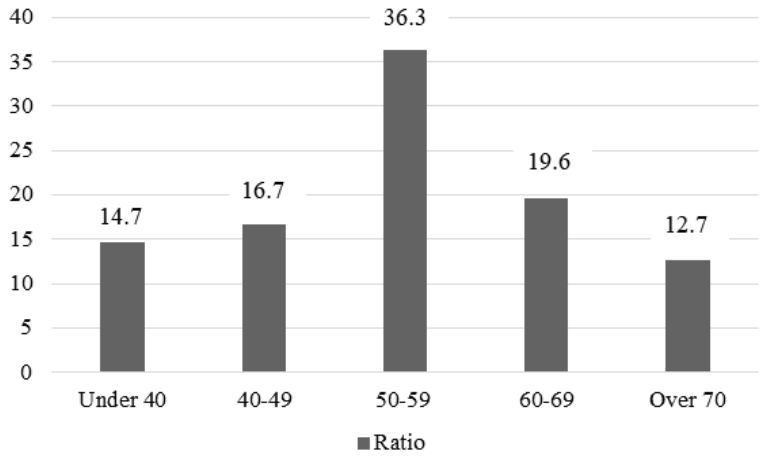
2.6. Ethics in Research: The study was approved by Hanoi Medical University in Decision No. 637/QĐ-ĐHYHN dated April 5, 2021. The search and use of documents were approved by the author; or, done for scientific reports or articles published publicly in reputable journals.

3. RESULTS

3.1. Characteristics of studies on thyroid cancer in Asia:

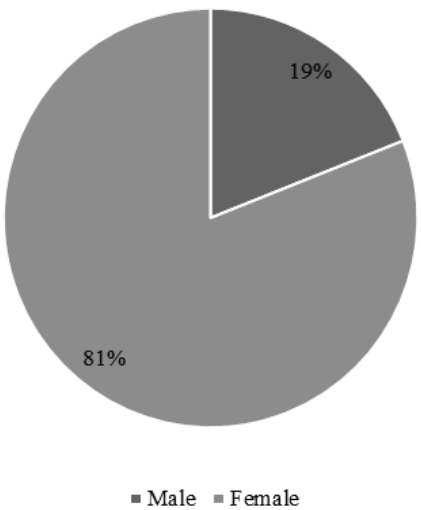
The characteristics of thyroid cancer studies include:

Figure 1. Distribution of disease by age group



The average age of the disease is 54.53 ± 13.11 years old, the youngest is 21 years old, the oldest is 85 years old. The disease is mainly seen in the 50-59 years old group accounting for 36.3%.

Figure 2. Distribution of disease by gender



Female patient accounted for the majority with 83/102 patients, accounting for 81% while male patient accounted for only 19%.

The incidence of thyroid cancer is 15.5 per 100,000 men and women per year, and the mortality rate is 0.5 per 100,000 men and women per year.

These rates were adjusted for age and based on cases and deaths between 2010 and 2019.

Lifetime Cancer Development Risk: about 1.2% of men and women will be diagnosed with thyroid cancer at some point in their lives, based on 2010-2019 data.

Incidence of thyroid cancer in Asia by 2021:it is estimated that there will be about 893,094 people living with thyroid cancer in Asia.

3.2. Incidence of thyroid cancer:

Table 1. Age-adjusted rates of new cases/deaths per 100.000 people and relative survival rates for 2010-2019

Year	New case rate – SEER 9		New case rate – SEER 13		Mortality rate - Asia		Relative survival time in 10 years - SEER 9	
	Observed	Patterned trends	Observed	Patterned trends	Observed	Patterned trends	Observed	Patterned trends
2010	14.49	14.10	13.88	13.53	0.52	0.49	98.76%	98.24%
2011	13.98	14.36	13.47	13.80	0.51	0.50	98.19%	98.36%
2012	14.80	14.62	14.29	14.07	0.51	0.50	98.71%	98.47%
2013	15.00	14.89	14.36	14.35	0.48	0.50	98.53%	98.40%
2014	15.18	15.16	14.69	14.64	0.52	0.51	98.28%	98.33%
2015	15.17	15.44	14.68	14.93	0.50	0.51	-	98.26%
2016	15.11	14.92	14.70	14.46	0.51	0.51	-	98.18%
2017	14.60	14.42	14.11	14.01	0.54	0.51	-	98.11%
2018	13.77	13.94	13.35	13.57	0.49	0.52	-	98.03%
2019	13.46	13.47	13.19	13.14	0.51	0.52	-	97.94%

Incidence of new and death above 100,000: The incidence of thyroid cancer is 15.5 cases over 100,000 inhabitants. The mortality rate is 0.5 cases per 100,000 inhabitants per year. These rates are adjusted for age and are based on cases and deaths between 2010 and 2019. Lifetime cancer development risk: About 1.2 percent of the population is at risk for thyroid cancer at some point in their lives.

Table 2. SEER's age-standardized incidence from 2010 to 2019

Year	Female				South			
	Rate of over 100.000 inhabitants	95% CI -bottom	95% CI -above	Modeling trends	Rate of over 100.000 inhabitants	95% CI -bottom	95% CI -above	Modeling trends
2010	21.31	20.13	22.56	21.20	6.91	6.17	7.71	6.37
2011	22.17	20.97	23.42	22.57	6.34	5.65	7.1	6.78
2012	21.90	20.72	23.13	22.72	7.61	6.86	8.43	7.21
2013	23.54	22.34	24.79	22.86	7.47	6.74	8.26	7.66
2014	23.92	22.73	25.17	23.01	8.09	7.33	8.90	8.15
2015	22.54	21.40	23.73	23.16	8.13	7.39	8.92	8.14
2016	24.72	23.54	25.95	23.31	8.45	7.7	9.25	8.12
2017	23.22	22.09	24.40	23.46	8.1	7.39	8.87	8.11
2018	22.65	21.54	23.81	23.61	8.09	7.38	8.85	8.1
2019	23.78	22.64	24.96	23.76	7. 97	7.27	8.72	8.08

Using statistical models for analysis, the age-adjusted rate for new cases of thyroid cancer stabilized in 2010-2019. The age-adjusted mortality rate has increased by an average of 0.6% per year between 2010-2019. In particular, the number of cases in females tends to increase higher than the five genders during the same period of follow-up.

3.3. Thyroid cancer trends in Asia

Table 3. Incidents and incidence of thyroid cancer standardized by age from 2010 to 2019

	All ages, no. × 10 (95% of surveys)		Transformation (%)	Age-standardized rate by age over 100.000 (95% of survey)		EAPC (95% CI)
	2010	**2019**	**2010–2019**	**2010**	**2019**	**2010–2019**
Asia	87.58 (82.24–92.72)	233.85 (211.64–252.81)	167%	2,01 (1.9–2.12)	2.83 (2.56–3.06)	1.25 (1.12–1.37)
Male	23.79 (22.21–25.7)	76.01 (68.23–82.92)	219.56%	1.16 (1.09–1,24)	1.9 (1.71-2.07)	1.89 (1.77–2.02)
Female	63.8 (58.66–68.29)	157,83 (140.4–173.07)	147.4%	2.82 (2.61–3.02)	3.74 (3.32–4.1)	0.98 (0.85–1.12)
Sociology indicators						
High SDI	32.9 (31.78–33.89)	68.41 (62.05–74.86)	107.95%	3.4 (3.28–3.5)	4.59 (4.17–5.03)	1.21 (0.9–1.51)
High average SDI	25.52 (23.78–26.87)	57.88 (52.33–63.92)	126.85%	2.28 (2.13–2.4)	3.05 (2.76–3.37)	1.04 (0.94–1.15)
Average SDI	16.65 (15.14–18.61)	64.33 (56.64–71.61)	286.41%	1.31 (1.2–1.51)	2.44 (2.15–2.71)	2.34 (2.25–2.42)
Low average SDI	8.6 (7.22–10.11)	30.05 (25.92–33.62)	249.25%	1.13 (0.97–1.33)	1,91 (1.65–2.12)	1.8 (1.74–1.85)
Low SDI	3.87 (2.92–5.04)	11.43 (9.35–13.45)	195.15%	1.23 (0.98–1.57)	1.59 (1.31–1.86)	0.93 (0.88–0.99)

Figure 1. Association between age-specific incidence of thyroid cancer

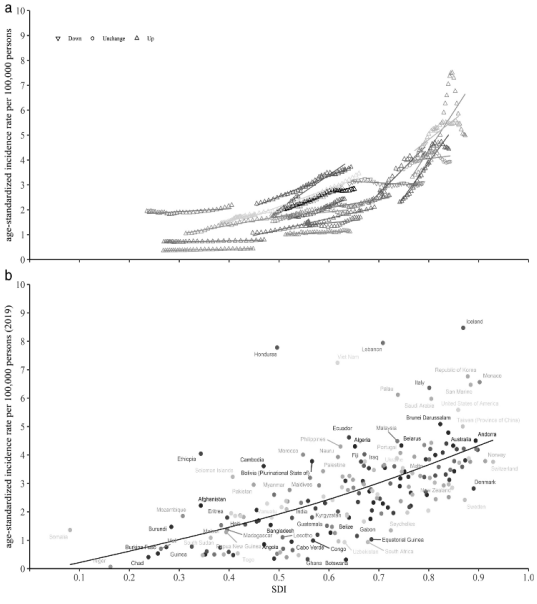
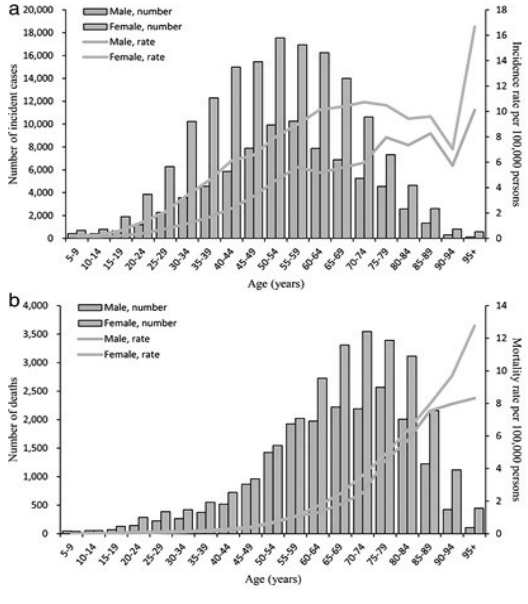


Figure 2. Indicators of thyroid cancer by age and gender



New cases of thyroid cancer in Asia in 2019 were over 340.000 (95% UI: 211637–252807), an increase of 167% compared to 2010. From 2010 to 2019, the incidence of age-standardized thyroid cancer (ASIR) tended to increase (EAPC = 1.25, 95% CI: 1.12–1.37). In Asia, thyroid cancer caused 45 576 (95% UI: 41290-48775) deaths in 2019 with a standardized mortality rate by age (ASMR) of 0.57 (95% UI: 0.51–0.61). Over the past 10 years, ASMR has shown a downtrend (EAPC =−0.15, 95% CI: −0.19 to −0.11).

4. DISCUSSION

4.1. Results of the study review

Mortality trends vary in the region, with large increases in some Asian countries while levels decline in both Australia and New Zealand. The predicted snow cancer mortality rate in South Korea between 2010 and 2020 triples if current models continue [8]. Trends can also vary in a country. 60 articles on reported thyroid cancer deaths in rural parts of China increased by 20% compared to a 7% decline in urban areas between 2007-2010 and 2010-2019, although mortality rates remain higher in urban areas [9].

Worrying results have emerged about the tendency to die by age. We found that in most countries, the death rate from thyroid cancer in women either decreased faster, or increased at a slower rate, for women under 50 than in the above. This is most notable in Japan and Singapore, where mortality rates among young women are significantly reduced compared to snow cancer mortality rates in older people.

4.2. Trend of thyroid cancer in Asia

Thyroid cancer mortality rates among people over the age of 70 increased significantly, while the mortality rate of the other three age groups decreased, possibly due to improved treatment and aging populations. In our study, the group with a low SDI showed the lowest number of deaths and the highest number of DALY associated with thyroid cancer. However, the cause of the relatively low thyroid cancer burden in districts with lower SDI cannot be ruled out for the lack of advanced health services and accurate tests. The main age group for which thyroid cancer is associated with mortality is proportional to SDI values, similar to the gap in medical standards and income across Asia [10] and HDI and its components in different regions of the world.\nMethods: An ecological study was conducted; the data was obtained from the GLOBOCAN project in 2012. Inequality in TC estimates (age-specific incidence and mortality rates.

Although there is fair consistency between the results of the current study and other results, some biases may influence the observed relationships. First, women who participated in these epidemiological studies may have distinct characteristics from those who did not. For factors that have a relatively consistent risk impact in studies, non-participation would have to involve the same factors in each diverse population that has been studied to produce consistent biased results, but this seems unlikely. In our study, white women(79% of cases, 77% of the subjects) were more willing to participate than Asian women (66% of cases, 62% of the subjects) [11].

IV. CONCLUSION AND RECOMMENDATIONS

The incidence of thyroid tumors is a significantly increased in Asian countries in the last 10 years and in the second half of the period 20-10-2019 it began to be decreased in some countries such as South Korea. The incidence of thyroid cancer in Asia tends to be increased while mortality tended to be decreased. There are more studies needed across multiple areas to have the whole picture of thyroid tumors.

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FEATURES OF CHEST COMPUTED TOMOGRAPHY NTM-PD TREATMENT AT CENTRAL LUNG HOSPITAL (ON 54 CASES)

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ABSTRACT

Objectives: To describe the characteristics of chest computed tomography images of lung diseases caused by Non Tuberculosis Mycobacteria (NTM-PD) examined and treated at the Viet Nam National Lung Hospital.

Subjects and research methods: prospective, descriptive, cross-sectional chest computed tomography image of 54 patients with clinical signs, diagnosed with NTM-PD by identifying microbiological techniques (culture: sputum, bronchoalveolar lavage/BAL)

Results: Average age 59.61±11.85; male/female = 23/31; NTM-PD patients with a history of pulmonary tuberculosis (MTB) are the most common, accounting for 43.0%; cough for more than 2 weeks, with sputum 80.0%; Culture identification: *M. abscessus* 24 (44.44%); *M. intracellular* 17 (31.48%); *M. avium* 10 (18.51%): *M. chelonae* 1 (1.85%); *M. fortutium* 1(1.85%); *M. scrofulaceum* 1(1.85%); Main chest computed tomography images: Bronchiectasis occurs in 70.4% of cases; in which: Cylindrical expansion 66.7%; Varicose 44.4%; Cystic 55.6%; mixed 55.6%; Location of dilatation: Most left upper lobe (LUL): 51.9%; at least left lower lobe (LLL): 24.1%; Simultaneous dilation of the middle lobe of the right lung (RML) and the left lobe of the tongue: 46.3%; bronchiectasis through the pleural cavity: 24.1%. Cavity appeared in 51.9% of cases; most in right upper lobe: 31.5%; at least right middle lobe: 9.3%. Tree-in-Bud pattern appeared in 83.3% of cases with approximately the same frequency in 5 lobes of the lung. Solidification (infiltrative) interlaced lesions are seen in 37.0% of cases. Pleural effusion in 1 patient (1.9%). Hilar lymph node, mediastinum 1 patient (1.9%). Most of the patients had lesions in the high zone of two lungs (upper lobe and six segment): 94.4%; Symmetry of the high zone on both sides: 83.3%; Diagonal symmetry (upper-lower cross):72.2% and no case only bilateral low-region symmetry (0%).

Conclusion: Chest CT has an important role in orienting and supporting the diagnosis of NTM-PD with positive and negative imaging signs.

Keywords: NTM-PD computed tomography; Atypical pulmonary tuberculosis.

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1. INTRODUCTION

Nontuberculous Mycobacteria (NTM) belong to the Mycobacteriaceae, it's not tuberculosis. They are organisms widely distributed in the environment, especially in water, moist soil.... NTM can cause disease in many organs in the body such as skin, soft tissues, central nervous system, eyes; but NTM lung disease (NTM-PD) is the most common manifestation of infection.[1,2]

The incidence and prevalence of NTM lung disease is increasing worldwide, due to the increasing proportion of patients with chronic lung diseases, the increasing diagnostic capacity and awareness of physicians about this disease. NTM may be found in respiratory tract specimens, but may also cause pulmonary disease, nonspecific clinical symptoms, or may be misdiagnosed as TB. Although the distribution of NTM species varies markedly by geographic region, among more than 200 officially recognized species, the most common human pathogens are still *M. avium complex* (MAC), *M complex abcessus* (MABC) and *M. kansasii*. MAC which includes M. avium and M. intracellulare is the most common cause, MABC being the second most common cause is now divided into three species (*M. abscessus, M. massiliense and M. bolletii)*.[3]

Diagnosis of NTM-PD according to ATS (2007) and BTS (2017) needs to be based on clinical and imaging criteria, especially microbiological tests to identify bacteria. Clinically, the patient must have symptoms pointing to NTM-PD combined with typical lesions on routine radiographs or CT while excluding other pulmonary pathologies. After orientation as NTM-PD, the patient will be taken a sputum sample or BAL or a biopsy specimen for culture and identification of bacteria.[1]

In Vietnam, the Central Lung Hospital is developing guidelines on the diagnosis and treatment of NTM-PD. Currently, there are not many studies on computed tomography features with a large enough sample size of NTM-PD to show characteristic imaging features of this disease. Therefore, we carry out this study to solve the above goal, step by step create a tool to support the diagnosis of NTM-PD.

2. MATERIALS AND METHODS

Patients

At Vietnam Central Lung Hospital, from June 2020 to June 2021, a prospective study was performed on 54 consecutive patients presenting with chronic lung infection, clinical symptoms and chest X-ray suspected tuberculosis; AFB direct sputum test result was positive but Gene Xpert MTB/RIF result was negative. Sputum and BAL samples were cultured and NTM results were obtained. All patients during the examination were subjected to computed tomography and image analysis by experienced radiologists. This study was authorized by the Ethics Committee of the Central Lung Hospital and the patients gave written consent.

Table 1. Characteristics of study patients (n=54)

Characteristic	Results
Age (year ± SD, max-min)	59,61± 11,85 (86- 29)
Sex, n (%)	Male: 23 (42,6) Female: 31 (57,4%)
History of pulmonary tuberculosis	23 (42,6%)
Persistent cough with phlegm	43 (79,6%)

Table 2. Culture results for NTM identification (n=54)

Ordinal number	Species name	n	%
1	*M. abscessus*	24	44,4
2	*M. intracellular*	17	31,5
3	*M. avium*	10	18,5
4	*M. fortutium*	1	1,9
5	*M. scrofulaceum*	1	1,9
6	*M. chelonae*	1	1,9

CT Procedures

All CT procedures were performed on a 16-slice machine (Revolution, GE/ Emotion, Siemens); 64 slices (Perspective, Siemens Medical Solutions) with parameters: 130kV, XTube: 130 mA, spiral image, slice thickness 3 mm, taken before and after intravenous contrast injection. Lung parenchymal window (WW/WL): 1200/-800; Mediastinal window (WW/WL): 350/50; Contrast Xenetic 350 x 100ml, intravenous injection, speed 4ml/s, patient inhale deeply, hold breath throughout the scan.

CT Post-Processing

The image data obtained from the scans were reconstructed windows with a slice thickness of 0.75mm, and transferred to a dedicated CT image processing workstation (Syngo workstation, VB30, Siemens). The pre-and post-injection images were reconstructed independently. The thin part is used MPR algorithm for image rendering in Cronal, Sagital directions.

CT Analysis

All image data after being processed are stored in the PACS system, which will be read by 2 radiologists at two consecutive times. The results of the readings will be listed in the uniform tables on the criteria; criteria that do not have consensus of two experts will be consulted with a third expert (3 experts at the same time) to decide on consensus. Definition of imaging criteria according to Fleischner Society (2008); "Thoracic Imaging Pulmonary and Cardiovascular Radiology", Third Edition (2017) by W. Richard Webb and Charles B. Higgins and "Hight-Resolution CT of the Lung", fith edition (2015), by W. Ricvhard Webb, Nestor L. Muller, David P. Naidich.

Definitive diagnostic technique

Patients with suspected TB abnormalities on routine radiographs and computed tomography will undergo the following steps to confirm the case:

- Step 1: Test sputum by direct staining method using fluorescence microscope; If the result is positive for AFB, go to step 2; If AFB results are negative, bronchoscopy will be performed to collect BAL; If AFB BAL results are positive, proceed to step 2.
- Step 2: Positive AFB sputum and bronchial lavage samples will be tested for Gene Xpert MTB/RIF. If the result is positive => confirm MTB; If the result is negative => culture for NTM.
- Step 3: Isolation of NTM species identifiers for positive cultures.

In our study, a case with confirmed NTM-PD must have at least 2 sputum samples/1 sputum sample and 1 bronchoalveolar lavage sample positive for the same species of NTM.

Diagnosis is confirmed when there is a concordance between risk factors, clinical, imaging, microbiological tests, consultation with a specialist and other causes such as tuberculosis, cancer are excluded and other lung infections.

Statistical Analysis

The data was entered into the computer and analyzed using the IBM SPSS software package version 20.0. Quantitative data are described using mean and standard deviation. The significance of the results obtained was assessed at the 5% level. Statistical algorithms are used to evaluate the occurrence frequency of image features.

3. RESULTS

The mean age of the patient group at the time of the study was 59.61± 11.85 years old (from 29–86 years old); 23 (42.6) men and 31 (57.4%) women. There were 23 patients (42.6%) previously diagnosed with pulmonary tuberculosis. Most of the patients had signs of prolonged cough and sputum production: 43 (79.6%). The clinical data are presented in Table 1.

Table 3. Prevalence of lung lesions (n=54)

	Number of patients	%
Lesions to 1 side of the lung	6	11,1
Lesions on both sides of the lung	48	88,9

Most patients present with bilateral lung involvement; The frequency of occurrence is shown in Table 3. Details of lesion forms will be presented in the following tables.

Most patients present with dilatation with thickening of the bronchial wall. Diagnostic criteria for bronchiectasis on computed tomography of the lung window: The "tramway" image appears more than 2 cm long (lost taper gradually to the periphery); The diameter of the bronchi is 1.2 times greater than that of the optional pulmonary artery; signs of "ring" in the middle and periphery of the lung; sign of multiple small sacs with fluid-air levels (Cystic bronchiectasis). The frequency of occurrence of bronchiectasis is shown in Table 4.

Table 4. Bronchiectasis prevalence (n=54)

	Number of patients	**%**
Yes	38	70,4
No	16	29,6

Table 5. Location of bronchiectasis (n=38)

	Number of patients	**%**
RUL	24	63,2
RML	22	57,9
RLL	16	42,1
LUL	28	73,7
LLL	13	34,2
Bronchiectasis only 1 side	4	10,5
Bronchiectasis on both sides	34	89,5
Simultaneous bronchiectasis of RML and the lingual segment of LUL	25	65,8

Table 5 shows that bronchiectasis can occur in all lung lobes, but among 38 patients with bronchiectasis, the highest frequency occurs in the LUL (73.7%), the lowest in the LLL (34.2%). Simultaneous bronchiectasis on both sides accounts for the vast majority (89.5%); And especially, the rate of simultaneous bronchiectasis between RML and the lingual segment of LUL was quite high (65.8%).

Table 6. Bronchiectasis morphology (n=38)

	Number of patients	%
Cylindrical	36	94,7
Varicose	24	63,2
Cystic	30	78,9
Mixed bronchiectasis (2 or more forms)	30	78,9
Bronchiectasis through the pleural cavity	13	34,2

All forms of bronchiectasis appeared with the frequencies shown in Table 6. Mixed forms of bronchiectasis appeared in 78.9% of cases. In particular, Bronchiectasis through the pleural cavity (34.2%) shows that bronchiectasis extends from the center to the end of the bronchioles.

Table 7. Cavity rate (n=54)

	Number of patients	%
Yes	28	51,9
No	26	48,1

Table 8. Location of cave (n=28)

	Number of patients	%
RUL	17	60,7
RML	5	17,9
RLL	8	28,6
LUL	12	42,9
LLL	6	21,4

Table 9. Cave morphology (n=28)

	Number of patients	%
Spherical	5	17,9
Oval shape	9	32,1
Not shaped	25	89,3

Table 7 shows that 51.9% of the studied patients appeared cavernous in the lungs. The diagnostic criteria for the cavernous cavity is the gas density cavity with a continuous and closed contour. The upper lobe of the right lung appeared cavernously (60.7%). Right middle lobe has 5/28 cavitation cases (17.9%). The left upper lobe accounted for 42.9% (12 cases). And caves with amorphous (non-canonical) shape accounted for 89.3% (25/28 cases) (table 9). The following morphological features were also studied:

- The largest cave (horizontal condition): 89mm
- Thickest cave wall: 9.7mm
- Smooth inside surface: 100%
- In the cave, there is a mycetome: 01
- The cave has a horizontal water level: 0

Table 10. Rate of appearance of Tree-in-bud (n=54)

	Number of patients	%
Yes	45	83,3
No	9	16,7

Table 11. Location of appearance of Tree-in-bud (n=45)

	Number of patients	%
RUL	36	80,0
RML	36	80,0
RLL	32	71,1
LUL	36	80,0
LLL	37	82,2

Tree-in-bud appear when the bronchioles are filled with mucus. Cross-sections of computed tomography may show a mucinous bronchiole (their axis coincides with the scan plane) or a small nodule (slice perpendicular to the scan plane). Among the 45 patients with this appearance, their frequency was similar in all lobes (Table 11). The transverse diameter of the bud is usually < 1 mm.

Table 12. Rate of nodule appearance (n=54)

	Number of patients	%
Yes	38	70,4
No	16	29,6

Table 13. Location of nodules (n=38)

	Number of patients	%
RUL	34	89,5
RML	28	73,7
RLL	25	65,8
LUL	32	84,2
LLL	29	76.3

Another abnormality seen in the study group was the appearance of large nodules, defined as > 2mm to less than 30mm in diameter, which can be distributed in any location, and can be isolated or interwoven with other lesions other (Tables 12 and 13).

Table 14. Prevalence of infiltrative lesions (n=54)

	Number of patients	%
Yes	20	37,0
No	34	63,0

Table 15. Location of infiltrative lesions (n=20)

	Number of patients	%
RUL	19	95,0
RML	14	70,0
RLL	11	55,0
LUL	20	100,0
LLL	15	75,0

Infiltrative is a condition where the nodules are concentrated in clusters, adhere to each other and no longer have a boundary between them. The term "consolidation" is often used for this condition. In our study 37% of patients had infiltrative lesions, of which 100% had lesions of the LLL; 95% in RUL; RLL is present in at least 55% of 20 cases.

Table 16. Prevalence of calcification (n=54)

	Number of patients	%
Yes	13	24,1
No	41	75,9

The number of patients with alternating calcified nodules in the lesion was found in 13/54 cases (24.1%) (Table 16). The remainder did not show any calcifications although most were chronic lesions. We will cover this issue in more depth in the discussion.

Table 17. Prevalence of pleural thickening (n=54)

	Number of patients	%
Yes	6	11,1
No	48	88,9

Table 18. Percentage of occurrence of pleural effusion (n=54)

	Number of patients	%
Yes	1	1,9
No	53	98,1

Pleural thickening in the study only encountered 6/54 (11.1%) cases (table 17) and was not found to be related to previous effusion (1/54 cases) (table 18).

Table 19. Prevalence of alveolar dilatation (n=54)

	Number of patients	%
Yes	15	27,8
No	39	72,2

Table 20. Location of alveolar dilation (n=15)

	Number of patients	%
RUL	13	86,7
RML	12	80,0
RLL	12	80,0
LUL	10	66,7
LLL	6	40,0

Emphysema represents an obstruction of the airways, especially the small airways. In our study, we encountered 15/54 cases with emphysema (table 19); Forms include centrilobular emphysema, paraseptal emphysema. Emphysema in the lower lobe of the left lung is the least common (40%); The other positions are quite similar in proportion (table 20).

Table 21. Prevalence of fibrosis appearance (n=54)

	Number of patients	%
Yes	38	70,4
No	16	29,6

Table 21 shows that fibrosis is quite common against the background of chronic lesions. There is no direct image, fibrosis is assessed indirectly through the displacement of the anatomical structures of the lung and mediastinum due to traction. Up to 70.4% of patients had fibrosis in the affected areas.

Table 22. Prevalence of hilar and mediastinal large lymph node morphology (n=54)

	Number of patients	%
Yes	53	98,1
No	1	1,9

Identifying large hilar lymph nodes, mediastinum is usually based on cross-sectional computed tomography; more obvious with intravenous contrast; location assessment according to the map of 14 groups of nodes of AJCC. In our study, only 1 case (1.9%) had large mediastinal lymphadenopathy (group 4R) (table 22). This will be covered in more depth in the discussion.

Table 23. Lesions distribution (n=54)

	Yes (No; %)	No (No (%)
In the high zone	51 (94,4)	3 (5,6)
Symmetry of the high zone on both sides	45 (83,3)	9 (16,7)
Diagonal symmetry	39 (72,2)	15 (27,8)
Symmetry indicates low areas on both sides	0 (0)	54 (100)

The distribution (appearance) of lesions on chest CT has many points of note: Most of the lesions appear in high areas (upper and VI segments of lower lobes); (51/54 ~ 94.4% of cases); Symmetrical lesions in the high zone on both sides accounted for 83.3% of cases; Diagonal symmetry occurs in 72% of cases; while no cases were found, only lesions in the lower areas of the two lungs were found (0%).

4. DISCUSSION

The survey results of 54 NTM-PD patients showed that the average age of the study subjects was 59.61± 11.85 years old (ranged from 29 to 86 years old), in which the group of patients over 60 years old accounted for rate 50.7%. A study by Izumi K et al on 975 NTM-PD patients in Nagasaki - Japan showed that the highest incidence was in people over 60 years old (83.8%).[14] Hyung Jun Kim studied 347 patients in Seoul, showed that the average age of NTM-PD patients was 67 ± 14 years old.[16] Comparing the patient's age with other studies showed that the age of over 60 years is The risk of lung disease due to NTM is highest, however, the average age of Japan, Korea, and Europe is higher than in Vietnam due to the aging rate of the population in developed countries.

Our study shows that NTM-PD has a female proportion of 57.4%, 42.6% higher than that of men. Morimoto et al., studied 510 NTM patients, female accounted for 53.4%.14 This shows an increasing trend of detecting NTM-PD in women.

In Vietnam, NTM-PD is also known as "Atypicalmycobacteria" because the disease has clinical symptoms, the electro-optical picture is quite similar to MTB; especially when all tests show AFB in the sputum. Previously, when there was no Gene Xpert test, the diagnosis of TB cases was usually based on sputum smear microscopy for AFB while the culture techniques of medical facilities were still limited. In our study 42.6% of patients had previously been diagnosed and treated with MTB failed result because NTM was resistant to most of the first-line anti-TB drugs. This result is similar to the study of Karla Grip Couto de Mello et al., 58% of NTM-PD patients had a history of TB treatment. Prolonged cough, with sputum seen in nearly 80% of the patients studied may be the cause of chronic infection with bronchiectasis. Our study has similarities with Moon SM, the most common symptom is a persistent cough and a cough with phlegm, accounting for 80.1%.[12]

Most of the studied patients had bilateral lung lesions

(88.9%); Lesions in the high zone of the two lungs account for 94.4% of cases; the proportion of cases with symmetrical lesions in the high region on both sides was 83.3%, with cross symmetry in 72.2% and there were no cases with only bilateral symmetry in the lower regions of the lungs. These results of the study show that the pattern of occurrence and distribution of lesions is very similar to that of MTB.[17,20]

Bronchiectasis with the gold standard diagnosis based on HRCT imaging is a prominent sign in NTM lung lesions. Bronchial wall thickening, dilated polymorphisms (cylindrical, Varicose, Cystic with frequency of 94.7%; 63.2% and 78.9% respectively) and the majority of cases show mixed dilation (79.8%), diffuse and often very long longitudinal dilation of the airways: from the center to the end of the bronchioles. The highest frequency appeared in the LUL (73.7%); followed by the RUL (63.2%) and the lowest in the LLL (34.2%). Among 38 patients with bronchiectasis, 34 patients (89.5%) had bronchiectasis in both lungs; 25 patients (65.8%) found bronchiectasis at the same time as the middle lobe of the right lung and the left lobe of the tongue. And in particular, 13 patients showed signs of bronchiectasis contact with a localized air cavity in the pleural cavity. This is the most severe form of bronchiectasis; This complication is likely to cause foci of chronic infection of the pleural cavity. Moon SM et al., showed that diffuse bronchiectasis-nodular lesions were an important finding suggesting pulmonary MAC infection.[12]

Figure 1. A, B: CT chest, lung window in female patient, 59 years old, diagnosed with NTM-PD due to M. abscessus. Polymorphic bronchiectasis (yellow arrow) RML and LUL; cave (green arrow); Large nodule (infiltrate – red arrow).

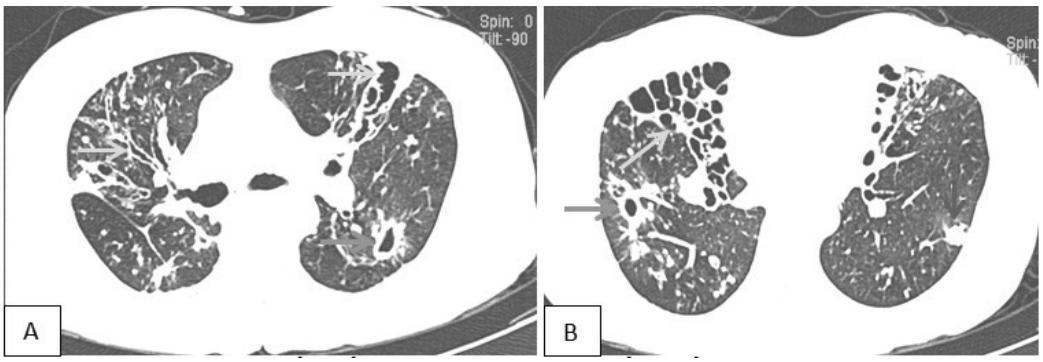
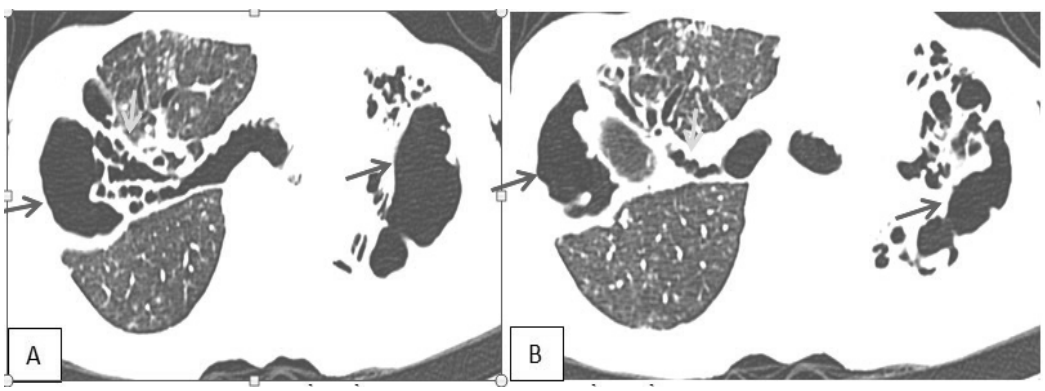
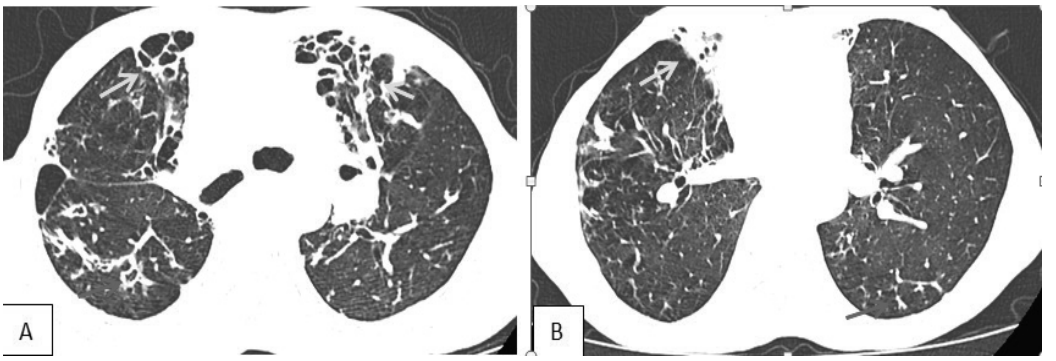


Figure 2.A,B: CT chest, lung window of a 67-year-old female patient, diagnosed with NTM-PD due to M. intracellulare. Polymorphic bronchiectasis (yellow arrow) of the two upper lobes and Bronchiectasis through the pleural cavity (red arrow)



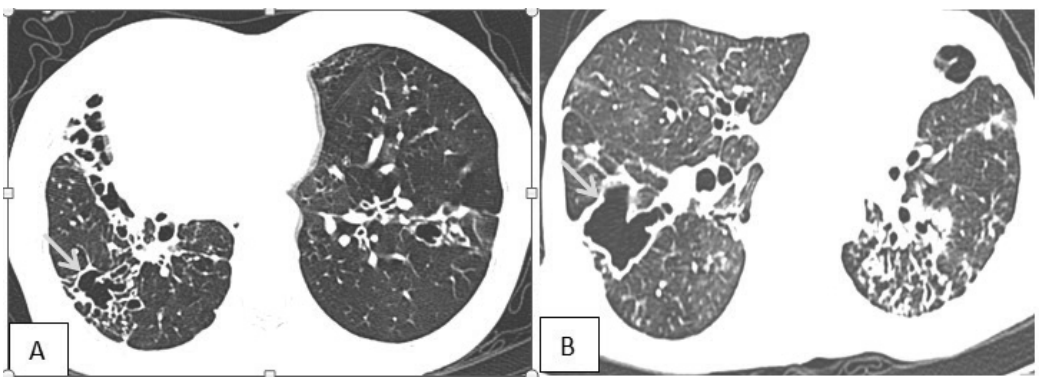
The Tree-in-bud pattern shows the small airways filled with mucus at the periphery combined with bronchiectasis showing the airway diffuse pattern of NTM when entering the lung. Of the 54 studied patients, bud formation appeared in 45 patients (83.3%), with the frequency of occurrence in all lung lobes being almost similar (from 71.1% to 82.2%). This further confirms the possibility of NTM spreading along the airways, destroying the wall causing airway dilation (bronchiectasis) and small airway obstruction (Tree-in-bud).

Figure 3. A,B: Chest CT, lung window in a 67-year-old male patient, diagnosed with NTM-PD due to M. abcsessus. Polymorphic bronchiectasis (yellow arrow) upper lobe of both lungs and Tree-in-bud (red arrow)



Cavitation destruction is also a common feature in patients with NTP-PD. More than half of the study patients had cavernous (51.9%) and many were still in the upper lobes of the two lungs. The largest cave encountered in the study was 89 mm in diameter; cave has the thickest wall 9.7mm; 100% of the cave interior is smooth and there is no internal fluid level. A distinctive imaging feature of the caverns in patients with NTM-PD is that most of the cavernous shape is of the amorphous type (neither spherical nor classically oval). In our opinion, this can be explained because the cave originates from a dilated bronchial segment, the process of destruction of the wall and adjacent parenchyma creates the cave with an irregular shape. This is different from caves because MTB is usually spherical, has a smooth inner surface, and is especially present in the infiltrates.[17]

Figure 4. Chest CT, lung window in 55-year-old female (A) and 65-year-old male patient (B), diagnosis of NTM-PD due to M. Abcsessus and M. Avium: Multimorphic bronchiectasis, trends Cavitation from dilated bronchi (A) and amorphous cavitation (B)



One lesion pattern in NTM lung lesion is the "infiltrative" nodule/cluster (>2mm to <30mm). The nature of the infiltrative lesion is the alveolar filling pattern; The spread of lesions through the alveolar hole is the mechanism that gives the definition and terminology for this type of lesion. When nodules gather together, stick together in clusters, often called "infiltrates". The 2008 Fleisher Society recommended that the term be discontinued, but so far the associations have not agreed on an alternative term. In our study 20/54 patients had this lesion pattern (37.0%), the most in the LUL of the lung (100%), the RUL (95%) the lowest in the RLL (55 %). One thing we observed was that the attenuation in the nodules/infiltrates of the study was quite homogeneous, not exhibiting necrotic-type "hyperattenuating" foci. Infiltrative lesions are also commonly found in MTB and in this study we did not find any difference between them.20

The occurrence of interlaced calcifications in the NTM-PD lesions of the study was also not much (24.1%)

although most of the lesions were chronic. This, in our opinion, may need to pay attention to the mechanism of formation of calcified nodules originating from "bronchial stones" (a form of calcification of the lymph nodes that adhere to the airways) or the organization of "Caseous necrosis". Infiltrative lesions of NTM probably cause less "Caseous necrosis" than MTB, so calcification is also less common.

The occurrence of pleural thickening in our study was quite low (11.1%) and probably positively correlated with the rate of occurrence of pleural effusion (1.9%). Pleural thickening in MTB is largely a consequence of pleural effusion. Some authors believe that the sign of pleural effusion in NTM-PD should be considered a negative sign, which is very valuable to support the definitive diagnosis of the case. Similarly, signs of enlarged mediastinum and hilar lymph nodes in the study were quite low (1.9%). The lymph node was considered large when the smallest transverse diameter appeared on the computed tomography slice ≥ 10 mm. Currently, the hypotheses to explain the 3 signs mentioned above (thickening of the pleura; pleural effusion; enlarged mediastinal lymph nodes, hilar lung) appear with low frequency in NTM-PD of pathophysiologists, explain pathology has not yet found a consensus voice; while radiologists do not have in-depth comments on this issue.[19,20]

Finally, as with other chronic lesions, pulmonary fibrosis is fairly common. In our study 70.4% appeared this morphology. Chronic interstitial inflammation, sufartan deficiency caused by destruction of alveolar mucosal type II cells are the direct causes of adhesions that create pulmonary fibrosis.[19,20] It is difficult to recognize the image of fibrous lesions directly at the chest CT film, but the images of the constriction of the lung and mediastinal structures will indirectly help us to recognize this condition.

5. CONCLUSIONS

Computed tomography imaging techniques with multi-plane reconstruction are beneficial for radiologists in the full assessment of lesion morphology commonly encountered in patients with NTM-PD. The identification of positive signs (high frequency) and negative signs (low frequency) is very valuable for supporting the diagnosis of this pathology.

6. ETHICAL APPROVAL

All procedures performed in studies involving human participants were in accordance with the standards of the Central Lung Hospital Ethics Board, and with the 1964 declaration of Helsinki and subsequent amendments, or equivalent ethical standards.

7. CONSENT FOR PUBLICATION

Each patient received informed written informed consent for the release of clinical details.

8. DISCLOSURE

The authors report no conflicts of interest for this work.

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CAREER CHOICE TO WORK IN INTENSIVE CARE UNIT: PERCEPTION FROM STUDENTS AT HANOI MEDICAL UNIVERSITY

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ABSTRACT

The study estimates the percentage of selection and willingness working in the field of intensive care and the influential factors among students of Hanoi Medical University.

Cross-sectional descriptive design and multi-stage sampling techniques have been used in this study over 599 subjects including the first, fourth and sixth year general practitioner and preventive medicine students at Hanoi Medical University. The study used self-reported questionnaires.

Findings: 29.5% of students have intention to select and 15.7% of students are willing to work in intensive care field. There is an association between certain factors such as professional risk, levels of professional preference, learning opportunities and opportunities to work with foreign experts with intention and willingness of selection to work in intensive care filed.

Conclusion: Identifying behaviors relating to the career selection and the factors influencing each learning stage to attract students to work in intensive care filed need to be carried out.

Keywords: Intention, willingness, intensive care, student, selection/choice.

1. INTRODUCTION

The health human resource has been recently considerably concerned in Viet Nam. The doctor and the people rate is 5doctors/10.000 inhabitants of the Vietnamese population of 87.400.000, according to the statistics, 2008 [1]. However, this figure is much lower than 2015 health target: 7 doctors/10.000 inhabitants [2]. Besides, the doctor arrangement in the medical specialities and the areas is not reasonable, particularly 53% of the doctors are now working in the urban area with the population just accounts for 28% of the nationawide one [3]. The ICU – a medical clinical speciality has got more and more attention in Viet Nam. Nevertheless, the doctors who work in the ICU, particularly in the emergency intensive care and the aneastheology, are much shortaged. More than 1.700 intensive care employees are working in the hospitals in Southern Viet Nam but 20% of who have been trained in the emergency intensive care speciality. The lack of

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emergency intensive care doctors is available at all of the health levels and units [4]. The medical graduate student career selection factor impact apprehension will make contribution in the health manager particular intervention plan preparation for the future emergency – intensive care doctor shortage situation prevention. The research is carried out with the target: The student career choice in the ICU ratio estimation and the factors impact on Ha Noi Medical University students' career selection in this medical area description.

2. RESEARCH METHOD

2.1. Research time & place

The research was being carried out in Ha Noi Medical University during December, 2014 and March, 2015.

2.2. Research object

Ha Noi Medical University regular general practioners and the preventive medicine students are the project objects.

2.3. Research design

It is the cross – sectional and descriptive research.

2.4.Sample size & sample selection way

The research sample size formula is used in the WHO ratio estimation with the significant rate α=5%, the rate of the students whose willingness to work in the ICU: p = 0,2 and its relative accuracy ε=0.2. The necessary research sample size includes 385 students. 600 students with 200 students from each speciality are last selected in the research in order to eliminate such tolerences as: information is unfullfiled or the research is refused to participate in by the students. The latest research sample size therefore includes 599 students. The multi – stage research sample way is utilized in the research, including the 1st stage: the 1st year, the 4thyear and the 6th year student selection and the 2nd stage: 200 students from each speciality random choice from the student list submitted by the training management department under Ha Noi Medical University.

2.5. Data collection device

The questionnaire developed by the study team is utilized in the research, including: (1) Demograhic information (gender, age, address, qualification and career from the student's parents); (2) The career selection in ICU element impact: ICU joyment rate with intention to become an ICU doctor; with willingness to work in the ICU; the ICU role, task and operation nature; the factor impact rate in relation to the career selection. Ten career selection factor impact questions are designed on the influence rate from 0 to 10 marks (0: without effect and 10: the most effect). The questionaire form is tested in 15 students before use.

2.6. Data analysis & processing method

The data will be filtered and inserted in the computer with Epidata 3.1 software and analyzed with SPSS 20 statistical software after the data collection. The descriptive statistics is utilized, the ratio with relation to the research target is calculated, the factor impact on the career selection in the ICU rate is calculated with median and median of both "with willingness to work in the ICU" and "unwillingness to work in the ICU" groups is compared. Mann Whitney U statistical test is used in order to verify both groups' gap. The multi – variable recurrent model is employed to define the factors in relation to the career selection in the ICU.

2.7. Research ethics

The research is assessed and approved by the scientific commission under the Ha Noi School of Public Health, Ha Noi City. The students participated in the research are clearly informed about the study target as well content and have right to refuse to join in the research.

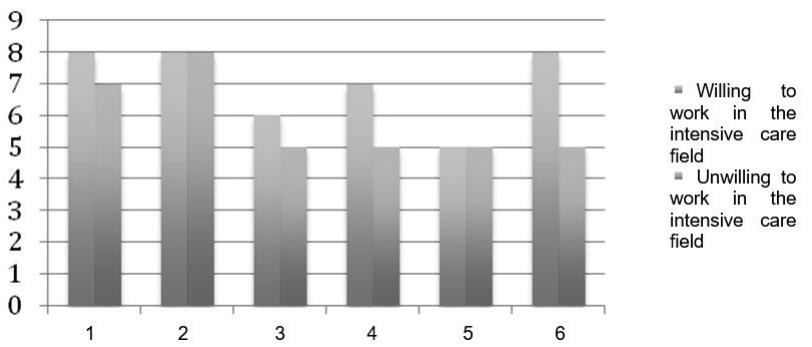
Table 1: The impact factors of the career selection in ICU: acknowledged themselves by Ha Noi Medical University students

Influence factor	With influence		The most influence	
	(n = 599)	%	(n = 599)	%
Self – competence	569	95%	107	17.5
Career joyment rate	568	94.8	108	18.0
Salary rate	542	90.5	31	5.2
Professional risk	544	90.8	40	6.7
Advantage from profession offer similar to parents'		40.1	6	1.0
Idea from friend/teacher	369	61.6	8	1.3
Career potentiality in coming 10 years	508	84.8	28	4.7
Career offer opportunity	547	91.3	36	6.0
Chance for working with the foreign specialist	498	83.1	22	3.7
Qualification improvement continuous study opportunity	525	87.6	34	5.7

Such elements as: self – competence, the career joyment rate, caeer offer opportunity, salary rate and the caeer risk are thought by 90% of the students, as shown in the above – mention table, to have a decisive impact on their career selection in the ICU. Moreover, the advantage from the profession offer which is similar to their parents' are found by less than 50% of them to get a decisive influence on their career selection. At last, such factors as: self- competence and the career joyment awared by the students themselves to get the most impact on their career choice in the ICU account for, respectively: 17.5% and 18%.

2. The rate of factor impact on the career selection in ICU

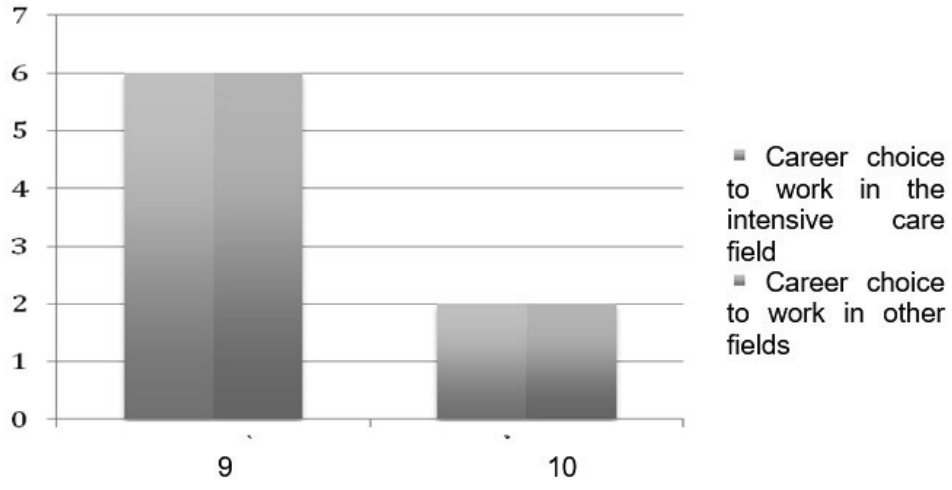
Figure 1: The rate of factor impact on the career selection in ICU (Analyzed by median).



Note: The impact rate is designed from 0 to 10 marks (0: without impact; 10: the most impact). The statistic significant difference: $p< 0.05$ (*); $p< 0.01$ (**); $p< 0.001$ (***).

What is shown in the figure 1 is that the student group whose career selection is the ICU, in comparison with the student group whose career choice is not the ICU, awares that the factors with the most impact on their career choice includesself – competence, the career joyment rate and the qualification improvement continuous study opportunity. In contrast, a chance for working with the foreign specialist gets the least influence on their career selection. This result includes the statistic significant difference of both groups.

Figure 2: The rate of factor impact on the career selection in ICU (Analyzed by median).



Note: The impact rate is designed from 0 to 10 marks (0: without impact; 10: the most impact). The statistic significant difference: p< 0.05 (*); p< 0.01 (**); p< 0.001 (***).

What is exposed in the figure 2 constitutes that there is no difference between the professional risk element impact rate and the self idea of the career selection from the students whose career choice is the intensive care and others whose career selection is not the intensive care.

3. The student's career selection in ICU and several other elements relationship

Model	Model 1		Model 2	
	Intention to work in the ICU		Willingness to work in ICU	
	OR	95% CI	OR	95% CI
Gender				
Male	1		1	
Female	0.86	0.52-1.42	0.8	0.54-1.19
Present study				
The medical general practitioner	1		1	
The preventive medicine	1.23	0.54-2.79	0.58	0.28-1.21
School year				
The 1st year	1		1	
The 4th year	0.68	0.36-1.27	1.21	0.74-1.96
The 6th year	0.98	0.53-1.79	1.39	0.86-2.28
Impact elements				
Self – competence	0.98	0.53-1.80	1.01	0.92-1.10
Profession offer opprotunity	1.10	0.95-1.27	1.09	0.96-1.22
Salary rate	0.93	0.81-1.08	1.02	0.89-1.13

Model	Model 1		Model 2	
	Intention to work in the ICU		Willingness to work in ICU	
	OR	95% CI	OR	95% CI
Professional risk	0.89*	0.80-0.99	0.89**	0.82-0.96
Advantage from profession offer similar to parents'	0.96	0.86-1.08	0.95	0.87-1.04
Idea from friend & teacher	0.89*	0.80- 0.99	0.95	0.87-1.04
Professional potentiality in coming 10 years	1.11	0.99-1.23	1.05	0.97-1.15
Professional joyment rate	1.12*	1.03-1.31	1.06	0.97-1.15
A chance for working with the foreign specialist	1.13*	1.00-1.29	1.08	0.98-1.19
Continuous study	1.10	0.96-1.23	1.11*	1.01-1.23

*The statistic significant difference *: p< 0.05; * *: p< 0.01*

The multi – variable recurrent analysis model is shown in the table 2. The elements influence to the student career selection in the ICU is displayed in the 1st model. Such factors as: the idea from the friend and the teacher (OR = 0.89; 95%CI [0.80-0.99], p<0.05); the professional risk (OR = 0.89; 95%CI [0.80-0.99]; are thought by the students a little impact on their career selection in the ICU decision but other factors: the professional joyment rate (OR = 1.12; 95%CI [1.03-1.31], p< 0.05); the opportunity for working with the foreign specialist (OR = 1.13; 95%CI [1.00-1.29], p< 0.05) get the most influence to their career choice in the ICU decision.

The elements in relation to the student's willingness to work in intensive care is shown in the table 2. The students whose willingness to work in the ICU find the professional risk to be a little impact on their career selection decision (OR = 0,89; 95%CI [0.82-0.96], p<0.05) but the continuous study opportunity much affects to their career choice decision (OR = 1.11; 95%CI [1.01 – 1.23], p< 0.05). Such factors as gender, speciality and school year do not related to their career selection in the ICU decision.

3. DISCUSSION

About one – third of the students are intended to work in the ICU while just one – sixth of them are willing to do so. This ratio is relatively high. The students who want to work in the ICU are requested to afford such certain natural talents as: the fast disadvantaged situation solution capability and work under high pressure, besides their good professional competence. The student group whose career selection is the ICU therefore all think such elements as: self – competence, the career joyment rate and the qualification improvement continuous study opportunity impact their career selection decision the most. This result is similar to those from the researches implemented in such industrialized nations as: the USA, Canada and Ireland. Their medical students also aware that the future career opportunity, the continuous study chance, the relationship with the patient and the experience from the study affect to their medical area selection decision [7][9][10]. More particularly, the Canadian student internal medicine sub – fields choice reveals that the gender, the professional rumour, the salary, the work pressure, the work time also have impact on their speciality selection [11].

The professional risk and the continuous study are the elements in realtion to the career selection in the ICU from both student groups whose willingness or whose intention to work in this medical field. Besides, such other factors as: the idea from their friend or teacher, the career joyment rate and the opportunity for working with the foreign specialist also influence to their career selection in the ICU. This result is similar to those from other researches in the world. The elements impact on the students to follow the nursing area, as shown in Hong Kong nursing student research, include the parents and the friends [12]. Learning opportunity [13] and the appropriate professional competence [14] are the elements in relation to the career selection from the surgical students in the USA. The professional opportunity [15][16] and joyment [16] are the factors

with relation to the career choice from the Keynyan and Bangladeshi medical students.

Research limitation

This research result just represents the output from the student group under the single university. It can not therefore be in use for the career selection decision conclusion from the nationwide medical students. Besides, the elements impact on the career selection in the ICU are restricted in ten factors given in the research, other elements should be therefore added if the research is implemented in the larger study sample. Moreover, the cross – section and descriptive research does not find out the cause – effect relationship between the impact elements and the career selection in the ICU from the students.

4. CONCLUSION

The health employers and the policy – maker should pay attention to the elements influencing to the student career selection behavior in order to promulgate the appropriate policies for the ICU human resource attraction, based on the research result. There should be an appropriate strategy to impact on the student group with the high career joyment rate, a little affected by their friend or teacher and the professional risk, the continuous study and work with the foreign specialist advantage offer from those with the intention to work in the ICU stage. Furthermore, the suitable strategy ought to influence to the students with a little attention to the professional risk and the qualification improvement continuous study offer from those with the willingness to work in the ICU stage.

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DIABETES TYPE II INSULIN RESISTANCE MOLECULAR MECHANISM UPDATE

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ABSTRACT

Insulin resistance is a major risk factor for developing diabetes type II caused by the inability of insulin-target tissues to respond to insulin properly. Insulin action involves a seriesof signaling cascades initiated by insulin binding to its receptor, eliciting receptor autophosphorylation andactivation of the receptor tyrosine kinase and resulting in tyrosine phosphorylation of insulin receptor substrates(IRSs). Phosphorylation of IRSs results inphosphatidylinositol 3-kinase (PI3K) activation and therefore toactivate Akt and its downstreamsignalling. Although the mechanisms underlying insulin resistance are not completely understood, it is thought to result ininsulin resistance caused by impaired insulin signal pathway.

Keywords: The molecular mechanism, Diabetes type II, the insulin resistance.

1. INTRODUCTION

Diabetes is the most complicated metabolism disorder disease now. The people suffering from diabetes hits the rate: 8,4% of the worldwide adults, according to the latest estimation from the International Diabetes Federation (IDF) (http://www.idf.org). The number of Diabetes patients increasingly raises, particularly this figure in the worldwide in 2013 is 382,000,000, 90% of those who suffers from diabetes type II and it will elevate 592,000,000 in 2035[1].

Diabetes is featured with Insulin ressistance of the peripheral tissues and Insulin excretion disorder. These factors play an important role and closely co – relate in Diabetes type II pathogenesis which usually happens before Diabetes clinical symtomp appearance. Insulin ressistance is the decrease or sentitivelessness state of Insuline from the insulin – targeted tissue, considered as the first defect or the main one of Insulin type II pathogenesis. Insulin ressistance appears if the normal Insulin quantity excreted by the pancrea gland does notafford to meet the body tissues' function as requested. More Insulinquantity should be excreted from b tissue of the pancreas gland to compensate the Insulin resistance phenomenon to maintain the normal blood glucose level which results in the blood Insulin level in increase. Insulin resistance is therefore considered as the indirect reason to get the pancreas gland Insulin excretion ability exhausted.

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2. INSULIN RESISTANCE TYPE II MOLECULAR MECHANISM

The main effects of Insulin metabolism include: Glucose is stimulated to be absorbed in the bony muscle and the fat tissue, promote the glycogen production in the bony muscle and inhibit glucose production in the liver and lipid production in the fat tissue. Those Insulin's effects are operated through the signaling cascade, from Insulin binding toits receptors in the tissue membrane to the tissue nucleus' operation. Although Insulin resistance molecular mechanism is still not apprehended, it is all caused by the abnormal intracellular Insulin signaling pathway at the cell level. This phenomenon can be made by Insulin in – receptor andInslulin post – receptor reasons.

1.1. Insulin in – receptor reason

After being excreted from pancreas gland, Insulin will bind to the Insulin receptor small unit α. Insulin receptor is a heterozygote including two small units α and both small units β. Small unit α completely lies outside the cell membrane and creates both low and high affinities of Insulin. Small unit α includes ligand bond space outside the cellular inhibitingsmall unit β Tyrosine Kinase activity through disulfite bridge and the non – electron – sharing valence interaction. The gene codes Insulin receptor including 22 exons creating two different isoforms on the 11^{th} exon, retaining the 11^{th} exon: a – isoform (Ira) and eradicating the 11^{th} exon: b – isoform (IRb). The Insulin receptor coded by the mutated gene involves the 11^{th} exon (Ira) with the Insulin affinity is much lower than the other isoform (IRb). IRb strongly binds to Insulin and is predominant in the Insulin – targeted tissues which are sensitive to the classical Insulin such as the liver tissue, the muscle tissue and the fat tissue. The patients suffering from Diabetes type II with the mutated isoform: the 11^{th} exon (Ira) just accounting for the low rate (about 0,4% - 7,8%) can be shown in several researches. Insulin receptor – coding gene mutation is Insulin in – receptor defect which results in the high blood Insulin level.

1.2. Insulin Behind – receptor reason

Insulin signaling pathway is very complicated which can be divided into five steps as following:

1. Insulin receptor activation:

After Insulin binds to the its receptor small unit α, information will be signaled through the cellular membrane to the inside Plasma cell of the small unit β and will stimulate its intrinsic Tyrosin Kinase activity. The small unit β auto – phosphorylationis operated at its Tyrosin tails and creates a series of the intracellular reactions. Particularly, the small units β auto – phosphorylationis operated at Tyr1158, Tyr1162 and Tyr 1163 positions in order to create the dockings of the endogenous substrates.

2. The substrate proteins phosphorylation:

Insulin receptor activation will directly cause the phosphorylation of the Tyrosin still left on such substrates as: protein IRS – 4 (Insulin receptor substrate), Shc, Grb – 2 – bond protein (Gab1), Dock1, Cbl and APS – bond protein, of which IRS protein (IRS1 and IRS2) plays the most important role in Insulin information signaling mechanism. All of these substrate proteins create the certain docking of other signaling proteins, including SH2 space (src homology 2).

3. IRS interaction with some intermediary signal molecules through SH2 and other identification spaces:

Protein SH2 binds to other IRS proteins resulting in the signaling cascades phosphorylation on three other ways: phosphatidylinositol-3 kinase (PI3K), mitogen-activated protein kinase (MARK) and Cbl-associated protein (CAP) ways, of which PI3K is the main way.

4. Serine and Lipid Kinase activation results in phosphorylation and phosphorylation neutralization extension:

Insulin's important effects as well as almost metabolism effects are PI – 3K →Aktdownstreamsignal cascade. PI3K is permitted to be bound and acted by IRS after Akt is activated. PI3K includes a small regulation unit consisting of SH2 space and a small catalysis unit which gets D -3 place of the inosol circle phosphorylated. The catalysis unit is unsustainable and just binds to the small regulation unit. PI3K is inactivated until both Sh2 spaces in the small regulation unit get phosphorylated in IRS protein molecule. PI3Ks will be activated and will catalyze the membrane phospholipid molecule phosphorylation: Phosphatidylinositol (4,5) – biphosphat (PIP2) at the 3^{rd} position to formphosphatidylinositol (3,4,5)-triphosphate PIP3 after PIK3s to be bound to IRSs. This phospholipid molecule binds to thepleckstrin homology (PH) space

of PI3K-dependent serin/threonin kinase – 1 – 2 (PDK1 and PDK 2). Protein Kinase B (PKB or Akt) phosphorylation process is continued to be operated at Serin 473 and Threonin 308 positions. All of these above – mentioned processes result in the complete Akt phosphorylation. The activated Aktresults in the phosphorylation and the activation regulation of several downstream proteins in much relation to the physiological process in the cellular. PIK3 inhibited by somechemicals or genes will cease almost metabolism responses stimulated by Insulin, including: glucose absorption, glycogen and lipid production and the fat tissue specialization. PIK3 is assured to be an important focus point with its equal effect as Insulin's.

5. The last Insulin biological effect regulation:

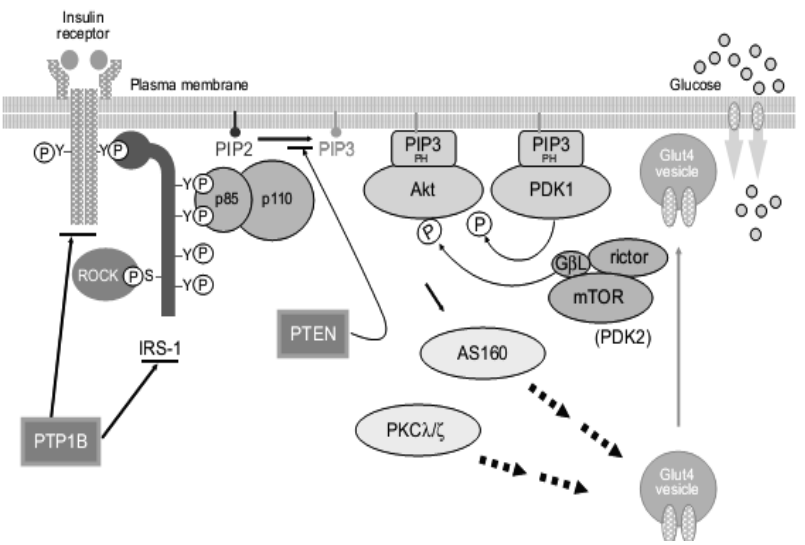
The activated Akt will phosphorylate its substrate – AS160 and will stimulate glucose – 4 (GLUT – 4) transportation substance to move from the intracellular particles to the cell membrane, which therefore promotes glucose absorption. Besides, Akt also phosphorylates and inactivates glycogen synthase kinase-3β (GSK3β): an enzyme with relation to the phosphorylation and the inactivation of glycogen production process. This results in glucose storage increase in glycogen form. GSK3 is also the endogenous substance to inhibit the guanine nucleotide (eIF2B) transformation factor which is the necessary element to participate in the protein decoding initiation. GSK3 inactivated by Akttherefore boosts the protein production resulting in a little amino acid use for the glucose reproduction. Akt also prevents the Forkhead box O1(Foxo1) element in the cellular nucleus reproduction and gets such the glucose reproduction enzyms manifestation as: glucose-6-phosphatase (G6P), fructose-1,6-biphosphatase (F16BP) and phosphor-enolpyruvate carboxykinase (PEPCK), whose operation is through Foxo 1. mTOR-mamalian target of rapamycin activated by Akt results in the protein production through p70 ribosome activation.

6. S6 kinase (p70S6K) with eIF4E binding protein (eIF4EBP)[15,16]: mTOR activated by Akt also promotes the fat acid absorption and production by activating the regulation decoding element of Sterol bound with protein 1C (SREBP – 1c): a protein boosts the fat acid and triglyceride production enzyme reproduction.

Briefly, Akt plays a central role in the biological cellular for it phosphorylates and regulates the activation of the proteins which control the survival, the development, the reproduction, the circuit, the metabolism and the cell divisionsuch as: AS160 (GLUT 4 position change), the cellular – killing element (Bad), mTOR, glycogen synthase kinase-3β (Gsk3β produces glycogen), tuberous sclerosis protein-2 (Tsc2 produces protein) but its most important role is to regulate the metabolism and survival by controlling a lot of genes' manifestation through such decoding elements as: forkhead Foxo1, SREBP1c…[5], [8], [2], [6].

The Ras→MAP kinase cascade'sactivation regulates the Insulin effect of the mitogenesis and the cellular development.

Figure 1. insulin Insulin signaling pathway[4]



The intracellular Insulin signaling pathway shown in the researches can be inhibited by some elements as following:

- Protein tyrosine phosphatase (PTP)-1B neutralizes IR's phosphorylation and inactivates IR, Insulin effect of the cellular is therefore reduced [9], [4].

- p85: It also inhibits the opposition small unit p85 on PI3K to get the contra – regulation of PI3K operation.

- SHIP – 2 (SH2-domain-containing inositol 5 phosphatase type II) and PTEN (Phosphatase and Tensin Homologue Deleted on Chromosome 10) includes the PI phosphorylation neutralization (phosphoinositol – the product is made by the PI3K catalysis), the Insulin effect is therefore decreased. [5], [4].

- GSK3: Glycogen synthase (GS) is phosphorylated by GSK3, this enzyme is therefore inhibited to result in the glycogen production inhibition [6]

- Serin/Threonin (S/T) kinase: About 1,100 Kinaseproteins in the human's or the mice's gene chain are found, dividing into three Kinase types: (1) Kinase is stimulated by Insulin (PKCλ/ζ, AKT, SIK2, mTOR, S6K1, ERK1/2 và ROCK1)intermediated with the feedback and S/T of IRS is phosphorylated by itself, including both positive and negative effects of Insulin sentitiveness. (2) The Insulin – free Kinase type: IRS1/2 can be phosphorylated by this Kinase type in the basic conditions (GRK2, PKCs, NK, IKKβ, mPLK). (3) Kinase responds to the activation through lipid intermediate if these substances concentration elevates during the metabolism disorder (GRK2, PKCs, NK, IKKβ, mPLK). If Kinase stimulated or inhibited results in the St phosphorylation of such proteins as: IR, IRS, PI3K, it will cause Insulin signaling pathway operation cease.[3], [7].

- Foxo1: Akt phosphorylates FOXo1 at S^{256} position and inhibits its reproduction operation and regulates a series of the physiological functions.Foxo phosphorylation neutralization at Akt position will maintain the Foxo1, will boost the Foxo reproduction operation and will make contribution in the blood glucose as well as insulin resistance increase [2], [7].

3. CONCLUSION

Diabetes type II includes the complicated interaction of the gene and the environment factors which results in the Insulin signaling pathway abnormality. The more profound pathogenesis acknowledges can be useful in the Insulin type II treatment due to the direct impact on the Insulin resistance targets of the Insulin signaling cascade.

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KNOWLEDGE AND PRACTICE OF LOCAL PEOPLE IN THE USE AND PRESERVATION OF HOUSEHOLD LATRINES TO PREVENT FECAL-ORAL TRANSMISSION AT 2 COMMUNES IN SON LA CITY IN 2015

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ABSTRACT

By cross-sectional descriptive study, 400 people at Chieng Sinh ward and Chieng Den commune in Son La city were interviewed. Study results showed that 98.0% of people know septic tank latrineissanitary latrine. 68.2% of people know the role of sanitary latrines are safe excreta disposal. There are 64.2% of people in two communes said unsanitary latrines causing environmental pollution. 56.3% of people at Chieng Sinh Ward and 33.3 people at Chieng Den commune said unsanitary latrines causing gastrointestinal diseases. 66.3% of people at Chieng Sinh Ward and 61.7% of people at Chieng Den commune said fecal-oral transmissiondiseases are diarrheal diseases; 94.4% of people at Chieng Sinh ward and 39.8% people at Chieng Dencommune said fecal-oral transmission diseases are cysticercosis. 41.1% of people have compost on time; 32% of people at Chieng Sinh Ward and 11.7% of people at Chieng Den commune have washed their hands with soap frequently. In conclusion, knowledge and practices of resident in the use and preservation of latrines at Chieng SinhWard was higher atChieng Den commune, the knowledge of resident about the use and preservation of latrines at 2 communes is pretty good while practice on this issue is not high.

Keywords: Sanitary latrine, environmental hygiene.

1. INTRODUCTION

Viet Nam is the developing nation with the present situation of with unsanitary latrine use or without latrine access by the household is available in many localities which is the direct reason to keep the simultaneous environmental pollution problem there. More than 80% of such diseases caused by the unhygenical water source and the unsanitary latrine as: Diarrhea, typhoid, dysentery, parasitic worms, hepatitis, etc ..., in accordance to some researches. Just 55% of the rural households, shown in the rural clean water & environmental hygene protection 2005 – 2010 program, have had an access to the sanitary latrine as

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requested by the Ministry of Health. The lowest rate is in the Northern Central area (34%) but the highest ratio constitutes in the Eastern – Southern zone (69%). The general program target up to 2020 is that all rural people will access to the sanitary latrine and will get used to the individual sanitation preservation habit, will keep the commune's or the village's environmental hygene protection and will get the community's good environmental sanitation practice .

The environmental hygene program, under the Party's, the State's and the Ministry of Health's concern for the past years, have been significantly improved. However, the minority's environmental hygene present situation in the mountainous area including Son La province, particularly Son La City have not been studied yet. The research "Knowledge and practice of local people in the use and preservation of household latrines to prevent fecal-oral transmission at 2 communes in Son La city in 2015" has been implemented.

The research target is as following:

"The *description of the people's knowledge and practice of the household latrine use and preservation for the fecal – oral transmission prevention at 2 communes in Son La City in 2015".*

2. RESEARCH METHOD

2.1. Research area

The research is carried out in 2 communes/ wards in Son La City, Son La province: Chieng Den commune and Chieng Sinh Ward.

2.2. Research object

The research object is the householder or the person at age of over 18 in the family.

2.3. Research method

Research design: The research is designed by the descriptive epidemiological method based on the cross – section investigation of all question form for the interview from the householder or the person at age of over 18 in the family in order to determine the people's awareness and practice of the household latrine use and preservation to prevent the fecal – oral tranmission.

Research sample and its selection:

The investigation implemented in the research is the descriptive epidemiological research based on the cross – section investigation with its sample unit: the household, it is therefore calculated in the formula as following:

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

The selected data is calculated the sample size: n = 384 rounded up to be the result: n = 400 households. The sample size for each commune in the research is 400/2 = 200 households.

Research sample selection:

-The research commune selection: Both communes: Chieng Sinh Ward in the 1st research area and Chieng Den commune in the 2nd research one are targeted to be selected.

The 1st research area includes the commune/the ward on the road N° 6 in Son La City with about 50% of the population whose jobs are the farmers and 50% left whose occupation are the State public servant. Most of the population here is Kinh or Thai minority.

The 2nd research area involves the communes beyond Son La City (12Km far from this city) and 98% of the population here are famers whose qualification is low and stays in the particularly disadvantaged communes.

- The research object choice: The research object is randomly selected by the accident choice of a village where a household is incidentally selected from the commune/the ward selected as the research area then the investigation is carried out in "door – to – door" way from this village to the others until the research sample size is afforded. The householder or the person at age of over 18 in the household is interviewed with the question form at every family (just one person is interviewed in each family).

Research time:The research is being implemented during May, 2015 and August, 2015.

3. RESEARCH RESULT

Table 1.The people's knowledge of the sanitary latrine types

Latrine type	ChiengSinh ward (n=202)		ChiengĐen commune (n=201)		p
	SL	%	SL	%	
Septic tank latrine	199	98.5	197	98.0	>0.05
2 – tank latrine	17	8.4	1	0,5	<0.05
Water – pouring penetration	10	4.9	2	1.0	<0.05
Biogas	16	7.9	2	1.0	<0.05

The results shown in the table 1 imply that the people's knowledge of the septic tank latrine hits the highest rate (98.5%), moreover their awareness of the 2 – tank latrine, the water – pouring penetration latrine and the Biogas latrine gets the ratio, respectively: 8.4%, 4.9% and 7.9% in Chieng Sinh Ward. Those ratios in Chieng Den commune are respectively: 98%, 0.5%, 1% and 1%. There is a difference of the water – pouring penetration and the 2 – tank latrines awareness content from the people in both communes ($p < 0.05$).

Talbe 2. The people's knowledge of the sanitary latrine role

The sanitary latrine role	Chieng Sinh Ward (n=202)	Chieng Den Commune (n=201)	p	%	
	SL	%	SL		
Clean latrine	184	91.1	49	24.4	<0.05
Without flies in latrine	91	45.1	5	2.5	<0.05
Without disease infection caused by unsanitary latrine	31	15.4	0	-	-
Safe dung treatment in latrine	115	56.9	137	68.2	<0.05
None of acknowledge	0	-	11	5.5	-

The outputs shown in the table 2 exposes that the people's knowledge of such sanitary latrine roles as: clean latrine, without flies in the latrine, no disease infection from the latrine and the safe excreta disposal in the latrine are respectively: 91, 1%, 45.1%, 15.4% and 56.9% in Chieng Sing ward. Those ratio from the people whose awareness of the clean latrine, without flies in the latrine, the safe dung treatment in the latrine and none of acknowledge with no answer of this issue constitute respectively: 24.4%, 2.5% and 68.25 and 5.5% in Chieng Den commune. This knowledge question gap of both communes involves the significant statistics ($p < 0.05$).

Table 3.The people's knowledge of the unsanitary latrine harm

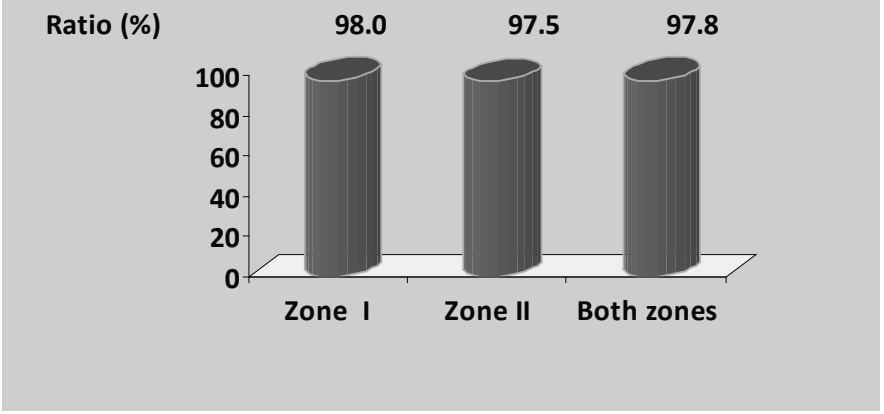
The unsanitary latrine harm	Chieng Sinh Ward (n=202)		Chieng Den Commune (n=201)		p
	SL	%	SL	%	
Intestinal diseases contamination	114	56.4	67	33.3	<0.05
Suffering from Dermatological disease	24	11.9	0	-	-
Bad odour	72	35.6	1	0.5	<0.05
Environmental pollution	111	54.9	129	64.2	>0.05
None of acknowledge	5	2.5	10	4.9	>0.05

The results shown in the table 3 display that the people's arareness of such unsanitary latrine harmsas: the intestinal diseases, the dermatological disease, the bad odour, the environmental pollution and none of the acknowledge are respectively: 56.4%, 11.9%, 35.6%, 54.9% and 2.5% in ChiengSinhWard. Those rates in Chieng Den constitute respectively: 33.3%, 0%, 64.2% and 4.9%.

Table 4.The people's knowledge of the fecal – oral disease

The fecal – oral disease	Chieng Sinh Ward (n=202)		Chieng Den Commune (n=201)		P
	SL	%	SL	%	
Parasitic worms disease	190	94.1	80	39.8	<0.05
Diarhea	134	66.3	124	61.7	>0.05
Colitis	4	2.0	0	-	-
Dermatitis	10	5.0	0	-	-
Sore – eye	13	6.4	0	-	-
None of acknoledge	12	5.9	30	14.9	<0.05

The results shown in the table 4 mention that the people's replies of the fecal - oral, the diarrhea, the colilitis, the dermatitis, the sore eyes and the none of acknowledge account for respectively: 94.1%, 66.3%, 2%, 5%, 6.4% and 5.9% in ChiengSinh ward. Those people whose answers of the parasitic worms, the diarrhea and the none of acknowledge in Chieng Den Commune hits the ratios respectively: 39.8%, 61.7% and 14.9%.



The ratio of the population whose awareness of the fecal – oral disease can be prevented

The results shown in the chart 3 exposes that the population who awares that the fecal – oral can be prevented accounts for respectively: 98% and 97.5% in Chieng Sinh ward and Chieng Den Commune. The mutual rate in both communes is 97.8%.

Table 5.The people's knowledge of the fecal – oral prevention

The disease prevention knowledge	ChiengSinh Ward (n=202)		ChiengDen Commune (n=201)		p
	SL	%	SL	%	
The sanitary latrine use	140	69.3	128	63.6	>0.05
Without fresh night soil usage	135	66.8	92	45.8	<0.05
Sanitary eat/drink	73	36.1	57	28.4	>0.05
Individual sanitation preservation	87	43.1	12	6.0	<0.05
Clean water access	80	39.6	12	6.0	<0.05
None of acknowledge	9	5.4	13	6.5	>0.05

What is shown in the table 5 manifests that the people's knowledge of the fecal – oral preventionwith the ratio of thepopulation whose replies of such ideas as:the sanitary latrine use, without fresh night soil usage, the sanitary eat/drink, the individual sanitation preservation, the clean water access and none of acknowledge are respectively: 69.3%, 66.8%, 36.1%, 43.1%, 39.6% and 5.4% in ChiengSinh Ward. Those rates account for respectively: 63.6%, 45.8%, 28.4%, 6%, 6% and 6.5% in Chieng Den commune. The difference shown in the answers includes a significant statistics.

Talbe 6. The people's practice of the fecal – oral contamination prevention

The disease prevention practice	Chieng Sinh Ward (n=202)		Chieng Den Commune (n=201)		p
	SL	%	SL	%	
The sanitary latrine use	161	79.7	55	27.3	<0.05
Without fresh night soil usage	53	26.2	11	5.5	<0.05
The sanitary eat/drink	67	33.2	47	23.3	<0.05
The individual sanitation preservation	52	25.7	10	5.0	<0.05
Clean water access	37	18.3	5	2.5	<0.05

The results shown in the table 6 exposes that the ratio of the population whose replies of suchfecal – oral prevention ways as: the sanitary latrine use, without fresh night soil usage, the sanitary eat/drink, the invidual sanitation preservation and the clean water access are respectively: 63.4%, 28.7%, 33.2%, 25.7%, 18.3% in ChiengSinh ward. Those rates account for respectively: 52.7%, 10.4%, 23.3% and 5% in Chieng Den commune. The difference shown in the answers from both communes involves a significant statistics.

4. DISCUSSION

The research results shown in the table 1 exposes that most of the population from both communes (98%) just awares of that the septic tank is the sanitary latrine. Moreover, the population quantity in Chieng Sinh

Ward who awares of the water – pouring penetration latrine and the 2 – tank one are respectively: 4.9% and 8.4% in Chieng Sinh Ward meanwhile those in Chieng Den hit so low rate. However, these above – mentioned ratio are too much higher than those from H'Mong minority research implemented by Thang Nguyen Manh, particularly the rate of the population whose replies are the septic tank and the 2 – tank latrine only are respectively: 25.8% and 32% but the number of people whose answer is the underground latrine with the ventilation pipe access hits the higher rate than ours (34%). This idea can be thought to be explained by the underground latrine with the ventilation pipe is consulted to be occupied by H'mong minority much more than other types. The results shown in both researches implemented by Hien Thu Do Thi in Hai Duong province and Hoan Le Thi in Ba Vi District, Ha Noi City are equal to ours in ChiengSinh Ward, particularly the population whose awareness of the septick tank access are respectively: 80.2% and 96.4%. This can be caused by the fact that the access to the septic tank type in the urban area, the plain zone and the towns are more popular than others. The correct awareness quantity shown in the research carried out by Hoan Dam Khai et al also accounts for so low ratio, mainly the correct awareness of the septic tank access (accounting for over 35%).

5. CONCLUSION

- The knowledge about the septic tank type accounts for the high rate of the sanitary latrine (98%).

- Almost populationawares of such ideas as: the sanitary latrine role: the safe dung treatment in the latrine and it is clean account for respectively: 68.2% and 24.4% in Chieng Sinh Ward and Chieng Den Commune. 5.5% of the population in Chieng Den commune still unackneledges of those conceptions as mentioned above.

- 64.2 % of the interviewees reply that the environmental pollution is caused by the unsanitary latrine. The population quantity in Chieng Sing Ward and Chieng Den Commune whose answer is that the intestinal disease is caused by the unsanitary latrine accounts for respectively: 56.3% and 33.3%. There is a difference shown in the replies from both communes ($p < 0.05$).

Almost the interviewees whose replies are the infectious diseases caused by the fecal – oral contamination is Diarhea are respectively 66.3% and 61.7% but it is caused by the parasitic worms disease accounts for respectively: 94.4% and 39.8% in Chieng Sinh Ward and Chieng Den Commune. The diffrence of the answer involves a significant statistics. However, the number of the people who unacknoledges of those questions as mentioned above hits the ratio, respectively: 5.9% and 14% in Chieng Sinh Ward and Chieng Den Commune.

- The people's knowledge of the fecal – oral: The population number whose replies of that the sanitary latrine should be accessed hits the high rate (respectively: 63.6% and 69.3% in Chieng Sinh Ward and Chieng Den Commune) meanwhile those rates of the people whose answers are without fresh night soil access in both Chieng Sinh Ward and Chieng Den Commune account for respectively: 45.8% and 66.8%.

- The people's practice of the fecal – oral prevention: such ways done by the people as: on – time composting hits the rate: 41.1% and the frequently soap – washed hand practice accounts for respectively: 32% and 11.7% in Chieng Sinh Ward and Chieng Den Commune.

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