

Health risk behaviours among adolescents in central of Vietnam: a cross sectional study

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Background: Adolescence is vulnerable subjects and faces many risks that greatly impact their health and development in the future, but adolescents are not really getting the proper care from the health care system. This study aimed to examine the prevalence of health risk behaviours among adolescents in Thua Thien Hue Province, Vietnam, and to determine related factors to adolescents' health risk behaviours.

Materials and Methods: A descriptive cross-sectional study was conducted on 934 adolescents in Thua Thien Hue province, with a multi-stage sampling method. The Youth Risk Behaviour Survey of the Center for Disease Control and Prevention was used for data collection in this study. The SPSS 20.0 software was used to analyse data. **Results:** The proportion of overweight-obesity adolescents accounted for 14.6%. The prevalence of adolescent bullying was 14.0%, the higher the adolescent high, the lower the risk of bullying (OR=0.981, p=0.03). The proportion of smoking was low (2.8%), while the alcohol use rate accounted for 10.0%. Adolescents in high school have a higher risk of smoking and alcohol use than those in secondary school. The proportion of adolescents who attempted suicide was slightly high (16.0%). Adolescents who felt lonely, whose parents did not know what the adolescent did in their free time, and does not respect them were several factors that increase suicide intention. **Conclusions:** School adolescent violence, overweight-obese status, alcohol use, smoking, and suicide intention are health problems occurring among adolescents in Thua Thien Hue. Besides, the feeling of loneliness increases the risk of suicide intention. Adolescents need to receive proper attention from their parents, as well as the healthcare system.

Keywords: Adolescent; health-risk behaviours; Thua Thien Hue province.

1. BACKGROUND

Health risk behaviours during adolescence could contribute to the leading cause of death and disability in adults. Remarkable health risk behaviours compose tobacco use, sexual behaviours, unintentional injuries and violence, mental health, alcohol use, physical inactivity, overweight and obesity, other drug use, etc. These behaviours are usually established during childhood, and are preventable. In addition, to causing serious health problems, these behaviours also contribute to educational and social problems.

Nowadays, 65% of the world's population live in high-income and most middle-income countries where overweight and obesity kill more people than underweight. According to the Global Burden of Disease study 4.7 million people died prematurely in 2017 as a result of obesity [1]. Besides, physical inactivity has been rated as high as the 4th leading risk factor for global mortality, causing an estimated 3.2 million deaths globally [2].

Noticeably, an alarming proportion of suicide

attempts among adolescents was recorded in low- and middle-income countries, with 79% and suicide is the second leading cause of death among adolescents and young adults (aged 15–29 years) worldwide [3].

The adolescents comprising one-sixth of the world's population, a number of their health behaviours at this time could seriously impact on the health and development in the future. In Vietnam, the adolescents aged 10 to 19 years old make up 14.3% of Vietnam's population [4], they have to face a variety of health risks, but adolescents are not really getting the proper care of the health system. In addition, identifying risky health behaviours will provide essential and useful information that aim to orient and develop appropriate and effective interventive programs for the adolescent. With practical support and intervention, the quality of adolescent's life will be ensured and enhanced. Therefore, we have conducted the research: 'Health risk behaviours among adolescents in central of Vietnam: A cross sectional study' with objectives:

1. *Examining the proportion of health risk behaviours among adolescents in Thua Thien Hue Province.*

2. *Determining related factors affecting to health risk behaviours of adolescents in Thua Thien Hue Province.*

2. METHOD

Study object

The target population of the study was defined as Vietnamese Adolescents from 10 to 19 years old who were studying in secondary and high schools within Thua Thien Hue province. The study excluded Adolescents with a history of mental disorders, unable to read and communicate in Vietnamese, deafness or blindness.

Design and setting

This was an analytical cross-sectional study, which was conducted at secondary and high schools in Thua Thien Hue province, Vietnam from January 2017 to November 2017. The sample size of this study was calculated using the formula:

In which, n is sample size; with $\alpha = 0.05$, . We chose p from several related studies within The United Nations Population Fund in Vietnam [5], including: The percentage of using alcohol among adolescents from 16 - 19 years in Central of Vietnam is 18.1%; the percentage of using tobacco among adolescents from 16 to 19 years in Central of Vietnam is 33.4%; the percentage of using a condom for the first time having sex among adolescents from 16 to 19 years old is 31.7%; the percentage of adequate physical activity among adolescents from 16 to 19 years old is 30.7%. We selected $p = 0.181$, ϵ : approximation error and we chose $\epsilon = 0.2$. Then, we computed the number of participants: $n = 435$. Selected the coefficient of the design was 2. We estimated the rate of inappropriate responses and refusing to join research responses at 10%. So, the sample size was 957. In reality, we collected 952 responses. After rejecting invalid responses, the final valid response number was 934.

A Multi-stage sampling method was used in this study. Since Thua Thien Hue Province has 9 District-level sub-divisions and is subdivided into 3 geographical zones: mountainous area, plain area, and coastal area, then for the *first phase*, we selected randomly 2 Districts represented for each geographical zone: two districts from mountainous area, two from plain area, and two from coastal area. *Secondly, at the District level*, we randomly selected 2 Secondary schools and 2 High schools in each District.

In total, we selected 12 Secondary schools and 12 High schools. Finally, for the *third phase*, we used the Probability Proportional to Size sampling method. The proportion of students between Secondary school and High school is respectively 65% and 35%, corresponding to 622 and 335 students. Then, we computed the number of students chosen for the sample in each school. In each school, we randomly selected 1 class in each grade, then we made a list of students in that class and randomly selected the corresponding student number.

Data collection

Data collection tool:

The questionnaire of Youth Risk Behaviours Survey (YRBS) of The United States Centers for Disease Control and Prevention (CDC) was used for data collection in this study. The questionnaire was modified to suit the conditions in Vietnam and conducted a pilot study prior to the main study. This research conducted a survey of four groups of health risk behaviours, including: 1) Behaviours that contribute to unintentional injuries and violence, 2) Alcohol and other drug use, 3) Tobacco use, 4) negative feelings and friendships.

Evaluation Criteria:

Health risk behaviours: According to The United States Centers for Disease Control and Prevention (CDC), Health risk behaviours are health - related behaviors that significant contribute to "the leading causes of death, disability, and social problems, including: behaviors that contribute to unintentional injuries and violence; sexual behaviors related to unintended pregnancy and sexually transmitted infections, including HIV infection; Alcohol and other drug use.; Tobacco use; Unhealthy dietary behaviors; and Inadequate physical activity" [6]. Nutritional status: Assessment of nutritional status of adolescents based on Z-score BMI index by age (10 - 19 years) of the World Health Organization [7], in which: $BMI = \text{weight (kg)} / \text{height}^2 (\text{m}^2)$. Evaluation criteria are as follows: Z-Score < -3 SD: Severe thinness; Z-Score < -2 SD: Thinness; $-2 \text{ SD} \leq \text{Z-Score} \leq 1 \text{ SD}$: Normal weight; Z-Score > 1 SD: Overweight; Z-Score > 2 SD: Obesity.

Economic conditions: Assessment of economic conditions based on income according to the Prime Minister's Decision No. 59/2015/QĐ-TTg as follows [8]: Poverty level: 700.000 VND/person/month in rural areas and 900.000 VND/person/month in urban areas; Near-poverty line: 1.000.000 VND/person/month in rural areas and 1.300.000 VND/person/month in urban areas.

Data analysis

The SPSS 20.0 and R software were used to analyse data. Descriptive statistics will be presented as frequency and percentage or means $\pm$ standard deviations (SD). Multiple linear regression and logistic regression were used to determine related factors to adolescent health risk behaviours. Odds ratio (OR) and 95% Confidence Interval (CI) were calculated for measuring strengths of association between risky behaviours and related factors. The significant level was defined at 0.05.

Ethical consideration

The research proposal has been approved by Hue University of Medicine and Pharmacy. The study objects and their guardian (father/mother) will be clearly explained the purpose and content of the study, and agree to participate in the study by document before the data collection progresses. All information about the objects of study will be encoded, kept confidential and only used for study purposes.

3. RESULT

3.1. General characteristics of the study object

Table 1. General characteristics (N=934)

General characteristics		Frequency	Percentage
Gender	Male	349	37.4
	Female	585	62.6
Age group	10-13 years old	402	43.0
	14-16 years old	421	45.1
	17-19 years old	111	11.9
Living area	Urban	260	27.8
	Rural	674	72.2
Economic condition	Poor/near-poor	90	9.6
	Other	844	90.4
Ethnicity	Kinh people	849	90.9
	Minorities	85	9.1
Recent learning results	Excellent/Very Good	387	41.4
	Good/Average/Weak	547	58.6

The information about adolescent's general characteristics is shown in Table 1. The table reveals that females accounted for nearly two-thirds of the study objects (62.6%). The majority of study objects lived in the rural area (72.2%). The poor and near-poor households made up 9.6%. Study object is minority ethnics accounted for 9.1%.

3.2. Prevalence of health risk behaviours among adolescents

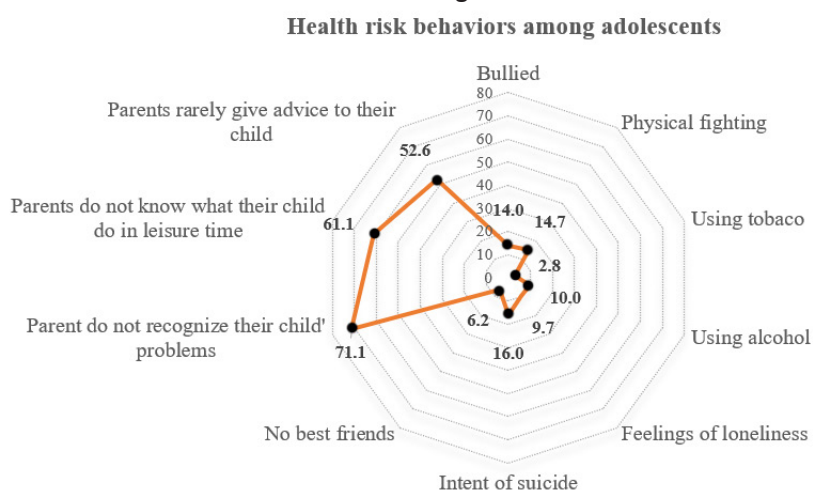


Figure 1. Prevalence of health risk behaviours among adolescents

It is obvious to notice from Figure 1 that three remarkable proportions of parents do not understand their child, parents do not know what their child does in leisure time and rarely give their child advice accounted for 71.1%, 61.1%, 52.6% respectively. Especially, adolescents with suicide intent made up roughly 16.0%. Besides, the percentage of juveniles being bullied and joined in physical fighting comprises 14.0% and 14.7%, respectively. The figure for using alcohol among adolescents was approximately 10.0%. Using tobacco among juveniles is in a low proportion (2.8%).

Table 2. The nutrition state of adolescents

Classification based on z-score of BMI-for-age	Male n (%)	Female n (%)	Total n (%)
Marasmus type, moderate	2 (0.6)	5 (0.9)	7 (0.7)
Normal*	284 (81.4)	507 (86.7)	791 (84.7)
Overweight	40 (11.5)	55 (9.4)	95 (10.2)
Obesity*	23 (6.6)	18 (3.1)	41 (4.4)
Total	349 (37.4)	585 (62.6)	934 (100.0)

Table 2 shows that the percentage of overweight-obesity adolescents accounts for 14.6%. It has a small proportion of marasmus type (0.7%). There was a statistical difference about overweight-obesity proportion between male and female adolescents (6.6% vs 3.1%, respectively).

3.3. Several factors related to health risk behaviours

Table 3. Several factors related to health risk behaviours in adolescents

Health risk behaviours	OR	95%CI	P-value
<i>Violence behaviour</i>			
Secondary school (High school)	1.938	1.217-3.085	0.005
Male (Female)	4.865	3.237-7.310	<0.001
Were bullied (were not bullied)	3.235	2.024-5.170	0.000
No best friends (Have best friends)	2.076	1.004-4.291	0.049
<i>Being bullied</i>			
Secondary school (High school)	2.463	1.423-4.263	0.001
Height	0.981	0.964-0.998	0.030
Physical fighting (No physical fighting)	2.672	1.706-4.185	<0.001
Parents do not know what their child do in leisure time (known)	2.043	1.310-3.187	0.002
Parents do not respect for their child (Respected)	2.094	1.386-3.165	<0.001
<i>Tobacco use</i>			
High school (Secondary school)	4.263	1.317-13.800	0.016
Male (Female)	3.773	1.124-12.667	0.032
Poor/ near - poor (Normal)	3.727	1.018-13.642	0.047
Physical fighting (No physical fighting)	12.174	4.044-36.648	<0.001
Thoughts of suicide (None)	5.033	1.648-15.366	0.005
Using alcohol (Disuse)	4.319	1.513-12.335	0.006
<i>Alcohol use</i>			
High school (Secondary school)	4.956	2.974-8.257	<0.001
Male (Female)	2.360	1.414-3.937	0.001
Weak (Excellent/Very Good)	15.498	1.278-187.972	0.031
Good/Average (Excellent/Very Good)	2.496	1.428-4.362	0.001
Feelings of loneliness (No)	2.634	1.381-5.026	0.003

Thoughts of suicide (No)	3.047	1.715-5.415	< 0.001
Using tobacco (Disuse)	5.208	2.051-13.220	0.001
Intent of suicide			
Female (Male)	1.958	1.259-3.045	0.003
Feelings of loneliness (No)	5.465	3.303-9.042	< 0.001
Using tobacco (Disuse)	4.231	1.645-10.886	0.003
Using alcohol (Disuse)	2.638	1.516-4.590	0.001
Parents do not know what their child do in leisure time (known)	2.145	1.377-3.342	0.001
Parents do not respect for their child (Respected)	2.188	1.455-3.289	< 0.001

The results of multivariate logistic regression to determine several related factors to each risky behaviour are shown in Table 3. It is noticeable that the secondary juveniles tend twice as to be violent as high school students. Male adolescents are more likely 4.8 times as violent as female peers. The students bullied tended 3.2 times as to be violent as others. The students who have no best friends are twice as likely to be as violent as ones. It also recognized from Table 3 that the secondary students are an object more bullied than high school students (2.5 times). The higher students are, the less risk they are being bullied (every 10 centimeters had risen, the bullied risk had fallen 19%). The adolescents who joined in physical fighting tend to be bullied more than others (2.7 times). Comparing the adolescents who had respected from their parents, 'disrespected group' had 2 higher of being a victim.

In terms of smoking, the high school students used tobacco higher than their secondary counterparts 4.2 times. The tobacco utilization in male students was 3.8 times as high as female students. Besides, poor and near-poor students used tobacco higher than others 3.8 times; tobacco use in 'physical fighting group' was extremely higher than ones 12.2 times. The adolescents who had thoughts of suicide have a tendency to using tobacco upper 5 times, while tobacco consumption in alcohol use counterparts had higher than the adolescents who had not to have 4.3 times.

Our result in table 3 also reveals that high school students used alcohol higher than their secondary counterparts 5 times. Additionally, the worse learning result got, the higher students consumed alcohol (the figures for alcohol utilise in weak students and average students higher than good counterparts are 15.5 times and 2.5 times respectively). The lonely students more likely to using alcohol and thinking

about suicide than peers (2.6 and 3 times in turn); alcohol had used by tobacco students higher than students who did not have 5.2 times.

Female ponder over suicide higher twice than male. The adolescents who felt lonely tend to be suicide 5.5 times. Comparing the students who disused tobacco, the tobacco utilises students who had thoughts of suicide higher 4.2 times; while the alcohol use group has tended to suicide 2.6 times higher. Moreover, the odds of suicide intent would increase 2.1 times if their parents disrespect students. (see Table 3)

4. DISCUSSION

4.1. Several health risk behaviours among adolescents in Thua Thien Hue province

According to the standards of Vietnam Nutrition Institute, the proportion of overweight - obesity adolescents is 14.6%, in which the percentage of obesity students accounted for 4.4%. These figures lower than the WHO statistics on overweight and obesity status among adolescents in 2016 (18%) [9]. Particularly, the proportion of overweight male and female students in Thua Thien Hue province was 4.3% and 5.9% lower than WHO statistics (19% and 18% in turn); while the percentage of male and female obesity adolescents made up 2.5% and 1.9% respectively lower than WHO statistics (8% for male and 6% for female).

Adolescents are children who have sudden modifications in physiology and psychiatric vulnerability, so they often have immature thoughts before making a decision. Therefore, school violence is prevalent at this age. Figure 1 illustrates that the prevalence of being bullied accounted for 14%, while the proportion for students fighting each other was 14.7% in over 12 months. This issue could lead to serious consequences such as feelings of loneliness,

even thoughts of suicide. In the other hand, a family could be a part of causes. 71.1% of parents could not understand their child difficulties; 61.1% do not know what they do in leisure time, and parents do not give an advance to their child made up 52.6%.

The status of using tobacco and alcohol among adolescents has still existed but not significantly (2.8% and 10% in turn). This result is comparable with Khuong. et al, the prevalence of current smoking is only 2.8% in 2019 [10], and Le. et al also reported that the proportion of smoking among adolescents in Vietnam is 3.5% in 2014 among the children aged 13-15 years old [11]. On the other hand, the Using Alcohol, Beer and cigarette among Vietnamese Youth analysis of SAVY II data in 2008 shows that 60% of youth reported ever having finished a glass of beer or liquor [12], while the percentage of alcohol use among adolescents in our study is sharply low (10%). This decline tendency illustrates that health communicating and educating activities about tobacco and alcohol harms are effective in increasing the knowledge of the community.

4.2. Several factors related to school violence among adolescents (consist of fighting and bullied)

School violence is one of the public health issues obtained concentration not only from schools but also from student's families. Several elements connected to physical fighting behaviour have discovered. Trend of adolescents fighting in secondary school is 2.5 times higher than in high school and also an object more likely to be bullied (higher 2.5 times than high school students- Table 3), hence the school violence status gradually decreased following the age. Adolescents could explain this feature are maturing in the mental and emotional development process, so they do not have the competence to solve psychological problems, but the higher age group would resolve better. This result suits the WHO statistics [13].

Male adolescents tend to fight higher 4.9 times than female peers (table 3). Nowadays, school violence in female student trends to gradually increased, whereas school violence in male adolescents are still elevated substantially [5], the male trend to perform strong sexuality, specifically in adolescents period, so they tend to bully the weak. Besides, we discovered that height could be effect bullied; the higher students are, the less risk they being bullied (every 10 centimetres had risen, the bullied risk had fallen 19%). Psychological research-based, the tallness could be increased the self-confident, thus the students who had a good height less risk to be bullied. A bunch of evidence

shown school violence could significantly impact on adolescent health. This consequence could extend to mature [13].

The bullied students have faced health and psychology problems; they tend to fight with their peers higher 3.2 times than others. Besides, 'no best friends' group has a habit of fight higher 2.1 times than others. The students who had less attention from their parents could be bullied frequently [13]; the parents had not respected their children as well as had not known what they do in leisure time also increased bullied risk, respectively 2.1 times and 2 times.

4.3. Several factors related to thoughts of suicide among adolescents

According to WHO, suicide is one of the public health concerns, which is estimated to account for around 6% of all death cases among adolescents [14], especially among female adolescents. According to the research in the United States, the proportion of thoughts of suicide and suicide in female adolescents are extremely high (40% and 34% in turn). In our study, we had found the gender factor involved in thoughts of suicide, in which female students had thoughts of suicide twice as much as male peers. This result might explain that female adolescent is more vulnerable in psychological than male peers, hence when they face problems in daily, they tend to think negatively.

Furthermore, feelings of loneliness also substantially affect thoughts of suicide [15], [16]. According to Ariel Stravynski, there were strong associations among suicide ideation, parasuicide and different ways of being lonely and alone [16]. Similarly, our study observed that adolescents feeling lonely would lead to thoughts of suicide higher 5.5 times than optimists. (Table 3)

Harmful behaviours such as smoking and alcohol use also have a great impact on thoughts of suicide ($p < 0.05$) and vice versa. Smoking students were 4.2 times more thoughts of suicide than students who did not. In addition, students who drank alcohol also had 2.6 times more thoughts of suicide. Both of these two habits interact with each other (table 3) and adversely affect the way of thinking and behaving of students who are easily imitated by bad behaviours from adults. Therefore, the role of school and family is very important in orienting students and helping students avoid bad behaviours.

Last but not least, the family plays a massive role in the adolescent's thinking. Suppose parents do not respect their children and do not know what

they do in leisure time, the thoughts of suicide higher 2.1 times than others. Thus, thoughts of suicide were considerably declined base on support from family and friends.

5. CONCLUSION

The proportion of overweight-obesity adolescents accounted for 14.6%. The prevalence of adolescent bullying is 14.0%, the higher adolescent high, the lower the risk of bullying (OR = 0.981, CI 95%: 0.964-0.998, $p = 0.030$). The proportion of smoking was low (2.8%), while the alcohol used rate accounted for 10.0%. Adolescents in high school have a high risk of smoking and alcohol use than adolescents in secondary school. The proportion of adolescents who attempted suicide was slightly high (16.0%). Adolescents who felt lonely, whose parents does not know what the adolescent did in free time and does not respect them were several factors that increase

the suicide intention. Student's thinking was significantly affected by school and family. Without being attention, adolescents may feel lonely and be being bullied by peer. Therefore, parents and school should take more attention to adolescents.

6. RECOMMENDATION

Parents should enhance their role in taking care of their children especially give more attention when the child faces difficulties and in their free time. Schools should monitor and have effective solution to the violent behaviour that occurs in the school environment. Develop a closed connection between school and student's family to build healthy eating behaviours and diets, also enhance physical activity for students. Governments need to take more effective measures to enforce the laws prohibiting the sale of tobacco and alcohol products to the ones under 18 years old.

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