Comparative Study of Risk Profiles for Non-Communicable Diseases in Urban and Suburb Adolescents in Padang City (Indonesia)

Meri Neherta*1, Yonrizal Nurdin1

1Department of Pediatric and Maternity Nursing, Faculty of Nursing, Universitas Andalas, Padang, Indonesia; 2Department of Psychiatric and Community Nursing, Faculty of Nursing, Universitas Andalas, Padang, Indonesia

Abstract

BACKGROUND: Adolescence is when we still like to experiment and often develop bad habits which may lead to non-communicable diseases (NCDs) in the future.

AIM: This study aimed to understand the lifestyle at risk of NCDs in adolescents that live in the urban and rural areas of Padang city.

METHODS: This research method is comparative descriptive with a descriptive analytical approach, with a total sample of 788 people. The study was conducted from March 2019 to November 2019.

RESULTS: Based on the research, it was found that there was a risk behavior for non communicable diseases in adolescents. The data shows that about 57.77% of respondents in urban areas and 69.54% of respondents in rural areas like to eat junk food. 45.35% urban respondents and 60.21% rural respondents like to consume high-sweetened beverages. 73.4% of urban respondents and 7.6% of rural respondents like to smoke. About 80.6% of urban respondents and 87.8% of rural respondents lack physical activity. About 59.9% of urban respondents and 49.05% of rural respondents dislike exercising. About 67% of urban respondents and 80.2% of rural respondents sleep late at night.

CONCLUSIONS: The risk behavior of NCDs in rural adolescents is higher than in urban adolescents. It is recommended that parents, teachers, and health workers work together to carry out intervention activities for healthy lifestyles for all adolescents.

Introduction

Changes in diet and lifestyle among adolescents occurred in big cities, making them vulnerable to being the sufferer of non-communicable diseases (NCDs) in their future lives [1].

The increase in NCD prevalence is related to lifestyle [2], including smoking, consumption of alcoholic beverages [3], physical activity, and consumption of fruit and vegetables. Evidence based, since 2013, the prevalence of smoking in adolescents (aged 10–18 years) has continued to increase, namely, 7.2%, data on the proportion of alcoholic beverage consumption have also increased from 3% to 3.3%. Likewise, the proportion of less physical activity also increased from 26.1% to 33.5%. Another thing is that the proportion of less fruit and vegetable consumption in the population is still very problematic, which is 9.1% [4].

Materials and Methods

This research is a comparative descriptive study with a descriptive analytical approach conducted in Padang (West Sumatera Province) from March to November 2019, with a total sample of 788 people. The data were taken using a questionnaire to determine the lifestyle of adolescents. The data are processed with the help of computerization. This research has passed the ethical test on the Research Ethics Committee Team, Faculty of Medicine, Andalas University dated July 1, 2019, No; 199/KEP/FK/2019.

Results

Data collection was assisted directly by 20 enumerators who had been trained by the researchers 1 week before the study was conducted. Before taking the data, all respondents were asked for their consent by signing an informed consent form. Most of the respondents were 17 years old, and most of them were female.

From Table 1, it is known that:

1. The number of adolescents who have the habit of eating fast food types of sausages, pizzas, boiled noodles, fried noodles, French fries, and KFC/CFC in urban areas is 51.93%, while in
Table 1: Frequency distribution of food habits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Urban area</th>
<th>%</th>
<th>Suburb area</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast foods/junk foods</td>
<td>Never</td>
<td>189</td>
<td>48.07</td>
<td>135</td>
<td>34.28</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>205</td>
<td>51.93</td>
<td>259</td>
<td>65.72</td>
</tr>
<tr>
<td>High-fat foods</td>
<td>Never</td>
<td>210</td>
<td>53.37</td>
<td>176</td>
<td>44.76</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>184</td>
<td>46.63</td>
<td>219</td>
<td>55.24</td>
</tr>
<tr>
<td>Snacks</td>
<td>Never</td>
<td>172</td>
<td>43.65</td>
<td>96</td>
<td>24.7</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>222</td>
<td>56.35</td>
<td>298</td>
<td>75.3</td>
</tr>
<tr>
<td>Street fried foods</td>
<td>Never</td>
<td>109</td>
<td>27.55</td>
<td>66</td>
<td>16.25</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>285</td>
<td>72.45</td>
<td>330</td>
<td>83.75</td>
</tr>
<tr>
<td>Grilled foods</td>
<td>Never</td>
<td>152</td>
<td>38</td>
<td>131</td>
<td>30.8</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>242</td>
<td>62</td>
<td>263</td>
<td>69.2</td>
</tr>
<tr>
<td>MEAN</td>
<td>Never</td>
<td>166.4</td>
<td>42.23</td>
<td>120</td>
<td>30.46</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>227.6</td>
<td>57.77</td>
<td>274</td>
<td>69.54</td>
</tr>
</tbody>
</table>

2. The habit of eating high-fat foods such as meatballs, combed beef, and nuggets is admitted by 46.3% of respondents in urban areas, while in the suburbs is 55.24%.

3. The number of respondents accustomed to eating snacks such as crackers, French fries, and chips is 53.7% in the urban areas, while in the suburbs is 75%.

4. The habit of eating fried street food, such as fried tempeh, fried banana, bakwan (fried flour mix with vegetables), and fried tofu by respondents in urban areas, is 72.45%, while the respondents in the suburb areas are 83.75%.

5. The habit of consuming roasted foods (roasted fish, roasted corn, and roasted chicken) in urban areas is 62%, while in the suburban areas is 69%.

From Table 2, it is known that: (1) The respondents who never eat vegetables in urban areas are 6.3%, while in the suburbs are 1.8%. (2) The respondents who never consume fruits in urban areas are 9.9%, while in the suburbs are 4.8%.

Table 2: Frequency distribution of vegetable and fruit eating habits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Urban area</th>
<th>%</th>
<th>Suburb area</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating vegetables</td>
<td>Never</td>
<td>25</td>
<td>6.3</td>
<td>7</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>369</td>
<td>92.7</td>
<td>387</td>
<td>98.3</td>
</tr>
<tr>
<td>Eating fruits</td>
<td>Never</td>
<td>39</td>
<td>9.9</td>
<td>19</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>355</td>
<td>90.1</td>
<td>375</td>
<td>95.2</td>
</tr>
</tbody>
</table>

From Table 3, it is known that respondents who used to drink high-sweetened beverages in the type of soft drinks (carbonated and non-carbonated), instant powder drinks, and instant brewed drinks in urban areas are 45.35%, while in the suburbs are 60.21%.

Table 3: Frequency distribution of drinks of respondents at risk for suffering from NCDs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Urban area</th>
<th>%</th>
<th>Suburb area</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink high-sweetened drinks</td>
<td>Never</td>
<td>215</td>
<td>54.65</td>
<td>157</td>
<td>39.79</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>179</td>
<td>45.35</td>
<td>237</td>
<td>60.21</td>
</tr>
</tbody>
</table>

1. In urban areas, respondents with smoking habits are 73.4%, while in the suburbs are 7.6%.
2. In urban areas, respondents with a lack of physical activity as much as 80.6%, while in the suburbs, are 87.8%.

3. In urban areas, respondents with a lack of physical exercise habits are as much as 59.9%. Meanwhile, the suburb respondents are 49.05%.
4. About 67% of respondents in urban areas have the habit of sleeping late at night (later than 10 PM), while in the suburbs are 80.2%.

Discussion

This research was conducted in Padang (West Sumatera, Indonesia) from March to November 2019 (9 months). Respondents who participated in the study were adolescents (junior and high school students) who lived in the urban areas (394 people) and the suburbs area (394 people), so the total number of respondents was 788 people. Viewed from the gender characteristics, female is the majority of the respondents, both from the urban areas (59%) and suburbs areas (61.7%).

Afterward, when viewed from the age characteristics, the respondents from urban areas are mostly 14 years old (38.8%), and 29.2% are 17 years old. Respondents from the suburbs are predominantly 17 years old (35%), while 27.7% are 14 years old.

Adolescents lifestyle in urban and suburb of Padang.

Breakfast habits

From Table 2, the number of respondents who never eat breakfast is higher in the urban areas (7.4%) than respondents who are in the suburbs areas (6.3%). This study shows that there are a few respondents who do not eat breakfast. However, despite the small number, that they exist should raise a concern.

The benefit obtained from breakfast is that it lowers the risk of diabetes and heart disease. Breakfast can also make us more focused and productive in school because the stomach is full [5]. Not having breakfast makes it difficult for the body to meet daily needs for vitamins and nutrients. Research shows that people who eat breakfast are more likely to meet their overall nutritional needs for fiber, calcium, Vitamins A, B, and C, and other essential nutrients [6], [7].

Junk food eating habits

This study shows that both respondents in the urban and suburban areas consume a lot of junk food. Harmful substances mainly caused the destructive impact of junk food such as a wax coating in instant noodles [8]. Not only that, fast food contains...
preservatives and various types of flavoring, such as MSG. If consumed too often will endanger health and cause various diseases, such as cancer, stroke, and kidney stones [9].

**Habits of eating vegetables and fruits**

Some respondents never eat vegetables and fruit. The lack of vegetables and fruit consumption is one cause of the increase in NCDs in Indonesia in recent years [10]. Fruits and vegetables contain Vitamins A, C, and E, folic acid, zinc, magnesium, potassium, and calcium that the body needs [11]. Then, fruits and vegetables contain antioxidants, fiber, and fluids. Fiber helps slow the absorption of sugar in the body. Fiber also regulates the sugar levels in the body, preventing excessive levels and maintaining them not to decrease drastically [12].

**The habit of drinking sugary and high-sweetened drinks**

From Table 4, in general, it can be seen that all respondents, both in the urban and suburban areas, consume a lot of high-sweetened beverages. Consumption of sweet drinks is very detrimental to the health of the human body [13], [14]. The harmful impact of high sweeteners is that they can gain weight and lead to obesity. A 20-year study of 120,000 men and women, published in the New England Journal of Medicine, found that people who increased their consumption of sugar-sweetened beverages to even one serving per day increased their risk of weight gain overtime [15]. Significant weight gain can be seen in 4 years after an individual increase their intake of sugary drinks [16]. Consuming too much sugar, one-fifth of the daily calories will be harmful to health, obesity, diabetes mellitus can occur and increase the risk of heart disease twice [17], [18].

**Table 4: Frequency distribution of respondents’ risk behavior for suffering from NCDs**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Urban area</th>
<th>Suburb area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T</td>
<td>%</td>
</tr>
<tr>
<td>Smoking</td>
<td>Never</td>
<td>105</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>289</td>
<td>73.4</td>
</tr>
<tr>
<td>Lack of physical activity</td>
<td>No</td>
<td>76</td>
<td>19.4</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>318</td>
<td>80.6</td>
</tr>
<tr>
<td>Physical exercise</td>
<td>Never</td>
<td>236</td>
<td>59.9</td>
</tr>
<tr>
<td></td>
<td>Often</td>
<td>158</td>
<td>40.1</td>
</tr>
<tr>
<td>Sleep late</td>
<td>No risk of stress</td>
<td>130</td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td>Risk of stress</td>
<td>264</td>
<td>67</td>
</tr>
</tbody>
</table>

NCDs: Non-communicable diseases.

**Smoking habit**

Smoking habits in respondents who are in the urban areas (73.4%) are higher than those in the suburbs. Cigarettes are undoubtfully dangerous. Sixty of the chemicals in cigarettes can cause cancer [19]. Some of the most hazardous materials in a cigarette are carbon monoxide, tar gas oxidant, and benzene [20]. In addition to the ingredients above, there are still many toxic chemical substances in a cigarette, such as arsenic (used in pesticides), formalin or formaldehyde (used to preserve corpses), hydrogen cyanide (used to make chemical weapons), ammonia [21], and other chemicals [22]. The content of all these chemicals can degrade the health of the brain, mouth, throat, lungs, stomach, bones, skin, and reproductive organs, and can lead to cardiovascular and psychological disorders [23].

**Lack of physical activity and exercise habits**

Lack of physical activity is a risk factor for chronic disease, and overall, can cause death [24]. Regular physical activities and exercises will provide good benefits for the body, such as improving reproduction, heart health, physical immunity, fitness, reducing the risk of cancer, and many other benefits [25], [26]. Physical activity can maintain the brain’s blood level and increase the supply of nutrients to the brain. In addition, physical activity can also facilitate the metabolism of neurotransmitters, triggering changes in molecular and cellular activities that support and maintain brain plasticity [27].

**Habit of sleeping late at night**

Typically, adequate sleep time is between 7 and 8 h a day. Sleeping less than 6 h a day causes the body to release more stress hormones and cortisol. Cortisol in large quantities will result in collagen and protein substances breakdown in the skin [28]. Lack of sleep makes the body secrete less growth hormone, even though this hormone is needed at the time of growth. These hormones can help increase muscle mass, thicken skin, and strengthen bones [29]. Growth hormone is only produced during sleep in a calm, comfortable, and deep sleep. In addition to having an impact on physical health, lack of sleep also causes psychological disorders [30]. People with insomnia symptoms have a higher risk of hypertension [31]. In addition to hypertension, the dangers of sleeping late at night can also cause very deadly diseases, such as heart disease and stroke [32].

**Conclusions and Suggestions**

Respondents, both in the urban and in the suburbs of Padang, are at risk of suffering from NCDs. However, in general, the percentage of adolescents living in the suburbs is higher than in urban areas. It is recommended that local governments, especially health workers, intervene in health education on healthy lifestyles comprehensively to the community.
Acknowledgment

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PMid:26619095


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PMid:24468205

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PMid:26045526

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