



Matrix Coding of Hypertension Prevention Behavior of Students in Semarang City

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Abstract

Hypertension or high blood pressure is a serious medical condition that significantly increases the risk of heart attack, kidney failure, and blindness. Hypertension is one of the causes of premature death in the worldwide. 34.1% of Indonesian adults aged 18 years and over are affected by hypertension. The purpose of this study is to describe the results of matrix coding of hypertension prevention behavior of students in Semarang city. This research is a descriptive qualitative research. The data were obtained by in-depth interviews with 25 sources using purposive sampling technique. The data analysis used qualitative analysis using the NVivo 12 Plus application that was presented in the form of matrix coding which was then described. The results showed that hypertension prevention behavior carried out by students in Semarang City by doing: 1) limiting high-fat foods, 2) reducing excess salt consumption, 3) reducing trans fats, 4) consuming balanced vegetables and fruits, 5) avoiding cigarettes, and 6) do sports and physical activity. Moreover, there are still things that are not known by students in preventing hypertension, such as consuming alcohol which can actually increase the risk of hypertension.

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INTRODUCTION

Hypertension continues showing an increasing number every year. Data from the World Health Organization (WHO) shows that around 1.13 billion people in the world have hypertension, it means that 1 of 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people with hypertension, and it is estimated that every year 10.44 million people die due to hypertension and its complications (Ministry of Health, 2019). From the 2018 *Riskesdas (Riset Kesehatan Dasar r/ Basic Health Research)* data, 34.1% of Indonesian adults aged 18 years and over have hypertension. This figure has increased by 7.6% from the results of *Riskesdas 2013* which is 26.5 percent. Meanwhile, the prevalence of hypertension in the 18-39 year age group has reached 7.3% and the prevalence of prehypertension in this age group has reached a fairly high number, which is 23.4% (Ministry of Health, 2018).

Hypertension is a major risk factor for cardiovascular disease and it causes many deaths (Dorans et al., 2018). Hypertension is one of the non-communicable diseases that can be prevented. The prevalence of hypertension is currently increasing (Kurniati et al, 2012).

Quoted from the CNN (Cable News Network) Indonesia website, hypertension can happen to anyone, including those who are young (CNN Indonesia, 2019). Research conducted on students in Kuwait found that 39.5% of students had prehypertension and 7% of students had hypertension, with the overall proportion of hypertension and prehypertension being high in male students of 85.7% and 64.4% (Al- Majed & Sadek, 2012).

In line with the research conducted by Santoso (2013), the data obtained from 31 samples of students there were 9.3% have the opportunity to experience hypertension with the prevalence of hypertension which tends to continue to increase around 15.2% in the young age (Santoso, 2013). The research conducted by Nisa (2015) has results of the study showing that the description of the risk of experiencing hypertension in students for the

next 1 year and the risk of hypertension for the next 4 years is high, amounting to 93.8 percent (Nisa, 2015).

The several studies on the prevalence of hypertension in students and college students show varying numbers. In a study conducted by Dilajaya Robin et al (2017) of 127 research samples on medical students, 2.4% had hypertension (Dilajaya Robin et al., 2017). The latest research conducted by AlWabel et al (2018) stated that the prevalence of hypertension was found to be 29.2% in university students, this figure shows that there is high prehypertension and hypertension among young people, most of which are undiagnosed cases (AlWabel et al., 2018).

The previous research stated that for people with hypertension, behavioral and environmental factors are related to the prevention and control of blood pressure (Riyadina et al., 2019). The research conducted by Kurniati et al (2012) states that lack of exercise, lack of knowledge, lack of information, lack of facilities and infrastructure and lack of information from families and medical personnel are factors related to the occurrence of hypertension (Kurniati et al, 2012).

Semarang city as the capital city of Central Java Province has 64 colleges consisting of universities, high schools, polytechnics / polytechnics and academies. This number is a list of Semarang City having many universities compared to other regencies in Central Java Province (Wikipedia, 2019). From a preliminary study conducted in the city of Semarang, it was found that about 20% of hypertension suffered by those who were young or still in student status.

METHOD

This type of research is qualitative with the presentation of data using a descriptive pattern. Qualitative research with descriptive method was carried out aimed at systematically describing the facts and characteristics of the research subject using 25 respondents obtained by purposive sampling technique. The method of selecting respondents in this study is based on the principle of conformity and the principle of adequacy. In this study, the respondents consisted of students who

were taken to represent 5 major campuses in the city of Semarang.

The instrument in this study was the researcher himself, assisted by a voice recorder and interview guide. Interview guidelines were used so that the interview process during research did not deviate from the research objectives and the data obtained were in accordance with what was expected.

The data collection techniques in this study by means of observation and interviews. The observations were made by looking at and following the object of research and observing the activities carried out by respondents during the research process. Interviews were conducted by researchers in the form of semi-structured interviews that aim to collect complete information, which contains the opinions, attitudes and experiences of respondents to the object under study.

The primary data source of this study is the result of interviews and observations of respondents, and triangulation is carried out by matching data from respondents and conducting observations and interviews with respondents.

The research procedure consisted of pre-research, research process, and post-research stages. Activities carried out at the pre-research stage were preparing a voice recorder and preparing interview guidelines. The stage of the research process in which the researcher conducts direct observations of student activities around the campus and conducts interviews with respondents. The last stage is post-research, at this stage after the research has been completed includes recording and tidying up the interview recordings of data that have been obtained during the research which is then followed by the data processing and data analysis process.

The data processing in this study was carried out using the NVivo 12 Plus qualitative data analysis application. Where the process consists of inputting the data that has been obtained during the research into the NVivo 12 Plus software, then creating a node or theme from the data that has been collected, then coding by inputting it into the appropriate node, after coding then making data visualization from the results of data analysis. with matrix coding that has been inputted into the NVivo 12 Plus software and the last is to interpret the

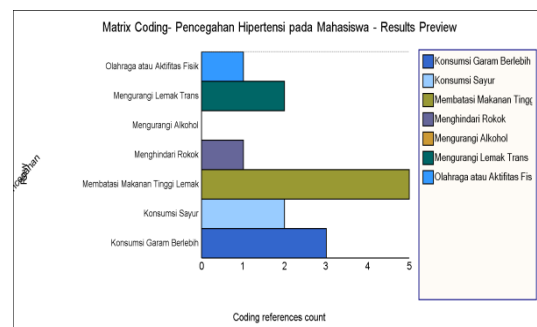
results of the data obtained from the results of the analysis into written form descriptively.

The last stage is to conduct a conclusion examination. Conclusions are drawn by comparing the research questions with the research results that have been obtained.

RESULTS AND DISCUSSION

Based on the results of research with Matrix Coding using NVivo 12 Plus qualitative analysis software, the following results were obtained:

Matrix coding can show the results of the meeting of the results of the coding between codes or to see the connection between codes or concepts. The requirement to be able to do matrix coding on Nvivo is that there are sentences or paragraphs that have been coded on several nodes or themes. From the results of the analysis that has been carried out, the results of the matrix coding show that the hypertension prevention behavior carried out by students in the city of Semarang is related to the prevention of hypertension with the things that must be done in preventing the occurrence of hypertension. However, a major finding from the analysis found that college students did not link reducing alcohol consumption to the incidence of hypertension. However, most students know the relationship between the incidence of hypertension by limiting high-fat foods.



1. Limiting High-Fat Foods

Based on the results of data analysis shown in the matrix diagram above, it appears that the phenomenon of hypertension prevention carried out by students in the city of Semarang knows or has a view on preventing hypertension by limiting high-fat foods. One respondent (R9) stated:

"Maybe it's like the fatty one, the meat is the same, because my mother sometimes has high blood pressure because she's not allowed to eat meat."

The same statement was also conveyed by other respondents (R6):

"I've heard that there are some precautions like it's not recommended to eat foods that are not recommended, usually goats, he said"

This statement is in accordance with research which states that there is a relationship between the habit of consuming high-fat foods with an increase in blood pressure with $p = 0.041$ and $OR = 1.987$ (95% CI: 1.074-3.677) (Mardani et al., 2011). Another study showed a significant value to the analysis of the relationship between the habit of consuming fat and blood pressure, it was found that $p = 0.041$ and $OR = 1.987$ (95% CI: 1.074-3.677) (Mardani et al., 2011).

In another qualitative study, it was stated that fat consumption was a factor in the occurrence of hypertension in young adults (Julianty Pradono, 2013). The latest research conducted by Wijaya et al which states that there is a relationship between the habit of consuming fatty foods with the incidence of hypertension with a p value = 0.000 (Wijaya et al., 2019).

From the results of the analysis and supported by the results of previous studies which show a relationship between the incidence of hypertension and the consumption of high-fat foods, it shows that students in Semarang City know that one of the preventions in preventing hypertension is to limit the consumption of high-fat foods. This can be influenced by the knowledge and family experience of the students themselves that consuming high-fat foods can cause hypertension.

2. Excessive Salt Consumption

In the results of the matrix study, the second percentage of hypertension prevention was occupied by excessive salt consumption. This shows that students in the city of Semarang have the view that consuming excess salt can cause hypertension. Respondents mentioned:

R2 *"As far as I know, it's because the food is salty, right?"*

R9 *"...maybe it's also Garem, he said if you eat too much Garem it can also increase your blood pressure"*

This is in line with previous research which states that there is a relationship between excessive

salt consumption and the incidence of hypertension with a value (p value = 0.004, $OR = 5.675$) (Agustina & Raharjo, 2015). The another study also stated that there was a relationship between sodium intake and the incidence of hypertension with p value = 0.000 (A et al., 2016).

The research in 2017 in Spain mentioned a study consisting of 1,263 people and 24.3% had a risk of high blood pressure, the results of the study stated that a statistically significant relationship was observed between high salt intake and risk of high blood pressure with a 95% confidence interval at the consumption level of 11g. /day and more it is estimated that 4.7% (95% CI 4.2-5.2) of the risk of high blood pressure can be attributed to excess salt consumption (Domínguez Cancino & Paredes Escobar, 2017). Recent research suggests that higher salt consumption may be associated with higher systolic blood pressure (Jensen et al., 2018).

The opinions from students who say that consuming excessive salt can cause hypertension and how to prevent it is by limiting excessive salt consumption, this can be influenced by the knowledge factor of the student.

3. Reduce Trans Fat

The results of the third matrix analysis state that students have a view that consuming the trans fats can cause hypertension and a way to prevent hypertension is to reduce the consumption of foods that contain trans fats. One respondent said R8 *"...do not consume foods that are too fatty or oily"* this indicates that students know that foods that contain too much oil and fat are one of the causes of hypertension and the way to prevent it is by limiting the consumption of these foods.

This is in line with previous research which states that the consumption of trans fat foods that come from consuming excess oil or oil that has been used many times (cooking) can also cause hypertension with the results of the study (p value = 0.009, $OR = 4.929$) (Agustina & Raharjo, 2015). Consuming lower saturated fat and increasing the antioxidant capacity of food can be very beneficial and important in combating the problem of hypertension (Ortega Anta et al., 2016).

The another study stated that consuming excess salty food was associated with the incidence of hypertension ($AOR=3.08$ 95% CI: 1.17-8.09) (Widyartha et al., 2016), excess sodium intake

(OR=14.752; 95%CI). = 1.58-137.53; $p = 0.018$) associated with the incidence of hypertension (Bintari Fajar Kurnianingtyas, Suyatno, 2019). In line with the results of research conducted by Estruch et al (2020) reduction of calorie density, salt, added sugar, saturated fat and trans fat is important to reduce the risk associated with chronic disease (Estruch et al., 2020).

4. Vegetable Consumption

The results of the fourth matrix analysis show that students know or have a view that consuming vegetables can prevent hypertension. One of the respondents said that R8 "*.. balance the food by eating vegetables and fruit*". This shows that students have knowledge of preventing hypertension, one of which is by increasing the consumption of vegetables and fruit.

This is in line with previous research which states that the application of a diet rich in plant foods such as vegetables and whole grains as well as low-fat milk and sodium intake within normal limits can be effective in preventing hypertension (Ozemek et al., 2018). Other studies also mention that a poor diet with lack of consumption of vegetables and fruit is associated with the incidence of hypertension ($p\ 0.032 < 0.05$) (Awaluddin et al., 2018).

5. Avoid Smoking

The results of the fifth matrix show that students have knowledge or views on preventing hypertension by avoiding smoking. This was conveyed by one of the respondents who said that R6 "*I've heard that there are several precautions such as not advised to consume foods that are not recommended, usually goats, but don't know much about it, don't smoke, keep exercising regularly, healthy lifestyle like that*".

In line with the results of previous studies which stated that there was a relationship between smoking habits and the incidence of hypertension with a value ($p\ value = 0.017$, OR = 6.0) (Agustina & Raharjo, 2015). Passive smoking increases the risk approximately double the OR 1.99 with a 95% confidence interval (Li et al., 2015)

This opinion is in line with previous research which states that the variable associated with hypertension is smoking behavior with a value ($p = 0.000$) (A. Syahri Ainun, MS, Dian Sidik Arsyad, 2012). A study in China stated that there was a

significant relationship between passive smoking and the incidence of hypertension with an OR value of 26.3% (Wu et al., 2017). In a study conducted on students in Japan, it was stated that special attention to smoking and alcohol consumption was needed, especially in male subjects because hypertension was strongly associated with it (Kawabe et al., 2019).

6. Sports and Physical Activity

The results of the sixth analysis show that students in Semarang have a view of preventing hypertension by exercising and maintaining physical activity. One of the respondents mentioned R1 "*the way is to do sports so you don't get stressed*". This shows that student has knowledge of how to prevent hypertension by exercising.

This is in line with previous research which states that there is a relationship between not exercising regularly or lack of physical activity with the incidence of hypertension with a value ($p = 0.004$) (Ramdhani et al., 2013). This is also in line with other studies which state that lack of physical activity or exercise is associated with the incidence of hypertension (AOR=3.53, 95% CI 1.38-9.01) (Widiyartha et al., 2016).

The latest research mentions the results of previous studies which state that lack of exercise or physical activity that can cause obesity or obesity is one of the factors that can cause hypertension with a value ($p\text{-value} = 0.018$) significantly associated with the incidence of hypertension ($p\text{-value} < 0.05$) (Arum, 2019).

7. Reduce Alcohol

The results of the last matrix analysis show that students do not have knowledge or views on reducing alcohol to preventing hypertension with a percentage value of 0%. This shows that students do not know that one way to prevent hypertension is to reduce alcohol consumption.

In previous studies, it was stated that alcohol consumption was associated with the incidence of hypertension with a value ($p = 0.002$) (A. Syahri Ainun, MS, Dian Sidik Arsyad, 2012). High alcohol use requires a careful history of alcohol in hypertensive patients with increased blood pressure, early intervention for excess alcohol use will help reduce blood pressure and the risk of cardiovascular disease (Puddey et al., 2019).

CONCLUSION

Based on the results of research that has been carried out, it can be concluded that hypertension prevention behavior carried out by students in Semarang City is to do, among others: 1) limit high-fat foods, 2) reduce excessive salt consumption, 3) reduce trans fat, 4) consume vegetables and balanced fruit, 5) avoid smoking, and 6) do sports and physical activity. Even so, there are still things that are not known by students in preventing hypertension, such as consuming alcohol which can actually increase the risk of hypertension.

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