

The Effect of Crossword Media Counseling on the Knowledge of Class X Students in Kota Padang About Obesity and Body Weight

Deni Maisa Putra^{1*}, Devid Leonard², Muhammad Al-Ashari³, & Aulia Syahrani⁴

¹STIKES Dharma Landbouw Padang, Indonesia, ²STIKES Dharma Landbouw Padang, Indonesia,

³STIKES Dharma Landbouw Padang, Indonesia, ⁴Politeknik Kesehatan Kementerian Kesehatan Padang, Indonesia

*Co e-mail: denimaisaputra@gmail.com¹

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ABSTRACT

Obesity and overweight have rapidly grown as a public health problem worldwide, including in Indonesia. The prevalence of overweight and obesity among Indonesian children and adolescents has also increased significantly in recent years (Maulina, 2022). This suggests that better interventions and prevention are needed to address this issue, especially for students (Susanti & Legal and Public Relations Working Team, 2019). All countries, including Indonesia, face the problem of being overweight, or overweight, and overweight, or obesity. Based on data from the Global Nutrition Report, 10% of the adult population in Indonesia is overweight, and 2% is obese (WHO, 2007). Therefore, this study aims to fill the knowledge gap by investigating the effect of counseling using crossword media on students' knowledge and attitudes about overweight and obesity. This study involved 48 grade X students who were overweight or obese. The sample was drawn from the entire overweight and obese population. Results showed that grade X students in Padang City had significant knowledge about overweight and obesity before and after counseling without using crossword media ($p=0.000$). In addition, there was a significant difference between students' knowledge on this topic before and after counseling using crossword media ($p=0.000$). According to the study, the use of crossword media has a significant effect on increasing students' knowledge. Therefore, it is recommended that students continue to use this media in instructional or learning activities at school.

Keywords: Crossword, Media Counseling, Knowledge



INTRODUCTION

Overweight and obesity have become global health problems that are increasing rapidly, including in Indonesia. The prevalence of overweight and obesity among Indonesian children and adolescents has also increased significantly in recent years (Maulina, 2022). This indicates the need for more effective prevention and intervention efforts to overcome this problem, especially among students (Susanti & Legal and Public Relations Working Team, 2019).

Throughout the world, the problem of being overweight, or overweight, or obesity, is affecting many countries, including Indonesia. According to the Global Nutrition Report, 10% of adults in Indonesia are overweight, and another 2% are obese (WHO, 2007). Modern lifestyles, which involve excessive energy consumption and insufficient physical activity, have led to an increase in the number of obese and overweight people in society. The terms "overweight" and "obese" are two terms often used to denote someone who is overweight. In fact, these words have different meanings. Obesity is a medical condition characterized by excessive accumulation of fatty tissue in the body. Overweight, on the other hand, is excess body weight compared to the ideal weight, which can be caused by the accumulation of fatty or non-fatty tissue. An imbalance between energy consumed and expended causes obesity and overweight. Due to changes in transportation modes and the increasing need for work, people today consume more foods that contain high energy, such as fat and sugar. On the other hand, there is a decrease in physical activity (Budiyanto, A K., 2002).

To find out whether someone is overweight or obese, they can measure their body mass index (BMI). BMI is calculated by dividing body weight in kilograms by the square of height in meters. One of the indicators most often used to measure the number of adults who are obese or overweight is body mass index. According to the Asia-Pacific criteria for Body Mass Index (BMI) classification, a person is considered overweight if the BMI is between 23 and 24.9, and a person is considered obese if the BMI is more than 25. According to the Indonesian Ministry of Health, a person is considered overweight if the BMI is more than 25 and obesity if BMI is more than 27 (Indonesian Ministry of Health, 2013).

Several factors can influence BMI, namely: (1) age, the prevalence of obesity increases gradually from the age of 20 to 60 years, and a decline begins to occur after the age of 60 years (2) gender, men are more obese than women, and fat distribution The body also differs in men and women (3) Genetically, some studies show that genes can influence the level of visceral obesity. A study shows that parents who are obese have children who are most often obese (4) Fast food diets also contribute to the obesity epidemic. Many families consume ready-to-eat foods that are high in fat and sugar, which is another factor that causes obesity to increase. Larger meal portions are also another factor that causes obesity to increase. The amount of physical activity has decreased significantly over the last fifty years as a result of the increased use of household aids, transportation, and recreation, as well as the use of machines in manual work Asil et al. (2014).

One of the best ways to prevent people from becoming fat or obese is to provide health education. Interesting and interactive health education media are still relatively limited. Crossword puzzles are one of the media that can be used in health education. Crossword puzzles are not only entertaining, but can also be an effective tool for conveying health information in an interesting and easy to understand way (Khoirunnisa & Kurniasari, 2022).

Crosswords can make information more interesting and easy to understand by using animation and sound. They can also allow users to have a more interactive experience. This can help

reduce ignorance and lower the risk of obesity and obesity. The use of crossword puzzles in health education can also reduce the costs required because this tool is cheaper and easier to access compared to other media such as television or radio (Kardi & Kurniasari, 2022).

Previous research shows that the crossword media approach has been used successfully in various health education contexts and has had a positive impact on people's knowledge and attitudes about certain health problems (Hasanah, 2019). However, there has been no research that specifically evaluates the impact of education using crossword media on students' perceptions and knowledge about obesity and obesity in Indonesia. Crosswords can make information more interesting and easy to understand by using animation and sound. They can also allow users to have a more interactive experience. This can help reduce the risk of obesity and obesity as well as lack of information (Kardi & Kurniasari, 2022). The use of crossword puzzles in health education can also reduce the costs required, as a tool that is cheaper and easier to access compared to other media such as television or radio (Zainuddin, 2017).

Therefore, this study aims to fill the knowledge gap by investigating how counseling using crossword media influences students' knowledge and perceptions about obesity and overweight. It is hoped that the results of this research will provide a better understanding of how effective this method is in increasing students' understanding and perception of the problem of obesity and overweight and provide a basis for development.

METHODS

By using a quasi-experimental research design, this study did not use randomization to select subjects for research. However, the results are quite significant from both internal and external points of view. The research sample was divided into two groups: experimental and control. Before data collection, known as a pretest, and after data collection, known as a posttest, both are carried out to see how knowledge changes before and after counseling. This is done using and without using crossword media.

The population in this study was all 48 class X students who were overweight and obese. Sampling was carried out using a total sampling technique, namely taking the entire sample from the existing overweight and obese population.

Univariate analysis aims to explain or describe the characteristics of each research variable and a description of knowledge before and after being given counseling about overweight and obesity which is presented using a frequency distribution table.

To analyze differences in knowledge about obesity and obesity before and after providing education, two statistical tests, Dependent t for one group and Independent t for two groups, were used, with a confidence level of 95%, for normally distributed data, and the Wilcoxon test for non-distributed data normal.



RESULTS

1. Univariate Analysis

a. The average Value of Students' Knowledge Level Before and After Counseling Without Using Crossword Puzzles

Table 1. of Student Distribution based on Level of Knowledge Before and After Counseling Without Using Crossword Media

Knowledge	Before	Percentage (%)	After	Percentage (%)
Good	2	8.3	9	37.5
Enough	16	66.7	14	58.3
Not enough	6	25	1	4.2
Total	24	100	24	100

The table above presents the changes in students' level of knowledge before and after counseling without using crossword puzzle media. The total number of respondents was 24 students. Before the counseling, most students were in the "fair" category, totaling 16 students (66.7%), while only 2 students (8.3%) were in the "good" category, and 6 students (25%) were in the "poor" category. After the counseling, there was an improvement in students' knowledge levels. The number of students in the "good" category increased from 2 (8.3%) to 9 (37.5%). Meanwhile, the "fair" category slightly decreased from 16 (66.7%) to 14 (58.3%), and the "poor" category dropped significantly from 6 (25%) to only 1 (4.2%).

Table 2. of Average Student Knowledge Scores Before and After Counseling Without Using Crosswords

Knowledge	n	Mean	Min	Max	Elementary School
Before	24	65.55	46.67	86.67	9.95
After	24	75.27	53.33	93.33	9.72

The table above shows the comparison of students' average knowledge scores before and after counseling without using crossword puzzle media. The total number of respondents was 24 students. Before the counseling, the average knowledge score was 65.55, with the lowest score being 46.67 and the highest 86.67. After the counseling, the average score increased to 75.27, with a minimum score of 53.33 and a maximum of 93.33. The standard deviation (listed as "elementary school" in the table, likely referring to *standard deviation*) slightly decreased from 9.95 to 9.72, indicating that students' scores became more consistent after counseling.

b. The Average Value of Students' Knowledge Level Before and After Counseling Usin Crossword Puzzles

Table 3. of Student Distribution based on Level of Knowledge Before and After Counseling Using Crossword Media

Knowledge	Before	Percentage (%)	After	Percentage (%)
Good	2	8.3	19	79.2
Enough	16	66.7	5	20.8
Not enough	6	25	0	0
Total	24	100	24	100

The table above shows the distribution of students' knowledge levels before and after counseling using crossword puzzle media. The total number of respondents was 24 students. Before the counseling, most students were in the "fair" category, totaling 16 students (66.7%), while only 2 students (8.3%) were in the "good" category, and 6 students (25%) were in the "poor" category. After the counseling that utilized crossword media, there was a significant improvement in students' knowledge levels. The number of students in the "good" category increased drastically from 2 students (8.3%) to 19 students (79.2%). The "fair" category decreased from 16 students (66.7%) to 5 students (20.8%), and there were no students (0%) remaining in the "poor" category after counseling.

Table 4. of Average Student Knowledge Scores Before and After Counseling Using Crossword Puzzle Media

Knowledge	n	Mean	Min	Max	elementary school
Before	24	64.16	46.67	80.00	10.17
After	24	85.55	73.33	93.33	7.78

The table above presents the comparison of students' average knowledge scores before and after counseling using crossword puzzle media. The total number of respondents was 24 students. Before the counseling, the average knowledge score was 64.16, with the lowest score being 46.67 and the highest 80.00. After the counseling that utilized crossword media, the average score increased markedly to 85.55, with a minimum score of 73.33 and a maximum of 93.33. The standard deviation (listed as "elementary school" in the table, likely referring to *standard deviation*) decreased from 10.17 to 7.78, indicating that students' scores became more uniform after counseling.



2. Bivariate Analysis

a. Differences in the Average Value of Students' Knowledge Before and After Counseling Using And Without Using Crossword Media

Table 5. of Differences in Student Knowledge Before and After Counseling Using and Without Using Crossword Media

Treatment	Knowledge Analysis	n	Mean	Elementary School	pValue
Media	Before	24	64.16	10.17	0,000
	After	24	85.55	7.78	
No media	Before	24	65.55	9.95	0,000
	After	24	75.27	9.72	

The table above presents the comparison of students' knowledge scores before and after counseling, both using crossword puzzle media and without using crossword puzzle media. Each group consisted of 24 students. For the group using crossword media, the average knowledge score before counseling was 64.16 with a standard deviation of 10.17, and it increased to 85.55 after counseling, with a standard deviation of 7.78. The p-value = 0.000 indicates a statistically significant difference in students' knowledge scores before and after counseling with crossword media. This means that the crossword-based counseling had a significant positive impact on improving students' knowledge. In the group without using crossword media, the average score before counseling was 65.55 with a standard deviation of 9.95, and it increased to 75.27 after counseling, with a standard deviation of 9.72. Similarly, the p-value = 0.000 shows that there was also a significant improvement in students' knowledge even without the use of crossword media.

b. The Difference in Changes in the Average Value of Students' Knowledge Between Counseling Without Using Crossword Media and Using Crossword Media

Table 6. of Differences in Changes in Knowledge Between Extension Using and Without Crossword Media

Counseling	n	Mean	pValue
Media	24	33.85	0,000
No media	24	15.15	

The table above shows the comparison of changes (improvements) in students' knowledge scores between counseling using crossword puzzle media and without using crossword media. Each group consisted of 24 students. The group that received counseling using crossword media had an average increase in knowledge of 33.85 points, while the group that received counseling without crossword media had a smaller average increase of 15.15 points. The p-value = 0.000 indicates that

the difference in the improvement of knowledge between the two groups is statistically significant ($p < 0.05$).

DISCUSSION

1. The Average Value of Students' Knowledge Before and After Counseling Without Using Crossword Puzzles

The research results showed that students, before counseling without crossword media, had 8.3 percent good knowledge, 66.7 percent sufficient knowledge, and 25 percent poor knowledge. The average knowledge score is 65.55. This is caused by the fact that students do not understand and understand the material provided, including knowledge about obesity and ten messages about balanced nutrition (Purwanti, 2012).

Knowledge is the result of knowing something after sensing it. The five human senses consist of the senses of sight, hearing, smell, taste and touch, and most of the knowledge acquired by humans is obtained through the eyes and ears. Knowledge is very important for making decisions and deciding what to do about the problems faced (Faridah & So seeni, 2020).

After counseling, students' knowledge is better than before counseling because the information conveyed through nutrition counseling can be accepted and understood by students. Students can answer questions correctly even if they don't use crossword puzzles.

2. The Average Value of Students' Knowledge Before and After Counseling Using Crossword Puzzles

The research results showed that students, before counseling using crossword puzzles, had 8.3 percent good knowledge, 66.7 percent sufficient knowledge, and 25 percent poor knowledge, with an average knowledge score of 64.16. This is due to the fact that students do not understand and comprehend the content provided, which includes an understanding of obesity, the effects of obesity, and ten messages about balanced nutrition.

Armiation's study (2021) shows that teenage female students at the Darussalam Al-waliyyah Islamic Boarding School, Labuhan Haji Barat District, South Aceh Regency understand more about anemia (Janna et al., 2023; Yulianie, 2023). After counseling, the average knowledge score of the 92 participants was 7.96, but after counseling, the score increased to 17.18 (Yulianie, 2023). These results indicate that the majority of participants had poor knowledge before counseling (Yulianie, 2023).

Factors such as the lack of information students receive at school and the lack of special education about nutrition can lead to high school students' lack of understanding about nutrition and health. According to research conducted on high school students in Depok, 70.8% of teenagers spent their own money on snacks, and 54.2% had sodium intake that exceeded the nutritional adequacy rate (AKG) (Ikrima et al., 2023).

School principals can work with hospital nutritionists and physical education teachers to provide nutrition training. Additionally, parents can be asked to remind and encourage their children to eat a balanced diet, and students should be educated about nutrition. Health education is a category of health education activities that uses methods of providing information, education and experience through methods such as persuasion, persuasion, appeals, invitations and providing awareness through health education activities. Health education has the potential to increase



knowledge, attitudes and skills related to health, which can reduce health problems and the risk of disease (Citrawathi, 2014).

According to research by Notoatmodjo (2007b), audiovisual media and health education approaches can also contribute to increasing knowledge in health education (Utari et al., 2018). Arsyad's (2016) study shows that learning media and the media used in health education also contribute to increasing knowledge (Utari et al., 2018). Audio visual media can improve mothers' knowledge, attitudes and psychomotor skills about breastfeeding techniques in health education because they can stimulate vision and hearing (Masruroh & Wahyuntari, 2022).

Presenters, materials, media used, counseling, and targets are several factors that can influence counseling. Therefore, education about knowledge and attitudes about obesity is carried out using lecture and crossword puzzle methods. The aim of this counseling is to increase students' interest in listening and remembering the material presented, which in turn increases the respondent's knowledge.

3. Differences in the Average Value of Students' Knowledge Before and After Counseling Using And Without Using Crossword Media

Based on the research results, students obtained an average score of 64.16 before counseling using crossword media and 85.55 after counseling, which shows an increase in students' knowledge scores about obesity and obesity by 21.39 points. The results of statistical tests show that there are significant differences.

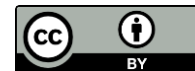
Health education is a combination of various activities and opportunities designed to achieve a situation where individuals or groups can acquire better knowledge, attitudes, values, norms and actions so that they can practice a healthy lifestyle.

Health education is an important component of education, and has a very important and strategic role in improving the quality of human resources, especially in physical and mental terms. Health education has the potential to increase the knowledge of target groups. Changes in attitudes resulting from this knowledge will have an impact on behavior based on the awareness and will of the individual concerned (Citrawathi, 2014). Health education is an influence carried out through persuasion, persuasion, appeals, invitations, and providing awareness through health education activities and is carried out using learning principles, so that people can gain new knowledge and will for individuals, groups and society (Iyong, 2020).

4. Differences in Changes in the Average Value of Students' Knowledge Before and After Counseling Without Using Crossword Puzzles and Using Crossword Puzzle Media

The results showed that there was a significant difference in students' knowledge about overweight and obesity before and after counseling using crossword puzzles. The statistical test results show a p value of 0.000, which indicates that the average change in students' knowledge scores about this topic with counseling without crossword media is 15.15, and with counseling using crossword puzzles is 33.85.

Crosswords are a game where there are empty spaces in the form of boxes with letters to form a word according to the answer to the question listed. This game is used in learning as a tool to make the learning process more enjoyable and develop correct perceptions and positive attitudes



in individuals or groups about health so that they can practice healthy living (Ayati & Rachman, 2017).

The results of the research show that the difference in knowledge between students using media is higher than students without using media. In this research, students played crossword puzzles in groups, with each group consisting of four people. This game increases students' ability to interact socially, where they can respect each other, help each other, and talk to each other to gain additional knowledge. This is different from the lecture approach, where the source of communication is one-way and the information provided is only given to the researcher.

CONCLUSIONS

The average knowledge score of students before receiving counseling without the use of crossword media was 65.55, which increased to 75.27 after the counseling session. In comparison, the average knowledge score before counseling using crossword media was 64.16, and it significantly increased to 85.55 afterward. There was a significant difference in students' knowledge before and after counseling, both with and without the use of crossword media ($p < 0.05$). Furthermore, there was a significant difference in the change in knowledge between counseling without crossword media and counseling that utilized crossword media ($p < 0.05$).

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