

THE INFLUENCE OF NUTRITION EDUCATION THROUGH TIKTOK ON THE KNOWLEDGE AND ATTITUDES OF YOUNG WOMEN IN EFFORTS TO PREVENT ANEMIA IN MEDAN CITY

Riski Sri Purwanti Pasaribu, Zulhaida Lubis, R. Kintoko Rochadi

Faculty of Public Health, Universitas Sumatera Utara

kipasbond6@gmail.com, zulhaida.lubis@usu.ac.id, r.kintoko@usu.ac.id

ABSTRACT

The prevalence of anemia in Indonesia in adolescent groups since 2007 has continued to increase until in 2018 it showed a percentage of 32 percent. This shows that efforts to prevent anemia are still not carried out properly. The purpose of this study was to analyze the influence of nutrition education through Tiktok on the knowledge and attitudes of adolescent girls in efforts to prevent anemia in Medan City. The type of research used is a pseudo-experiment with a pretest-posttest control group design. The number of samples of this study was 39 people in each group so the number of respondents was 78 people. Before conducting data analysis, the Kolmogorov-Smirnov test was carried out and it was known that the data was not normally distributed, so the data analysis continued with the Wilcoxon test and Mann-Whitney test. The results of the study in the experimental group showed the average value of knowledge from 9.92 to 15.03 with a p-value = 0.001 (<0.005) and an average attitude value from 7.69 to 12.59 with a p-value = 0.001 (<0.005) which means that there is an influence of nutrition education through Tik Tok on the knowledge and attitudes of young women. The results of the study in the control group obtained the average value of knowledge from 9.95 to 13.46 with a value of p = 0.001 (<0.005) and an average value of attitude from 7.90 to 12.05 with a value of p = 0.001 (<0.005) which means that there is an influence of nutrition education through leaflets on the knowledge and attitudes of young women. Respondents' knowledge (mean rank = 47.49) and respondents' attitudes (mean rank = 44.97) in the experimental group had a higher value increase than the control group so it can be concluded that nutrition education through Tik Tok is more effective in increasing the knowledge and attitudes of adolescent girls in efforts to prevent anemia than through leaflets. Therefore, Tik Tok is expected to be used as a health promotion medium.

Keywords: anemia, nutrition education, tiktok, leaflet, young women

This article is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/) 

INTRODUCTION

Adolescence is a change from childhood to adulthood that is passed by each individual. In adolescence, the body experiences rapid growth and development both physically, psychically, and cognitively. Changes in physical aspects in adolescence in the form of sexual maturation and also the formation of body posture so that adolescents usually pay more attention to physical appearance. Psychologically, at this time teenagers tend to appear wanting to be the best in order to get recognition from their friends. The dominance of concrete thinking, egocentrism, and impulsive behavior in adolescence is a change seen from the cognitive aspect (Fikawati et al., 2020).

Some nutritionists have the view that the adolescent phase is an important growth phase because it is the second fastest phase after the infant phase. The rapid growth and development of physical and reproductive organs certainly has an impact on nutritional needs in adolescence. However, the immaturity of adolescent thinking in food selection makes adolescents at risk in terms of habits or eating patterns.

One of the bad effects of adolescents who have a bad diet is the occurrence of anemia in adolescence. Hasyim (2018), found that in general, adolescent girls who have irregular eating

patterns also suffer from anemia, which is 89.2 percent. Anemia is a condition when the amount of hemoglobin (Hb) in the blood is low. Adolescent girls are at risk of anemia because they experience puberty, namely menstruation. Menstruation experienced by young women makes iron loss more than young men. In addition, there is a tendency for some adolescent girls to limit food consumption and do a vegetarian diet in order to get the desired weight resulting in this group at risk of anemia.

Anemia in adolescence can have a negative impact in the form of decreased concentration, academic achievement, and physical freshness. Adriani & Wirjatmadi (2012), stated that anemic adolescents result in a decrease in reproductive health, especially for adolescent girls, namely inhibition of motor, psychic, and intelligence development, decreased academic achievement and body fitness, and height is not achieved optimally.

Young women have an important role in the progress of a country because it will determine the next generation of the Indonesian nation. This situation is related to the increase in human resources that are expected to be more qualified in order to create a healthy and productive next generation. In addition, adolescent girls will later become prospective mothers so it is considered necessary to be a priority target so as not to continue to be women of childbearing age (WUS) who experience anemia which leads to anemia in pregnant women.

Anemia in pregnancy can affect the health status of the mother and the fetus being conceived. This will increase the risk of bleeding, abortion, fetal death in the womb, low birth weight (BBLR), stunting, congenital abnormalities, and others. This risk is one of the factors causing the high maternal mortality rate (MMR) and also the infant mortality rate (AKB) in Indonesia.

According to the World Health Organization (WHO) at the Global Health Observatory (GHO), globally the prevalence of anemia of women of childbearing age in 2019 is 29.9 percent or about half a billion women in the age range of 15-49 years. The prevalence of women of childbearing age anemia who are not pregnant is 29.6 percent while the prevalence of anemic pregnant women is known to be 36.5 percent.

Basic Health Research (Riskesdas) in 2018 showed that the prevalence of anemia in general in Indonesia was 23.7 percent, which means that almost a quarter of the population in Indonesia suffers from anemia. Anemia at the age of 5-14 years the prevalence is 26.8 percent which means 2-3 out of 10 children of that age suffer from anemia while at the age of 15-24 years the prevalence is 32 percent which means 3-4 out of 10 children of that age suffer from anemia. From the report it is also known that children aged 10-14 years as much as 97 percent consume less vegetables and fruits, 50.4 percent consume sweet foods, 61.86 percent consume sweet drinks, 44.2 percent consume fatty foods, and 78.5 percent consume flavoring spices all more than once per day.

A study in Medan City stated that there were 60 percent of adolescent girls who experienced anemia including 33.3 percent occurred in adolescent girls with excess weight, 23.3 percent in adolescent girls with normal weight, and 3.3 percent occurred in adolescent girls with underweight (Giawa et al., 2019). Furthermore, the study explained that anemia in adolescent girls occurs due to snacking habits at school, causing a lack of appetite upon arrival back home. This lack of balanced nutritional intake is thought to affect the case of anemia experienced by the adolescent girl.

Manik & Simamora (2020), found that 22 percent of adolescent girls also experienced anemia in Medan City. The main cause of anemia in adolescent girls is caused by iron consumption patterns. Adolescent girls who do not maintain iron intake risk anemia 4.25 times greater than adolescent girls who maintain iron intake. The tendency of young women in maintaining body appearance makes them avoid foods made from meat and prefer to consume vegetables and fruits.

According to Permanasari et al (2021), several factors for anemia in adolescents are lack of knowledge, low motivation, lack of family support, the role of health workers who lack in disseminating information, poor eating habits, nutritional status, lack of iron intake, vitamin A, vitamin C, and protein, breakfast habits, economic status, physical activity, rest patterns, Use of gadgets, menstrual patterns, maternal education, and living separately from parents.

Likewise, research by Podungge et al (2021), states that the factors for the incidence of anemia in adolescent girls in general are the level of nutritional knowledge, health status, consumption patterns, physical activity, socioeconomics, and menstrual cycles. Government efforts in tackling adolescent anemia focus on promotive and preventive efforts, namely increasing the intake of foods high in iron, supplementation of blood-added tablets (TTD), and also increasing foods fortified with iron and folic acid. Based on Risesdas data in 2018, it is known that adolescent girls in Indonesia get TTD as much as 76.2 percent and it is known that as many as 80.9 percent get it at school. However, only 1.4 percent of adolescent girls consumed TTD as many as ≥ 52 eggs. This shows that very few adolescent girls in Indonesia regularly consume TTD once a week.

Circular Letter issued by the Director General of Public Health of the Ministry of Health with Number HK.03.03/V/0595/2016 concerning the Provision of Blood Added Tablets for Adolescent Girls and Women of Childbearing Age, the distribution of TTD to adolescent girls is carried out in Junior High School / Senior High School / equivalent through School Health Business / Madrasah (UKS / M) in the existence of the educational institution. The dose is given as much as one tablet per week for a period of time throughout the year. The school also sets a day to take TTD together.

Promotive and preventive efforts in overcoming anemia should be intervened from early adolescence, namely when entering puberty so as to suppress early the continuation of anemia during pregnancy later. According to Rusdi et al (2021), the impact of anemia on adolescent girls can be prevented by providing information about balanced nutrition so that it can be a guideline for eating, doing physical activity, and maintaining a normal weight.

According to Nasruddin et al (2021), the increasing incidence of adolescent anemia is also caused by the lack of education on balanced nutrition consumption. Education is a process with broad dimensions in order for behavior change to occur so that it is able to apply a good diet in everyday life. Nutrition education aims to encourage positive behavior change about food and nutrition. In optimizing the delivery of balanced nutrition information, of course, it also requires proper nutrition education.

Research by Silalahi, Aritonang, and Ashar (2016) proved that there was a significant difference in nutrition knowledge scores before and after intervention with nutrition education for 8 weeks through lecture and question-and-answer methods. Nutrition education was able to provide increased nutrition knowledge in adolescent girls in Medan from 62.39 points before the intervention to 72.31 points after the intervention.

In line with the results of research by Fitria, Santosa, Lubis, and Lubis (2021) in Percut Village, Deli Serdang Regency, which states that there is an influence of providing nutritional material about anemia and chronic energy deficiency (SEZ) on the knowledge and attitudes of adolescent girls. The group of adolescent girls who received education about nutrition problems for 2 days and repeated the following week had a higher average score than the group that did not get nutrition education.

Providing effective and efficient nutrition education requires media that is also effective and efficient so that the information conveyed can be received by the intended target properly. Educational media are usually given to support health promotion activities in the form of leaflets, brochures, turning sheets, posters, and so on. However, due to the rapid advancement of information technology, today makes social media a fast and relevant exchange of information to reach targets.

Leonita & Jalinus (2018), explained that social media is a platform that can be used as a means of nutrition education because the targets reached are more and not limited in space and time. Social media with the internet has great potential in health promotion because it provides convenience in reaching targets at each level.

One of the social media that can be used is TikTok. This application gives access to users in making a video, editing, and can also share it easily which is equipped with supporting features. According to the Business of Apps report, Tiktok's monthly active users in the second quarter of 2022 were 1.46 billion active users worldwide, which is an increase of 62.52 percent compared to the previous year. Tiktok's active users have increased rapidly since the beginning of the pandemic in 2020. When compared to the previous five years, Tiktok users have increased by more than 1,000 percent.

Research conducted in Padang involving 146 high school students explained that providing nutrition education using the Tiktok application has an influence on increasing the knowledge and attitudes of young women regarding balanced nutrition. The increase in knowledge after intervention in the group given education through Tiktok increased by 4.71 points while in the control group only 1.35 points. In addition, the increase in attitudes after intervention in the group provided with education through Tiktok increased by 3.69 points while in the control group by 2.47 points (Ghifari, 2021).

The results of a survey by the Indonesian Internet Service Providers Association (APJII) for 2021-222 explained that internet users were 210,026,769 people, comparable to 77.02 percent of the total population of Indonesia, which is 266.91 million people. The data shows an increase from 2018 of 171.17 million people which is comparable to 64.8 percent of the population in Indonesia. North Sumatra Province is ranked 8th out of the 34 highest internet user provinces in Indonesia with a percentage of 79.3 percent. Based on the results of the survey, internet users use it the most to access social media.

A study conducted in Canada states that social media use in adolescent girls is twice as great when compared to adolescent boys with a duration of more than two hours a day (Sampasa-Kanyinga et al., 2020). Similarly, Mulyati and Frieda's (2018) research shows that women have an average score of smartphone use higher at 82.25 than men, which is 77.92. This is certainly a new breakthrough in increasing knowledge favored by today's adolescents which can be used as an opportunity for health workers in conveying health information including the problem of anemia of adolescent girls. The development of today's digitalization

era must be balanced with the creation of health programs that can always be innovative and in accordance with the times and are able to adjust to the intended target. Medan City is the third largest city after DKI Jakarta and Surabaya. Based on data from the Central Statistics Agency (BPS) in 2021, Medan City has a population of 2,460,858 people. The number of women aged 10-14 years is 90,968 people or about 7.36 percent of the number of women in Medan City.

According to data obtained from the Medan City Education Office, the number of junior high schools in 2022 in Medan City is 408 schools consisting of 45 public schools and 363 private schools. The school is divided into 21 sub-districts in Medan City. The number of students is 102,638 people with 51,883 men and 50,755 women.

According to the Medan City Health Office, the program carried out for the prevention of anemia in adolescent girls is in the form of distribution of TTD for women with the age group of 12-18 years carried out in junior high school / high school/equivalent with a target number of 124,811 people. The achievement of giving TTD to adolescent girls in August 2022 is 40.94 percent with a year-long target of 54 percent. In this case, the Medan City Health Office continues to monitor the distribution of TTD in order to achieve the annual target.

The initial survey was also conducted at SMP Negeri 10 Medan using questionnaires and involved 41 female students with an age range of 12-16 years and occupying grades VII to IX. The results of the initial survey showed that Tiktok was ranked first in the social media most often used by young women, which was 75.6 percent. As many as 30 people or 73.2 percent use Tiktok every day. The duration of using Tiktok is >3 hours or 39 percent. In addition, it is known that 61 percent of adolescent girls have poor knowledge about anemia and 56.1 percent have a good attitude about anemia. Therefore, researchers want to conduct research on the Effect of Nutrition Education through Tiktok on the Knowledge and Attitudes of Young Women in Efforts to Prevent Anemia in Medan City.

The purpose of this study is to analyze the influence of nutrition education through Tiktok on the knowledge and attitudes of adolescent girls in efforts to prevent anemia in Medan City. The benefit of this study is as a contribution of thought to the Health Office and Puskesmas in Medan City in compiling health promotion efforts in an effort to prevent anemia of adolescent girls.

METHOD

Types of Research and Research Design

This research is quantitative research. The research design is quasi-experimental (pseudo-experiment) with a non-equivalent control group design. According to Notoatmodjo (2010), this design is very appropriate if used in evaluating training or health education programs. In addition, this design can also be used to see the comparison of health program interventions in sub-districts / villages with other sub-districts / villages.

This study was divided into two groups, namely the experimental group and the control group. These two groups will be carried out an initial test (pretest) to analyze the level of knowledge and attitudes of adolescent girls, then given intervention in both groups and re-conducted a final test (posttest) to see if there are differences in the level of knowledge and attitudes of adolescent girls in efforts to prevent anemia before and after the intervention is carried out.

The research design is as follows.



Figure 4. Research design

Information:

- Q1: Knowledge and attitude of the experimental group before intervention
- T₂ : Knowledge and attitudes of the experimental group after the intervention
- X₁ : Nutrition education through Tiktok in the experimental group
- X₂: Nutrition education through leaflets in the control group
- Q3: Knowledge and attitudes of the control group before the intervention
- T₄ : Knowledge and attitudes of the control group after the intervention

Population and Sample

The population of this study was all young women at the junior high/equivalent level of Medan City with a total of 50,755 people. The sample in this study, sample selection combines three sampling techniques in stages, namely cluster sampling, simple random sampling, and purposive sampling because the population is quite large and spread into several regional level (Notoadmojo, 2018).

RESULTS AND DISCUSSION

Research Site Overview

Medan City is the capital of North Sumatra Province which has an area of about 265.10 km² and is directly adjacent to Deli Serdang Regency to the north, south, west, and east. Geographically, Medan City is located between 3° .27' - 3°47' North Latitude and 98° .35' - 98° .44' East Longitude with an altitude of 2.5 - 37.5 meters above sea level. Most of the city area is lowland where the Deli River and Babura River meet.

Medan City has a tropical climate with a minimum temperature of 21°C and a maximum temperature of 36°C. The humidity in this city averages 82 percent, the average wind speed is 1.16 / sec, the average total evaporation rate per month is 117.5 mm, and the average monthly rainfall is 228.5 mm. Medan City administratively consists of 21 sub-districts with 151 kelurahan divided into 2,001 neighborhoods.

This research was carried out in Medan City, namely at SMP Negeri 3 Kota Medan and SMP Negeri 6 Kota Medan located in Medan Kota District. SMP Negeri 3 Medan is located on Jalan Pelajar No. 69 District Teladan Timur. SMP Negeri 3 Medan was established on March 6, 1952 and is currently accredited A. SMP Negeri 3 Medan consists of 23 classrooms, 2 laboratory rooms, and 2 library rooms. The number of students in SMP Negeri 3 Medan can be seen in the table below.

Table 5

Number of Students of SMP Negeri 3 Medan

Characteristic	Man	Woman	Sum
Grade 7	161	188	349
Grade 8	130	219	349
Grade 9	149	195	344
Total	440	602	1042

SMP Negeri 6 Medan is located on Jalan Bahagia No. 42 Kelurahan Teladan Timur. SMP Negeri 3 Medan was established on August 1, 1959 and is currently accredited A. SMP Negeri 3 Medan consists of 23 classrooms, 1 laboratory room, and 1 library room. The number of students in SMP Negeri 6 Medan can be seen in the table below.

Table 6

Number of Students of SMP Negeri 6 Medan

Characteristic	Man	Woman	Sum
Grade 7	148	196	344
Grade 8	149	185	334
Grade 9	170	171	341
Total	467	552	1019

Univariate Analysis Results

Univariate analysis in this study was conducted to obtain an overview of research respondents such as age, maternal education, and father's occupation.

Characteristics of respondents

Respondents in this study amounted to 78 people because there were 6 people who disobeyed to follow the research until the end. Respondents were divided into two groups, namely 39 people in the experimental group with intervention through TikTok and 39 people in the control group with intervention through leaflets. The results of this study include respondents' characteristics in the form of age, maternal education, and father's occupation which are presented in the table below.

Table 7

Distribution of Respondents' Frequency Based on Age, Mother's Education, and Father's Occupation.

Characteristic	Group			
	Experiment		Control	
	TikTok	%	Leaflets	%
Age				
13	32	82,1	32	82,1
14	7	17,9	7	17,9
Mother's Education				
JUNIOR	3	7,7	2	5,1

SMA	18	46,2	28	71,8
D1/D2/D3	3	7,7	4	10,3
S1/S2/S3	15	38,5	5	12,8
Father's Work				
Not Working	2	5,1	2	5,1
Self employed	16	41	24	61,5
PNS/ TNI/ POLRI	5	12,8	1	2,6
Private Employees	7	17,9	6	15,4
Laborer	3	7,7	3	7,7
Pedicab Driver	2	5,1	1	2,6
Driver	2	5,1	2	5,1
Honorary Personnel	2	5,1	-	-

Based on Table 7 above, it can be seen that the characteristics of respondents based on age categories were the most in the experimental group and control group, namely at the age of 13 years as many as 32 people (82.1%) while the age category at least at the age of 14 years as many as 7 people (17.9%). The education of most respondents' mothers in the experimental group was high school as many as 18 people (46.2%) as well as in the control group was high school as many as 28 people (71.8%) while the least respondents' maternal education in the experimental group was junior high school and D1 / D2 / D3 which was 3 people each (7.7%) and in the control group was junior high school as many as 2 people (5.1%). The respondents' fathers' jobs were the most self-employed in the experimental group were self-employed as many as 16 people (41%) as well as in the control group were self-employed as many as 24 people (61.5%), while the respondents' fathers' jobs in the experimental group were not working, honorary workers, pedicab drivers, and drivers, were 2 people each (5.1%) and in the control group were civil servants / TNI / POLRI and pedicab drivers which were 1 person each (2.6%).

Knowledge and attitudes of respondents in efforts to prevent anemia before and after the intervention.

Knowledge of respondents prior to intervention. The results showed that respondents' knowledge before being given intervention through TikTok and leaflets can be seen in the table below:

Table 8
Frequency distribution of respondents based on knowledge before intervention

Knowledge	Group			
	TikTok	%	Leaflets	%
Not good	27	69,2	25	64,1
Good	12	30,8	14	35,9
Total	39	100	39	100

Based on the table above, it can be seen that the knowledge of respondents was not good in the experimental group as many as 27 people (69.2%) and the knowledge of good

respondents as many as 12 people (30.8%) while in the control group the knowledge of respondents was not good as many as 25 people (64.1%) and the knowledge of good respondents as many as 14 people (35.9%).

Knowledge of respondents after the intervention. The results showed that respondents' knowledge after being given intervention through TikTok and leaflets can be seen in the table below:

Table 9
Frequency distribution of respondents based on post-intervention knowledge

Knowledge	Group			
	TikTok	%	Leaflets	%
Not good	-	-	-	-
Good	39	100	39	100
Total	39	100	39	100

Based on the table above, it can be seen that the knowledge of respondents in the two groups after being given the intervention all had good knowledge as many as 39 people (100%).

The attitude of respondents before the intervention. The results showed that respondents' attitudes before being given intervention through TikTok and leaflets can be seen in the table below:

Table 10
Frequency distribution of respondents based on pre-intervention attitudes

Attitude	Group			
	TikTok	%	Leaflets	%
Not good	19	48,7	16	41
Good	20	51,3	23	59
Total	39	100	39	100

Based on the table above, it can be seen that the attitude of respondents was not good in the experimental group as many as 19 people (48.7%) and the attitude of good respondents as many as 20 people (51.3%) while in the control group the attitude of respondents was not good as many as 16 people (41%) and the attitude of good respondents as many as 23 people (59%).

Respondents' attitudes after the intervention. The results showed that respondents' attitudes after being given intervention through TikTok and leaflets can be seen in the table below:

Table 11
Frequency distribution of respondents based on post-intervention attitudes

Attitude	Group			
	TikTok	%	Leaflets	%
Not good	-	-	-	-
Good	39	100	39	100
Total	39	100	39	100

Based on the table above, it can be seen that the attitude of respondents in the two groups after being given the intervention all had a good attitude as many as 39 people (100%).

Results of Bivariate Analysis

Bivariate analysis was conducted to examine the effect of nutrition education on the knowledge and attitudes of adolescent girls in efforts to prevent anemia in Medan City. This study wanted to analyze the differences in knowledge and attitudes of respondents before and after getting the intervention. Before statistical testing is carried out, a normality test is first carried out to determine the statistical test to be used.

The data normality test was conducted to analyze the effect of nutrition education on the independent variable on the dependent variable through bivariate analysis at the level of meaning $p = 0.05$ (95%). In this study, the data normality test used the Kolmogrov-Smirnov test because the sample was >50 . The guidelines for making decisions in the normality test are:

- a. If the Significance value (Sig) > 0.05 then the data variance is distributed normally
- b. If the Significance value (Sig) < 0.05 then the data variance is not normally distributed

The results of the data normality test can be seen in the table below.

Table 12

Results of the Normality Test of Knowledge and Attitudes of Young Women in Efforts to Prevent Anemia Before and After Intervention through TikTok and Leaflet

Variable	Significance of Kolmogrov-Smirnov		Distribution data
	TikTok	Leaflets	
Prior knowledge	0,002	0,000	Abnormal
Knowledge after	0,037	0,000	Abnormal
Attitude before	0,004	0,000	Abnormal
Attitude after	0,014	0,000	Abnormal

Based on the table above, the results of the normality test using the Kolmogrov-Smirnov statistical test show that the significance of the data on knowledge and attitude variables before and after the intervention in the experimental group through TikTok and in the control group through leaflets has a sig result of < 0.05 , it can be concluded that the above data is not normally distributed so that the statistical test used is a test, Wilcoxon.

Comparison of the average value of respondents' knowledge in efforts to prevent anemia before and after intervention through TikTok

The results of the analysis of differences in respondents' knowledge before and after getting an intervention through TikTok using the Wilcoxon test can be seen in the table below.

Table 13

Comparison of the Average Value of Respondents' Knowledge in Efforts to Prevent Anemia Before and After Intervention through TikTok

Knowledge	$\bar{x} \pm SD$	\bar{x} different $\pm SD$	p value
Before	9.92 \pm 2.718		0,001
After	15.03 \pm 2,334	5.1 \pm 2,360	

The results of table 13 show that the average knowledge of adolescent girls before the intervention through TikTok was 9.92 with a standard deviation of 2.718. The average knowledge of adolescent girls after the intervention increased to 15.03 with a standard deviation of 2.334. The average difference in knowledge of young women before and after the intervention through TikTok was 5.1 with a standard deviation of 2.360.

The results of statistical tests using the Wilcoxon test obtained p value = 0.001 (<0.05) which means that there is a significant difference in the knowledge of adolescent girls in efforts to prevent anemia with an average value before the intervention of 9.92 and a value after intervention via TikTok to 15.03. According to the test results, it was found that there was a significant effect of intervention through TikTok on the level of knowledge of adolescent girls in efforts to prevent anemia between the pre-test and post-test given.

Comparison of the average value of respondents' attitudes in efforts to prevent anemia before and after intervention through TikTok

The results of the analysis of differences in respondents' attitudes before and after getting an intervention through TikTok using the Wilcoxon test can be seen in the table below.

Table 14

Comparison of Average Values of Respondents' Attitudes in Anemia Prevention Efforts Before and After Intervention through TikTok

Attitude	$\bar{x} \pm SD$	\bar{x} different $\pm SD$	p value
Before	7.69 \pm 1,398		0,001
After	12.59 \pm 2,233	4.9 \pm 1,930	

The results of table 14 showed that the average attitude of young women before the intervention through TikTok was 7.69 with a standard deviation of 1.398. The average attitude of young women after intervention increased to 12.59 with a standard deviation of 2.233 and an average difference of 4.9. The average difference in attitudes of young women before and after the intervention through TikTok was 4.9 with a standard deviation of 1.930.

The results of statistical tests using the Wilcoxon test obtained p value = 0.001 (<0.05) which means that there is a significant difference in the attitude of adolescent girls in efforts to prevent anemia with an average value before the intervention of 7.69 and a value after the intervention of 2.233. According to the test results, it was found that there was a significant influence of intervention through TikTok on the level of attitude of adolescent girls in efforts to prevent anemia between the pre-test and post-test given.

Comparison of the average value of respondents' knowledge in efforts to prevent anemia before and after intervention through Leaflet

The results of the analysis of differences in respondents' knowledge before and after getting an intervention through leaflets using the Wilcoxon test can be seen in the table below.

Table 15

Comparison of the Average Value of Respondents' Knowledge in Efforts to Prevent Anemia Before and After Intervention through leaflets

Knowledge	$\bar{x} \pm SD$	\bar{x} different $\pm SD$	p value
Before	9.95 \pm 2.051		0,001
After	13.46 \pm 1,484	3.51 \pm 1.819	

The results of Table 15 show that the average knowledge of adolescent girls before the intervention through leaflets was 9.95 with a standard deviation of 2.051. The average knowledge of adolescent girls after the intervention increased to 13.46 with a standard deviation of 1.484. The average difference in attitudes of young women before and after the leaflet intervention was 3.51 with a standard deviation of 1.819.

The results of statistical tests using the Wilcoxon test obtained p value = 0.001 (<0.05) which means that there is a significant difference in the knowledge of adolescent girls in efforts to prevent anemia with an average value before the intervention of 9.95 and a value after the intervention of 13.46. According to the test results, it was found that there was a significant effect of intervention through leaflets on the level of knowledge of adolescent girls in efforts to prevent anemia between the pre-test and post-test given.

Comparison of the average value of respondents' attitudes in efforts to prevent anemia before and after intervention through leaflets

The results of the analysis of differences in respondents' attitudes before and after getting an intervention through leaflets using the Wilcoxon test can be seen in the table below.

Table 16

Comparison of the Average Value of Respondents' Attitudes in Efforts to Prevent Anemia Before and After Intervention through leaflets

Attitude	$\bar{x} \pm SD$	\bar{x} different $\pm SD$	p value
Before	7.90 \pm 1.729		0,001
After	12.05 \pm 0.944	4.15 \pm 1,387	

The results of table 16 showed that the average attitude of adolescent girls before the intervention through leaflets was 7.90 with a standard deviation of 1.729. The average attitude of young women after intervention increased to 12.05 with a standard deviation of 0.994. The average difference in attitudes of young women before and after the leaflet intervention was 4.15 with a standard deviation of 1.387.

The results of statistical tests using the Wilcoxon test obtained p value = 0.001 (<0.05) which means that there is a significant difference in the attitude of adolescent girls in efforts to prevent anemia with an average value before the intervention of 7.90 and a value after the

intervention of 12.05. According to the test results, there was a significant effect of intervention through leaflets on the level of attitude of adolescent girls in efforts to prevent anemia between the pre-test and post-test given.

Comparison of TikTok and leaflets on respondents' knowledge and attitudes in efforts to prevent anemia after the intervention

The results of the analysis of differences in the average value of knowledge and attitudes of respondents after getting intervention through TikTok and leaflets can be seen in the table below.

Table 17
Comparison of TikTok and leaflet on Respondents' Knowledge in Anemia Prevention Efforts after Intervention

Media	Mean Rank	p value
TikTok	47,49	
Leaflets	31,51	0,002

Based on Table 17, the results of research using the Mann-Whitney test show that there is a significant difference in nutrition education between TikTok and leaflets in increasing respondents' knowledge with a p-value of 0.002, so it can be concluded that there is an influence of nutrition education through TikTok on the knowledge of adolescent girls in efforts to prevent anemia in Medan City. From the mean rank, it shows that respondents' knowledge after getting nutrition education through TikTok has a higher increase in knowledge (mean rank = 47.49) compared to nutrition education through leaflets. Therefore, it can be concluded that nutrition education through TikTok is more effective in increasing adolescent girls' knowledge in efforts to prevent anemia than nutrition education through leaflets.

Table 18
Comparison of TikTok and leaflets on Respondents' Attitudes in Anemia Prevention Efforts after Intervention

Media	Mean Rank	p value
TikTok	44,97	
Leaflets	34,03	0,029

Based on table 18, the results of research using the Mann-Whitney test show that there is a significant difference in nutrition education between TikTok and leaflets in increasing respondents' attitudes with a p-value of 0.029, so it can be concluded that there is an influence of nutrition education through TikTok on the attitudes of adolescent girls in efforts to prevent anemia in Medan City. From the mean rank, it shows that respondents' attitudes after getting nutrition education through TikTok have a higher attitude increase (mean rank = 44.97) compared to nutrition education through leaflets. Therefore, it can be concluded that nutrition education through TikTok is more effective in improving the attitudes of adolescent girls in efforts to prevent anemia than nutrition education through leaflets.

DISCUSSION

The results of the discussion in this study provide a further description of the results of data analysis that have been stated previously. Based on hypothesis testing, it has been found that TikTok and leaflets have an effect on changes in the knowledge and attitudes of adolescent girls in efforts to prevent anemia after being given interventions in Medan City.

Knowledge and Attitudes of Respondents in Efforts to Prevent Anemia Before and After Intervention

Knowledge of respondents prior to intervention. From the results of the research conducted, it was found that respondents' knowledge about anemia prevention efforts before being given intervention, both through TikTok and leaflets, the majority of respondents had poor knowledge, namely 69.2 percent in the experimental group and 64.1 percent in the control group.

The results of this study stated that the knowledge of respondents in the two groups above had almost the same characteristics with the same level of knowledge that was equally poor based on the results of questionnaires conducted at the beginning of the activity. This condition can be influenced by the lack of information obtained by respondents so it can affect the knowledge of these respondents.

Knowledge is the result of knowing what happens when individuals sense an object. One cannot make decisions or act on the problem at hand if one does not have knowledge. A person's knowledge is influenced by various factors, including internal factors such as

intelligence, interests, and physical condition, as well as external factors such as family, community, and facilities.

Knowledge is the result of knowing and this happens after a person has sensed a particular object. Without knowledge, a person has no basis for making decisions and determining actions on the problems he faces. Many factors affect a person's knowledge such as experience that has been passed, education that has been obtained, a supportive environment, openness to new experiences, easy learning ability, and having the motivation to always learn. Budiman and Riyanto (2013) explain that the factors that influence knowledge consist of education, information (mass media), social, cultural, and economic, environmental, experience, and age.

The lack of information about nutrition education and efforts to prevent anemia is one that affects the occurrence of anemia in adolescent girls. This affects adolescent girls in choosing food to be consumed, not getting used to breakfast, the habit of drinking coffee and tea that inhibits the absorption of iron in the body, and also lack of intake of nutrients such as carbohydrates, protein, and vitamin C, as well as lack of iron intake due to adolescent girls who do not regularly consume blood-added tablets.

The attitude of respondents before the intervention. From the results of the research conducted, it was found that respondents' attitudes about anemia prevention efforts before being given interventions, both through TikTok and leaflets, the majority of respondents had good attitudes, namely 51.3 percent in the experimental group and 59 percent in the control group.

These results show that the attitude of respondents in the two groups above has almost the same characteristics with the level of attitude that is equally good based on the results of questionnaires conducted at the beginning of the activity. This good respondent's attitude can

be influenced by information or experience that has been obtained previously regarding nutrition education and efforts to prevent anemia.

Attitude is a person's view or tendency towards objects, situations, or people. Beliefs, values, and feelings about an object can shape attitudes depending on how a person perceives the situation or object. Therefore, attitudes can be positive or negative. Before a person obtains information and sees or experiences an object himself, attitudes cannot be formed (Irwan, 2018). Some factors that can affect a person's attitude such as past experiences that have been passed, social groups followed, education taken, media and information received, personality owned, and also environmental factors.

From the results of this study, it was found that the majority of respondents' attitudes in both groups were good but with a percentage that was not too large. The existence of poor attitudes of respondents could be due to the lack of knowledge of respondents about nutrition education and efforts to prevent anemia from health workers and also from the surrounding environment. A person's beliefs or beliefs also affect the attitude towards an object. Many respondents still have the belief that foods with animal protein/iron sources can cause obesity which will affect their posture so they prefer protein/iron sources from vegetables only. In addition, young women prefer to eat vegetables and fruits rather than meat to maintain body appearance alone (Manik and Simamora, 2019).

Knowledge of respondents after the intervention. Based on the results of the study, it can be seen that there was a change in respondents' knowledge after being given interventions both through TikTok and leaflets, namely respondents' knowledge became high by 100 percent in both groups, both experimental and control groups. The results of this study showed that there was an increase in respondents' knowledge about anemia prevention efforts after getting interventions both with TikTok media and leaflet media. This situation illustrates that nutrition education as a form of health promotion is an activity that can affect the level of knowledge of adolescent girls, including changes in respondents' knowledge about efforts to prevent anemia.

The existence of nutrition education provided to respondents provides learning that results in a change from not knowing to knowing, who previously did not understand to understand. The knowledge gained to a better understanding is expected to change the attitude of young women in efforts to prevent anemia. This research is supported by Rusdi, Rahmy, and Helmizar (2021) who stated that providing nutrition education has an influence and is also effective in changing knowledge about balanced nutrition in adolescent girls. Nutrition education is part of health promotion that has an influence on one's knowledge improvement program directly and indirectly. Education or health promotion provided with the intention of changing the behavior of individuals, families, groups, and communities in an effort to improve their health status can also provide knowledge through direct experience or through the experience of others.

In line with the research of Silalahi, Aritonang, and Ashar (2016) which states that nutrition education can increase nutritional knowledge of adolescent girls. Adolescent girls who have good nutritional knowledge are expected to have good nutritional status as well to avoid the incidence of anemia in adolescence. Simanungkalit and Simarmata (2017) emphasized that knowledge is the dominant factor in the occurrence of anemia in adolescents so that it requires educational activities that are carried out regularly.

Respondents' attitudes after the intervention. From the results of this study, it can be seen that there was a change in attitude in respondents after being given intervention through

TikTok and leaflets. The majority of respondents' attitudes in the leaflet group are known to be good but the percentage has not been maximized. After being given intervention through TikTok and leaflets, respondents' attitudes in both groups improved so that all respondents had a good attitude. This change in attitude level proves that there are benefits of information conveyed by nutrition education through TikTok and leaflets.

Although there are still changes in attitudes that have not been observed, in general attitudes can be formulated as the tendency to respond positively or negatively to an object. Changes in a person's behavior can be seen from the reflection of his attitude. In this study, respondents' attitudes changed after being given interventions both through TikTok and leaflets. Changes in attitude score scores in this study can occur due to respondents' interest in receiving the information they get. Respondents in general have never received nutritional information/education as conveyed by researchers so it increases their curiosity and interest even higher, the results of which can be seen from the final results of attitude scores that have undergone very good changes.

This research is supported by Putra, Supadi, and Wijaningsih (2019) who explain that providing nutrition education using Instagram can increase the knowledge and attitudes of adolescent girls. Nabila (2023) also explained that health education using TikTok media has a significant influence and difference in the knowledge and attitudes of adolescent girls about anemia prevention.

The Effect of TikTok on Respondents' Knowledge in Efforts to Prevent Anemia Before and After Intervention

Based on the results of statistical tests conducted in this study, the knowledge value of adolescent girls before the intervention was 9.92 and after the intervention the average value rose to 15.03, and the results of the Wilcoxon test conducted obtained p value = 0.001 (< 0.05), which means that H_0 was rejected and H_a was accepted, with the conclusion that there was an influence of nutrition education through TikTok to the knowledge of young women after the intervention.

The results of this study show that there is a significant influence on health promotion in the form of nutrition education through TikTok on increasing the knowledge of adolescent girls in efforts to prevent anemia. The educational content on nutrition and anemia of adolescent girls displayed through TikTok is able to stimulate adolescent girls. This can be proven from the results of the final testing carried out, namely the increase in the scores of young women who are quite good.

The knowledge of adolescent girls so far about anemia is still not good, for example, there are still many adolescents who do not know what anemia is, the impact of anemia, efforts to prevent anemia and balanced nutrition. However, after young women received nutrition education through TikTok, their knowledge increased and young women have been able to answer questions about anemia and balanced nutrition.

TikTok content in the form of short videos presented with an attractive appearance and supported by appropriate music makes young women like the content created by researchers. Young women also do not feel bored with the material provided because the content of the video is made by dividing several topics into several contents. Repetition of interventions made even though the topic is the same but the content is made differently so that respondents do not

feel bored. In addition, video content is created in one account that contains the same topic so that young women can repeat videos on TikTok when they are using the application.

This is an innovation in promoting health topics that are tailored to its goals. Health promotion through TikTok carried out in this study is an activity that can trigger changes in one's behavior. The behavior change in question is the knowledge of adolescent girls in efforts to prevent anemia so that it can increase the understanding of adolescent girls and can reduce the incidence of anemia in adolescence.

This research is supported by research by Pamila, Desi, and Purba (2022) which states that nutrition education using TikTok videos can have an influence in increasing knowledge about balanced nutrition in adolescent girls. Vidyana and Atnan's (2022) research also explains that there is a strong influence on the effectiveness of TikTok content on students' final project knowledge. Factors that affect the effectiveness of TikTok are curiosity, novelty of content, entertainment, and uniqueness of content based on the needs of followers. Research by Simanjuntak, Yuliati, Rizkillah, and Maulidina (2022) explained that nutrition education through TikTok is the most effective social media to produce changes in the knowledge of high school students than Instagram, Twitter, Youtube, and Facebook.

TikTok's Influence on Respondents' Attitudes in Efforts to Prevent Anemia Before and After Intervention

From the results of statistical tests conducted in this study, the average value of respondents' attitudes before the intervention was 7.69 and after the nutrition education intervention through TikTok, the average value of respondents' attitudes was 12.59. To see the effect of nutrition education through TikTok on respondents' attitudes, this study continued with the Wilcoxon test and obtained the results of p value = 0.001 (<0.05), which means that there is an influence of nutrition education through TikTok on the attitudes of adolescent girls in efforts to prevent anemia after being given an intervention.

The results of this study stated that there was a significant influence on health promotion in the form of nutrition education through TikTok on improving the attitudes of adolescent girls in efforts to prevent anemia. Nutrition education through TikTok can change young women's attitudes about anemia. This can be seen from the final testing carried out, namely an increase in the attitude score of young women after being given the intervention.

Attitude becomes a very important thing because in dealing with various situations can affect one's behavior and actions. Views, beliefs, and values are part of a person's attitudes and serve as a foundation for their behavior and actions. Someone who has a good attitude can help in achieving goals, overcoming obstacles, and also make it easier to achieve success in life.

The existence of educational activities through TikTok received by respondents is certainly new information and knowledge about balanced nutrition and anemia prevention efforts which are expected to make respondents have thoughts and perceptions of the information received and lead to an action that can protect them to avoid anemia in adolescence. In addition, the good attitude that young women have regarding balanced nutrition is expected to make young women better understand choosing foods/drinks that support to support health.

TikTok is a social media application with interesting video display features and is supported by music that supports so that users can see and hear the content that is displayed using more five senses. This can strengthen the learning process so that message delivery is more easily absorbed and lasts longer (Manik, 2020). Daryanto (2013) suggests that the absorption of the

human sense of sight is 82 percent, the sense of hearing is 11 percent, the sense of smell is 1 percent, the sense of taste is 2.5 percent, and the sense of touch is 3.5 percent.

Video is a medium for delivering information that leads to the socialization of programs in the health sector, prioritizing education and information as well as persuasive health communication. Video is able to combine audio signals with motion images so as to visualize a message into motor movements, facial expressions, and certain environmental atmospheres. The advantages of video as a medium of information such as messages delivered are packaged attractively so that they are easily remembered by the audience, not limited to distance and time, can be repeated (Maysarah et al, 2021).

Health education requires tools in the form of media that support the principle of knowledge captured by humans processed through the five senses. The more five senses used to receive information, the more information is obtained so that understanding is clearer. In other words, the use of several senses is able to strengthen and complete the information received by humans.

Nutrition education through TikTok in this study has proven that TikTok is an effective medium and has an influence on behavior change, in this case in the form of adolescent girls' attitudes in efforts to prevent anemia in Medan City. This was judged by the increase in scores on respondents' attitudes after being given an intervention through TikTok.

This research is supported by Ghifari's research (2022) which states that nutrition education using the TikTok application has an effect on changing the balanced nutrition attitude of high school students. Research conducted by Ruru (2022) also explains that the use of TikTok social media as an educational medium affects the balanced nutrition attitude of high school adolescents. Research by Althoofany (2022) confirms that there is an influence of nutrition education using TikTok media on attitudes about obesity in adolescents.

The Effect of Leaflet on Respondents' Knowledge in Efforts to Prevent Anemia Before and After Intervention

Based on the results of this study, knowledge of adolescent girls before nutrition education was obtained through leaflets with an average value of 9.95 which increased after the intervention with an average value of 13.46. To determine the effect of nutrition education through leaflets, Wilcoxon statistical tests were carried out and obtained a value of p value = 0.001 (< 0.05) which means that there is a significant influence on the knowledge of adolescent girls in efforts to prevent anemia after being given nutrition education interventions through leaflets.

The results of this study show that there is an influence of nutrition education through leaflets on increasing the knowledge of adolescent girls in efforts to prevent anemia as seen from the increase in respondents' knowledge scores after the intervention was given. This proves that nutrition education through leaflets is also one of the effective and still relevant health promotion media given to disseminate public health information.

Nutrition education and anemia prevention efforts that have been received by respondents, especially in the routine administration of blood-added tablets delivered from local health centers, are still through short lectures and without providing media that can be stored by young women. Therefore, researchers want to try using leaflets containing writing and pictures about balanced nutrition and anemia prevention efforts to analyze the effects given. Leaflet as a conventional media is given to analyze the comparison of experimental groups through TikTok

social media which is currently popular in the era of digitalization. The leaflet is also expected to provide new information for adolescent girls about balanced nutrition and efforts to prevent anemia so that there is an increase in knowledge.

According to Budiman and Riyanto (2013), several factors that influence knowledge are education, information/mass media, social, cultural, and economic, environment, experience, and age. In this study, the delivery of information through leaflets turned out to have a good influence on increasing the knowledge of adolescent girls after being given intervention. The intervention provided by giving leaflets increased the average value of knowledge and proved the effect of nutrition education through leaflets on adolescent girls' knowledge about anemia prevention efforts.

Leaflet as one of the health promotion media is one of the media that is considered quite cheap in terms of cost, not difficult to carry everywhere, and can be used by all levels of society. Leaflets can affect a person's level of knowledge by looking at and reading leaflets. This is due to the advantages of leaflets such as messages that can be read for a long time, the information conveyed is short and clear and supported by an attractive visual design so that it can facilitate understanding for readers. However, leaflets also have disadvantages such as being easily folded and torn so that the intended message does not reach the reader and also cannot stimulate motion effects and sound effects.

Although leaflets have shortcomings, nutrition education through leaflets in this study has shown that this media is also still effective and has an influence in changing the knowledge of adolescent girls in efforts to prevent anemia in Medan City. The final results of this study showed that the value of respondents' knowledge scores increased well after respondents received interventions so it can be concluded that leaflets are also one type of health promotion media that is effective and feasible for providing health information to the public.

This research is in line with the research of Hannanti, Ilmi, and Syah (2021) which states that the provision of media leaflets has an effect on increasing anemia knowledge in adolescent girls. Research by Hadina, Tempali, and Erlawati (2022) shows that there is an influence of education using leaflet media on adolescent girls' knowledge about preventing anemia during menstruation. Purbowati, Follona, and Wijayanti (2021) suggest that interventions in the form of educational videos and leaflets can increase readiness and knowledge to face menarche. This research is also in line with the research of Putri, Salwa, and Wahyuningsih (2021) which explains that providing education using leaflets can help increase knowledge of iron deficiency anemia for adolescent girls.

The Effect of Leaflet on Respondents' Attitudes in Efforts to Prevent Anemia Before and After Intervention

Based on the results of this study, it is known that the attitude of adolescent girls before nutrition education through leaflets has an average value of 7.90 which has increased after the intervention with an average value of 12.05. To test the effect of leaflets on respondents' attitudes, the Wilcoxon test was carried out and obtained a value of p value = 0.001 (< 0.05), which means that there is a significant influence on the attitudes of adolescent girls in efforts to prevent anemia after being given nutritional education interventions through leaflets.

The results of this study show that there is an influence of nutrition education through leaflets on the attitudes of adolescent girls in efforts to prevent anemia as seen from the increase in respondents' attitude scores after the intervention. This proves that nutrition education

through leaflets is also one of the effective health promotion media used to change respondents' attitudes in efforts to prevent anemia since entering adolescence.

Notoadmojo (2014) explains that attitude is a form of closed reaction of a person as readiness to react to objects or an appreciation of objects. The knowledge, thoughts, beliefs, and emotions that a person has have an important role in the formation of attitudes. Some factors that influence attitudes according to Wawan and Dewi (2018) include personal experiences, the influence of others who are considered important, cultural influences, mass media, educational institutions and religious institutions, and also emotional factors.

Health education activities can change a person's attitude through efforts to increase knowledge because someone who has good knowledge is able to direct him to respond to attitudes towards good behavior as well. Nutrition education through leaflets conducted in this study has a direct influence on changing a person's attitude after getting useful and interesting information through the leaflets provided. Interesting information on the leaflet, namely colors that are not too flashy, writing that is not too small, terms that are easy to understand, and interesting and supportive images can motivate someone to change attitudes into better behavior (Amir, 2016).

Nutrition education through leaflets in this study has shown that leaflets are also still effective, relevant, and have an influence in changing the attitudes of adolescent girls in efforts to prevent anemia in Medan City. The final results of this study showed that there was a good increase in respondents' attitude scores after respondents received interventions so that it can be concluded that leaflets are also one type of health promotion media that are recommended and can be used to provide health information to the public because they are able to change respondents' attitudes.

This research is in line with Attari's research (2020) which suggests that education about anemia using leaflet media has an effect on changing anemia attitudes in adolescent girls. Nurfiana's research (2021) also states that there is an influence of nutrition counseling using leaflets on adolescents' attitudes about consuming fruit. Hafriani's research (2016) explained that leaflet media has an effect on changing students' attitudes in efforts to detect breast cancer here with awareness before and after counseling. However, research by Herman, Citrakesumasari, Hidayanti, Jafar, and Virani (2020) states that there is no influence of leaflets on adolescents' attitudes in consuming vegetables and fruits. The assumptions of this study are different, possibly influenced by the number of respondents and the background of respondents.

Comparison of TikTok and Leaflet on Respondents' Knowledge and Attitudes in Post-Intervention Anemia Prevention Efforts

From the results of this study, it was found that there was an increase in the average value of knowledge and attitudes of respondents after being given interventions in the form of nutrition education both through TikTok and leaflets in increasing respondents' knowledge and attitudes in efforts to prevent anemia. The mean rank value of knowledge and attitudes of respondents who received nutrition education through TikTok was greater than the mean rank value of knowledge and attitudes of respondents who received nutrition education through leaflets. The difference in the value of knowledge and attitudes of respondents obtained in this study is likely due to differences in health promotion media used. Because the use of media in health education can help in the process of implementing education which can be used as

teaching aids to facilitate the delivery and reception of health messages for the community (Maysyarah et al, 2021).

This study uses TikTok media and leaflets as tools in delivering nutrition education with the aim that respondents are able to receive the messages conveyed so that there is a change in knowledge and attitudes of adolescent girls in efforts to prevent anemia so that anemia cases in adolescence can be suppressed from an early age. From the results of the study, it has been explained that both TikTok media and leaflets can increase respondents' knowledge and attitudes in efforts to prevent anemia in Medan City with an increase in the final score.

However, the results of this study show that the mean rank value of respondents' knowledge and attitudes has a higher value by using TikTok as a nutrition education medium so it can be concluded that nutrition education through TikTok is more effective in increasing respondents' knowledge and attitudes in efforts to prevent anemia in Medan City than nutrition education through leaflets.

In the implementation of health promotion, the media has an important role in conveying health information which aims to help overcome obstacles to understanding the health information conveyed and can stimulate target interest in receiving messages to forward them to others (Maysyarah et al, 2021). Along with the development of information and communication technology in today's global era, social media is one option that can be used as a health promotion media that can reach targets quickly. According to Fitriani (2021), the use of social media as a medium for presenting educational content or digital learning can help identify additional learning content, expand learning materials, and be able to share knowledge with other users on social media.

Furthermore, Fitriani (2021) explained that TikTok as one of the social media is able to disseminate educational content to help its users add new knowledge and insights, trigger the quality of learning for its users, and be more independent and dance the interests of its users to know something new. Ghifari (2021) stated that the use of the TikTok application as an educational medium is the right media to carry out health promotion that can change one's knowledge and attitudes toward balanced nutrition in adolescents because nutrition education using TikTok affects changes in adolescent knowledge and attitudes.

In addition to TikTok, the results of this study also show that nutrition education through leaflets is still effective and relevant in disseminating information to today's teenagers. Leaflets are a form of health promotion that is effective, and attractive, and makes it easier for targets to receive the message conveyed. This can provide a good stimulus to the brain in providing information to respondents so that respondents' knowledge and attitudes will be better and increase because the messages conveyed can be understood and maintained in memory.

In disseminating health messages, a combination of various health promotion media tailored to the intended target is also needed. The use of several different media is expected to reach a wider target and increase people's knowledge and attitudes in a better direction so that there is a change in behavior to support healthy living. Therefore, both TikTok and leaflets are two media that can be used in providing nutrition education to increase the knowledge and attitudes of young women in efforts to prevent anemia.

Research Implications

Health promotion efforts require effective and efficient media that must be adjusted to the intended goals in improving one's knowledge and attitudes. TikTok as one of the social media that is being favored by teenagers is considered necessary to be used as an educational media in the health sector. TikTok content in the form of short-duration videos packed with supporting images, writing, and audio makes it easier for TikTok to attract the attention of viewers. The short duration of TikTok videos also avoids boredom or boredom from viewers in receiving health information so that hopefully the information can be conveyed and attached for a long time. In addition, TikTok content involves more five senses so that the information conveyed is more optimally received by the brain into a form of knowledge that will also cause attitudes.

This research is expected to be an innovation for the Medan City Health Office in planning health promotion efforts, especially efforts to prevent anemia in adolescent girls. TikTok can be used as one of the media used to create content containing health education that is packaged attractively.

Research Limitations

This research still has many shortcomings and limitations, namely the difficulty of researchers in receiving responses from respondents in the experimental group (nutrition education through TikTok) because the time the respondents have in accessing TikTok is not the same and researchers cannot know for sure whether respondents watch all TikTok content shown watched to completion or not. In addition, there were some respondents from the TikTok group who did not follow the research until the end due to the confiscation of mobile phones by parents, and had other activities so they did not watch educational content delivered on TikTok.

CONCLUSION

Before getting an intervention in the form of nutrition education through TikTok, young women's knowledge was good only 30.8 percent and after getting the intervention, young women's knowledge was 100 percent good. Before getting the intervention in the form of nutrition education through TikTok, the attitude of young women was good as much as 51.3 percent and after getting the intervention, the attitude of young women was 100 percent good.

Before getting the intervention in the form of nutrition education through leaflets, the knowledge of young women was good only 35.9 percent and after getting the intervention, the knowledge of young women was 100 percent good. Before receiving the intervention in the form of nutrition education through leaflets, the attitude of young women was good as much as 59 percent and after getting the intervention, the attitude of young women was 100 percent good.

There is an influence of nutrition education in increasing the knowledge of adolescent girls in efforts to prevent anemia through TikTok with a change in the average value of knowledge from 9.92 to 15.03 and through leaflets with a change in the average value of knowledge from 9.95 to 13.46. Nutrition education also has an influence in improving the attitudes of adolescent girls in efforts to prevent anemia through TikTok with a change in the average value of attitude from 7.69 to 12.59 and through leaflets with a change in the average value of attitude from 7.90 to 12.05. Therefore, nutrition education through TikTok can be said to be more effective in increasing the knowledge and attitudes of adolescent girls in efforts to prevent anemia.

REFERENCES

- Adriani, M., & Wirjatmadi, B. (2012). *Peranan Gizi Dalam Siklus Kehidupan*. Jakarta: Kencana© 2017. Nagari dan Nindya. Open Access under CC BY-SA License. Prenada Media Group, 2, 245–278.
- Badan Pusat Statistik. (2022). *Kota Medan dalam angka 2022*. Medan : BPS Kota Medan.
- Budiarti, A., Anik, S., & Wirani, N. P. T. (2020). Fenomonologi penyebab anemia pada remaja di Surabaya. *Jurnal Kesehatan Mesencephalon*, 6 (2), 137-141.
- Fikawati, S., Syafiq, A., & Veratamala, A. (2020). Gizi anak dan remaja. Rajagrafindo Persada.
- Firamadhina, F. I. R., & Krisnani, H. (2020). Perilaku generasi z terhadap penggunaan media sosial tiktok : tiktok sebagai media edukasi dan aktivisme. *Social Work Journal*, 10 (2), 199-208. doi: 10.24198/share. v10i2.31443
- Giawa, S., Lubis, Y. K., Zega, E., & Diana. (2019). Hubungan berat badan dengan kejadian anemia pada remaja putri di SMK Yayasan Pendidikan Nasional Pencawan (Pencawan School) Medan. *Public Health Journal*, 5(2).
- Hasyim, D. I. (2018). Pengetahuan, sosial ekonomi, pola makan, pola haid, status gizi dan aktivitas fisik dengan kejadian anemia pada remaja putri. *Jurnal Kebidanan Dan Keperawatan Aisyiyah*, 14(1), 6–14.
- Leonita, E., & Jalinus, N. (2018). Peran media sosial dalam upaya promosi kesehatan: Tinjauan literatur. *INVOTEK: Jurnal Inovasi Vokasional Dan Teknologi*, 18(2), 25–34.
- Manik, R. M., & Simamora, H. G. (2020). Factor Related With the Anemia Incidence Of Adolescent Girl in Private High School Santa Lusia Medan, 2019. *Journal of Midwifery*, 4(2), 33–38.
- Nasruddin, H., Syamsu, R. F., & Permatasari, D. (2021). Angka kejadian anemia pada remaja di Indonesia. *Cerdika*, 1(4), 357–364.
- Notoatmodjo, S. (2010). *Metodologi Kesehatan*. Jakarta: Rineka Cipta.
- Permanasari, I., Mianna, R., & Wati, Y. S. (2021). *Remaja bebas anemia melalui teman sebaya*. Gosyen Publishing.
- Podungge, Y., Nurlaily, S. Z., & Mile, S. Y. W. (2021). *Buku referensi remaja sehat bebas anemia*. Budi Utama.
- Rusdi, F. Y., Rahmy, H. A., & Helmizar. (2021). Pengaruh edukasi gizi menggunakan instagram terhadap perubahan perilaku gizi sembang untuk pencegahan anemia pada remaja putri di SMAN 2 Padang. *Journal of Nutrition College*, 10(1), 31–38.
- Sampasa-Kanyinga, H., Colman, I., Goldfield, G. S., Hamilton, H. A., & Chaput, J.-P. (2020). Sex differences in the relationship between social media use, short sleep duration, and body mass index among adolescents. *Sleep Health*, 6(5), 601–608.