Jurnal Gizi Prima (Frime Nutrition Journal)
Vol.8, Edisi.2, September 2023, pp. 98-106
ISSN: 2656 - 2480 (Online)
ISSN: 2355 - 1364 (Print)
Website : http://jgp.poltekkes-mataram.ac.id/index.php/home

The Effect of Using Educational Media Brochures, Interactive Videos, and Picture Guessing Games on Knowledge and Attitudes Regarding The Prevention of Kidney Failure

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Article Info

Article history:
Received July 3th, 2023
Revised July 24th, 2023
Accepte September 15th, 2023

Keyword:
Attitude; Educational Media; Guess the Picture; Interactive Video; Knowledge

ABSTRACT

Background: *Chronic kidney failure is a disorder of kidney function resulting in a condition in which the body fails to maintain metabolism and fluid and electrolyte balance, resulting in uremia. In the Province of West Java, including the Karawang area, the prevalence of patients with chronic kidney failure increases with age. This research was done to know the effectiveness of providing education using brochures, interactive videos, and picture guessing games for class XI students of SMAN 1 Telukjambe.*

Research Methods: *This research is quantitative research with a quasi-experimental design. The sample selection used a random sampling technique, with the research method being the group pre-post test. The sample is students of class XI IPS 3, XI IPS 4, and XI IPS 5. The population of this research sample is all students of class XI SMAN 1 Telukjambe Karawang. The data collected is information on the characteristics of the respondents, including age, gender, height, and weight, as well as knowledge and attitudes before and after the intervention. Data collection was carried out by filling out the pre-test and post-test questionnaires that had been given. The data were then analyzed using a statistical test application to determine the effect of providing various education on the knowledge and attitudes of the respondents.*

Research Result: *Brochures and picture guessing games are less effective in influencing knowledge and attitudes ($p>0.05$). Meanwhile, interactive video media provided an effective influence on learning ($p=0.01<0.05$) and attitudes ($p=0.007<0.05$) regarding chronic kidney failure education..*

Conclusion: *Interactive video media is the most suitable and accepted media to increase knowledge and attitudes regarding preventing chronic kidney failure in SMAN 1 Telukjambe Karawang students.*

BACKGROUND

Kidney failure is one of the non-communicable diseases that is dangerous and can threaten the survival of sufferers. Chronic renal failure is a progressive and irreversible impairment of kidney function resulting in a condition where the body fails to maintain metabolism and fluid balance, electrolytes resulting in uremia (Gultom, 2022). Chronic renal failure is a condition of decreased kidney function due to damage to the parenchymal tissue in the kidney organ, which is chronic and irreversible (Hidayati, 2008).

In Indonesia, kidney failure disease is 19.33%, with the highest in the DKI Jakarta region with a prevalence of 38.71% and the lowest in the Southeast Sulawesi region at 1.99%. The prevalence of patients in West Java province is 19.34%. This figure is relatively high compared to the prevalence of patients with

kidney failure throughout Indonesia (Riskesdas, 2018). According to the 2018 Riskesdas data, the prevalence of chronic kidney failure patients in the West Java region by age group increases with age. This disease can occur due to the development of various other non-communicable diseases. Kidney failure itself does not only affect the elderly but can also be suffered by young people. Indonesia is one of the countries with the highest number of patients with kidney failure. Chronic renal failure is a health problem that impacts medical, economic, and social problems for patients and their families, so this disease must be prevented. Prevention includes providing information about chronic renal failure and ways to reduce the risk of developing chronic renal failure. There are two types of risk factors for chronic renal failure: factors that can be changed and those that cannot. The factors that can be changed are diabetes (type 2) and hypertension. Unchangeable factors include a family history of kidney disease and certain diseases such as lupus, AIDS, Hepatitis C, and others (Indonesian Ministry of Health).

In the era of advanced development, humans face the digitalization period, which makes access to information more accessible. However, many people still need to be educated, especially regarding the prevention of chronic kidney failure. This can happen because users are generally more interested in using technology to find entertainment. Currently, the ease of accessing and obtaining information could be better utilized. The development of technology is different from an increase in the potential of human resources, so this development loses one of its primary functions in accelerating the process of receiving information.

Prevention of this disease can be done by providing education using media or information transfer processes to increase individual knowledge and awareness, and the goal is to create habits or changes in attitudes toward a better direction. These changes are directed at creating a new, healthier lifestyle to prevent individuals from various diseases, not only chronic kidney failure but other diseases such as hypertension and diabetes mellitus, as the risk factors for diseases that can be changed. This educational process can be done with various media, including 2-dimensional, 3-dimensional, and innovative media. Examples of 2-dimensional media are brochures, posters, and infographics. For 3- 3-dimensional media, an example is interactive video, and innovative media can be games. These various media have their advantages, so they can be adjusted to the target of providing education. Providing education is done using media so that the target can receive the information optimally.

Adolescence is a transitional period from childhood to adulthood. At this time, adolescents are searching for themselves. This process does not escape the association in the peer environment. This encourages creating attitudes or behaviors with positive or negative directions. Negative attitudes or habits of adolescents can be a risk factor for chronic kidney failure. These include smoking, taking drugs, and consuming alcoholic beverages. According to previous research, it was found that adolescents had smoking behavior <10 cigarettes/day, namely 66 people (66.0%), were not active in exercising. Ninety-four people (94.0%) did not consume energy supplements, namely 66 people. Normal nutritional status, namely 71 people (71.0%), and most consumed alcoholic beverages, namely 58 people (58%) (Ciptaning et al., 2020). Based on this, this prevention needs to be done as early as possible; this is related to the condition of chronic kidney failure, which lasts for a long time, and the condition of chronic renal failure, which lasts for a long time. In this case, adolescents are considered the suitable age group to be given education because they can receive information well and apply it in their daily lives (Latifah, 2023). SMAN 1 Telukjambe is a public high school located in West Karawang with A accreditation. For this reason, this study was made to determine the effectiveness of providing education using educational media brochures, interactive videos, and guessing games on the level of knowledge and attitudes related to the prevention of chronic renal failure in students of SMAN 1 Telukjambe.

METHODS

The research method conducted was quasi-experimental, with the research design conducted was pre-post test design. This study was conducted by giving a pre-test and post-test before and after the intervention. The sample in this study amounted to 45 people divided into three intervention groups. Respondents were students of class XI IPS 3, XI IPS 4, and XI IPS 5. The population of this research sample was all students of class XI SMAN 1 Telukjambe Karawang. Samples were selected using a random sampling method. This research was conducted for two weeks in May 2023. The research was conducted by conducting introductions and explanations related to the research conducted, then giving a pre-test first as a comparison in improving attitudes and knowledge before education. Furthermore, education was given using various media related to the prevention of chronic renal failure.

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ISSN : 2355 - 1364 (Print)

This research instrument is a brochure, educational video, guessing game, and questionnaire. This research questionnaire is a modification of a questionnaire that has been used in previous research by Puspitawati (2014) in her research entitled "The Relationship between Adolescent Knowledge of Chronic Renal Failure and Chronic Renal Failure Prevention Behavior at Markum Singodimejo Ponorogo 2013". The questionnaire contains ten questions in the form of multiple choice to assess respondents' knowledge about the definition of chronic renal failure, causal factors, and how to prevent it. Furthermore, there were ten questions to assess attitudes with a rating scale of always (SL) with a score of 4, often (S) with a score of 3, rarely (J) with a score of 2, and never (TP) with a score of 1. In its implementation, the brochure was given directly in physical form.

In contrast, the educational video media was given as a video link uploaded on YouTube media and displayed directly. The guessing game is done directly by displaying image questions that must be guessed in presentation files and displayed using a projector. The winner of the game will be given a prize. Regarding post-test data collection, seven days after taking the pre-test and providing the intervention, the post-test was taken online by filling in the g-form questionnaire link. Filling is done by giving the fastest respondent a time limit with a cash prize. The intervention was conducted on May 5, 2023, and the post-test was collected on May 12, 2023.

In data processing, the instrument used is a statistical test application. The characteristic variables are age, gender, weight, height, and nutritional status. The method of measuring nutritional status used is IMT / U. This measurement is done by calculating the z-score and then comparing the results with the anthropometric table listed in Permenkes No. 2 of 2020. The nutritional status is classified into malnutrition, undernutrition, good nutrition, overnutrition, and obesity. A non-parametric statistical test, namely the Wilcoxon test, was carried out to determine the effect of media interventions on respondents' knowledge because the data distribution was not expected in the normality test results. In the knowledge section, it was grouped into good and poor knowledge. For grouping, knowledge is divided into three groups, namely good (score between 76-100), sufficient (score between 56-75), and less (score <56) (Arikunto, 2016). In the attitude variable, the grouping is divided into positive (score T > T mean) and hostile (score T≤ T mean) attitudes (Anwar, 2016).

Figure 2. Interactive video education media

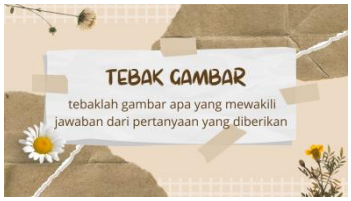

Figure 3. guessing game educational media

Figures 4 dan 5 (from left to the right). entation of posttest completion and prize-giving of guess the picture winners

Figure 1. Brochure educational media

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RESULTS

In the results section, there is an explanation related to the results of the frequency distribution test on the characteristics of respondents. In the knowledge and attitude section, there are the frequency and percentage results of each knowledge category, the minimum and maximum values of the pretest and posttest results, the average value and standard deviation, and the results of the Wilcoxon statistical test to determine the level of influence of various media on knowledge and attitude variables. The value of the influence between media on variables is seen based on the p-value; if <0.05, then it is significant, and if> 0.05, then it is considered insignificant, or there is no relationship or influence.

Respondent Characteristics

Table 1. Distribution of Respondents Based on General Characteristics

characteristics	Frequency	Percentage
	f	%
Age		
15	4	8,89
16	18	40
17	20	37,78
18	3	6,67
Gender		
Male	17	37,78
Female	28	62,23
BMI/U		
Malnutrition	1	2,23
Undernourished	4	8,89
Good Nutrition	33	73,34
Overweight	5	11,12
Obesity	2	4,45

In the characteristics, the respondent information obtained was age, gender, weight, and height. The age with the highest frequency of respondents is 17 years old, and the gender is female. This can occur because the targeted respondents are teenagers still attending high school. In general, the nutritional status of the respondents was good nutrition (normal) at 73.34% of the total 45 respondents. However, among the respondents, one student still needed better nutritional status. The student is female. This can occur because female students limit their food intake to maintain their appearance (Sartika, 2011).

Meanwhile, the obese nutritional status is owned by both male and female respondents. This is related to the incidence of growth spurt in adolescence, which increases the need for nutrients, thus encouraging an increase in carbohydrate intake as the primary energy source. (Sartika, 2011). In Indonesia, based on 2018 risks as data related to the prevalence of nutritional status of adolescents aged 16-18 years according to IMT / U in the West Java region amounted to 77.6% for normal nutritional status, 1.4% for malnutrition, and 4.5% for obese nutritional status (Riskesdas, 2018). This figure is by the distribution picture in the respondents of this study, which is dominantly normal.

ISSN : 2656 - 2480 (Online)
ISSN : 2355 - 1364 (Print)

Knowledge

Table 2. Levels and Differences of Knowledge Scores Regarding Prevention of Renal Failure Disease by Media Type

Media		Knowledge						Max	Min	Mean ± SD	*p-Value*
		Less		Simply		Good					
		f	%	f	%	f	%				
brochure	pre	2	13,33	7	46,67	6	40,00	80	30	68,00±14,243	0,206
	post	2	13,33	2	13,33	11	73,34	90	40	77,33±15,796	
Interactive video	Pre	2	13,33	10	66,67	3	20,00	80	30	66,67±12,910	0,01
	Post	0	0	1	6,67	14	93,33	100	70	84,00±9,103	
Picture Guessing Game	Pre	3	20,00	4	26,67	8	53,33	90	50	74,00±17,238	0,524
	Post	3	20,00	1	6,67	11	73,33	100	50	78,67±17,674	

In the knowledge variable, there are three categories, namely less, enough, and suitable. These categories are used to show the level of knowledge of respondents regarding the prevention of kidney failure before and after the intervention. In the brochure intervention, it is known that two respondents were classified as less knowledgeable in the pretest results, with the highest pretest score being 80, the lowest being 30, and an average of 68. In the posttest results, the number of respondents who knew the excellent category increased by 33.34%. However, in the poor category, the number of respondents remained the same even though they had been given education using brochure media. Respondents' maximum and minimum values increased by 10 to 90 and 40. It can be seen that there was an increase in the average of 8.67 to 77.33. The standard deviation also increased by 1.553. Although there was an increase in respondents in the excellent category, maximum and minimum values, average and standard deviation, the p-value for brochure media was 0.206, p=0.206>0.05, so it can be concluded that there is no significant relationship between providing education using brochures on knowledge of preventing chronic kidney failure.

In the intervention in providing Interactive video media, it can be seen that two respondents still need to be more knowledgeable in the pretest. However, there is an increase in knowledge so that no more respondents are less knowledgeable in the posttest of respondents with interactive video media. In addition, respondents in the moderate category decreased by 60%. In the excellent category, there was an increase in the number of respondents by 73.33% in the post-test results. Furthermore, there was an increase in the average of 17.33 to 84. In the standard deviation, there was a decrease of 3.807. The p-value obtained is 0.01, p=0.01 <0.05, so it can be concluded that a significant relationship exists between providing education using interactive video media and respondents' knowledge.

Three respondents needed more knowledge of the guessing game media, and there was no improvement despite the intervention. In the moderate category, there was an increase marked by a decrease in the percentage of the post-test results by 20%. The excellent category has increased by 20%. The maximum value increased when compared to the pretest results, and there was an increase in the average of 4.67 and 0.436 in the standard deviation. It was obtained at p=0.524>0.05, and it can be concluded that there is no significant relationship between the provision of education using guessing games and respondents' knowledge.

ISSN : 2656 - 2480 (Online)
ISSN : 2355 - 1364 (Print)

Attitude

Table 3. Levels and Differences of Attitude Scores Regarding Prevention of Renal Failure Disease by Media Type

Media		Attitude				Max	Min	Mean ± SD	*p-Value*
		Negative		Positive					
		f	%	f	%				
brochure	Pre	7	46,67	8	53,33	92	82	87,00±3,251	0,284
	Post	6	40	9	60	91	83	87,80±2,366	
Interactive Video	Pre	5	33,33	10	66,67	93	80	89,53±3,378	0,007
	Post	4	26,67	11	73,33	96	87	93,00±2,268	
Picture Guessing Game	Pre	9	60	6	40	93	87	88,87±1,959	0,376
	Post	5	33,33	10	66,67	94	83	89.93±3,494	

In the attitude variable, here are negative and positive categories to asses attitude development after education. In the brochure media, there was an increase in attitude marked by a decrease in the number of respondents in the harmful category by 6.67% and an increase in the positive category by 6.67%. However, there was a decrease in the maximum value to 91. In addition, there was an increase in the average of 0.80 and a decrease in the standard deviation of 0.885. statistical test results show p=0.284>0.05, so there is no significant effect between providing education using brochure media and changes in respondents' attitudes.

In interactive video media, there was an increase in the number of respondents with positive attitudes and a decrease in negative attitudes by 6.67%. There was an increase in the maximum and minimum values when compared between the pre-test and post-test. In addition, an increase also occurred in the average of 3.47. A decrease occurred in the standard deviation result of 1.111. The statistical test results showed p=0.007 <0.05, indicating a significant effect between providing education using interactive videos and changes in respondents' attitudes.

In the media, game Guess the picture, four respondents experienced an increase in attitude to be positive. There was an increase in the maximum value in the post-test results and an increase in the average value of 1.06. The increase also occurred in the standard deviation of 1.535. The statistical test results showed p=0.376>0.05. There is no significant effect between the provision of education using the guessing game media and the respondent's attitude.

DISCUSSION

Media influence on the knowledge level

The results of previous statistical tests are in Table 2—the pre-test and post-test knowledge results and Table 3. The results of the pre-test and post-test knowledge show that p=0.206>0.05, so it can be concluded that there is no significant relationship between providing education using brochures on knowledge of preventing chronic kidney failure. Brochure media is one of the 2-dimensional educational media with several advantages, including its size, which is small enough to be easily carried and contains essential information points. However, the weakness of this media is that brochures are less attractive compared to other educational media that utilize technology. Nowadays, people are more interested in what can be seen and heard, not just seen, which can also affect the quality of information received from brochure media. The results of this study are in line with the opinion of Pratiwi et al. (2020), who, in their journal, stated that the control group, which was only given media in the form of brochures, did not experience significant changes, so it can be said that brochure media did not affect increasing respondents' knowledge. This is also in line with the opinion expressed by Gultom et al. (2022) in their journal that the average IDWG score before and after education in the control group, which was only given a brochure sheet, was -0.5 (15.2%). The statistical test results obtained an α value of 0.076 (α> 0.05), so it was concluded that there was no significant/meaningful difference in the average IDWG score before and after in the control group.

The utilization of interactive video media P-value obtained is 0.01, p=0.01 <0.05, so it can be concluded that there is a significant relationship between providing education using interactive video media and respondents' knowledge. Interactive video media is a 3-dimensional educational media that includes not only audio sonic but also virtual so that both senses of the body can work more to receive and process

information received by the body. Educational video media is considered more effective for educating with an individual approach. This is in line with what Simanungkalit et al. (2020) stated, which states that providing education with audio-visual media on knowledge about diet in patients with chronic kidney failure disease at Siloam Lippo Village General Hospital has an effect. Educational media is considered adequate for delivering messages in the form of stories that are easy to understand and straightforward so that the education process can run optimally, so this is considered to be an advantage for video media education.

In the educational media, the guessing game was obtained at p=0.524>0.05, so it can be concluded that there is no significant relationship between providing education using guessing games and respondents' knowledge. The results of this study are not in line with previous research by Indah et al. (2020), which states that there is a significant influence between understanding oral health before being given counseling using picture guessing media. This is also different from the results of research from Rizqi and Sartika (2020), which state that there is a significant increase in knowledge in the group given education with a guessing game. This may occur due to differences in the average age of respondents.

Media influence on attitudes

In the variable attitude on brochure media, the results of statistical tests show p=0.284>0.05, so it can be concluded that there is no significant influence between providing education using brochure media and changes in respondents' attitudes. This differs from research conducted by Nafiah and Jumino (2019), which states that providing education using brochure media can increase understanding and student visits to the library at SMAN 3 Semarang. The difference in these results can be known from the respondents' good level of knowledge and understanding of the information to be educated and the positive aspects included in the attitude questionnaire so that this can affect the results of the intervention provided.

Brochures are larger than booklets, and the message conveyed uses short words with explanations complemented by illustrative images. Brochures are non-periodical publications that are not hard bound, complete (in one issue) and have at least five pages. Brochures also explain the detailed information using exciting words and display it with illustrative images. However, the literacy level in Indonesia still needs to be higher, so it requires education that does not attract more interest and leaves an impression so that information can be appropriately received. This is to the research of Nugraha and Oktavianah (2020), which states that Indonesia has a reading emergency until the Ministry of Education and Culture makes a unique program to improve public literacy. This shows that the general public has yet to cultivate reading as an essential habit.

In the variable attitude of interactive video media, the statistical test results show p = 0.007 <0.05, which shows a significant influence between providing education using interactive video and changes in respondents' attitudes. These results align with research conducted by Azhari and Fayasari (2020), which concluded significant differences in the post-test results given education with videos on fruit consumption behavior. According to Gunawan (2020), education using video provides a better experience for students in the learning process. Education also provides an overview for students regarding the material to be taught more clearly, making it easier to understand. Using media in the education and learning process will make it easier for teachers to prepare the material to be delivered because it can be combined with other media. In addition, videos can be used to display case studies of the process or stages of a procedure.

On the attitude variable of the guessing game media, the statistical test results showed p=0.376>0.05. There is no significant influence between providing education using the guessing game media and the attitude of respondents. This is not in line with research conducted by Izatusholihah et al. (2021), which suggests a significant influence between providing education on guessing games and the self-confidence of Al-Amin kindergarten students. Previous studies used elementary school and kindergarten students as their research samples. Of course, children of this age will be enthusiastic about participating in the Guess the Picture game so that education can run smoothly. While in high school, students, although the game has been modified to suit the ability of these students, participation in the intervention provided could be more optimal, thus affecting the educational activities provided. This discrepancy can occur due to differences in target respondents and a high level of respondents' understanding before being given education, so the intervention provided has little impact. Adolescence is a time when thinking can work abstractly, and the brain can think of other alternatives and test all possibilities when facing problems, while in childhood, children can only interpret the environment using symbols in the form of words or numbers (Holis, 2016).

Based on the results of the research that has been obtained, it can be seen that the most suitable educational media can have a significant effect on the variables of knowledge and attitude for students of SMAN 1 Telukjambe Karawang is an intervention with Interactive vide.

CONCLUSIONS

Based on the research that has been conducted, brochure media and guessing games are less effective in influencing knowledge and attitudes related to the prevention of kidney failure. While interactive video media effectively influenced knowledge and attitudes in students of SMAN 1 Telukjambe Karawang. Based on this, interactive video media is the most suitable and acceptable media to improve knowledge and attitudes related to the prevention of chronic renal failure in SMAN 1 Telukjambe Karawang students.

SUGGESTION

The suggestion that can be given is to use interactive video media to educate students about disease prevention so that the effectiveness of providing education can increase. Recommendations for further research are to examine the relationship between knowledge and attitude variables to respondent characteristics variables to determine confounding variables and test other variables, such as diet, as one of the parameters of the effectiveness of providing education using media in the form of interactive brochures.

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