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ED-DHENTYS (EDUCATION DENTAL HEALTH SYSTEM) MODEL AS AN EFFORT TO CHANGE BEHAVIOR IN THE IMPLEMENTATION OF ORAL HYGIENE THROUGH A FAMILY-CENTERED CARE APPROACH IN BIMA REGENCY, NTB

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KEYWORDS

Behavior, brushing skills, debris index, Ed-Dhentys

ABSTRACT

Background: Oral hygiene is still a major problem for the elderly. Riskesdas in 2018 said dental problems in the age group of 55-64 increased by 48.5% and in ages 65 and above by 38.6%. Various dental health services programs continue to be developed to reduce dental and oral health problems, including by improving the quality of the media used. The relevant media used today is technology-based media. Aim: Producing Ed-Dhentys models as a medium of education in changing the behavior of implementing oral hygiene for the elderly through a family-centered care approach. Method: Research and Development (R&D) with Quasy experiment Pretest-Posttest group design. Variables in this study: Knowledge, attitude, brushing skills, and debris index. Their research project was 2 groups: intervention 16 people given Ed-Dhentys Model and Control 16 people given Slide power point. Data was tested using Wilcoxon and Mann-Whitney. The hypothesis test meaningfulness criterion uses the p-value 0.002 of the delta value (Δ). Result: The Ed-Dhentys model is feasible as a dental health education media with expert validation results of 92% and a p-value of unpaired test results stating that this application is effective in increasing knowledge (Δ=6.81), attitude (Δ= 13.75), brushing skills (Δ6.93), and decreasing the debris index score (Δ=1.37) compared to the control group. Conclusion: The Ed-Dhentys model proved feasible and its application was effective as an effort to improve behavior in the implementation of oral hygiene and a decrease in debris index in adolescents compared to the control group.

INTRODUCTION

The elderly are humans who have reached the end of their life cycle. The aging process characterized by changes in the physical and mental aspects of the elderly will occur in this group of people who are considered elderly (Cunha-Cruz et al., 2015). The onset of physiological, functional decline, cognitive, affective, and psychosocial impairment follows the process of deterioration that occurs with age (Hollister & Anema, 2004). 65% of aging can be attributed to genetic factors while 35% of aging can be attributed to other factors. This process must occur in every human being (Vamos, Thompson, et al., 2015).

The United Nations Fund for Population Activities (UNFPA), reports that there are currently approximately 737 million elderly worldwide.4 It is estimated that by 2050, there will be 33 countries with more than 10 million elderly people, 22 of whom are developing countries.

By 2025, Indonesia is expected to have the world's largest elderly population at 41.4% which is an incredible number (Shelton & Stepanek, 1994). According to population projections, there will be (27.08%) of people aged 65 years and above in 2020 (27.08%), (33.69 million) in 2025, (40.95 million) in 2030, and (48.19 million) in 2035 (Jones, Snyder, Gesko, & Helgeson, 2017).

The dental and oral health of the Indonesian people is something that needs special attention from the health sector, both dentists and oral therapists. Riskesdas 2018, found that 10.22% of the Indonesian population received assistance from dental health workers and 57.6% of the Indonesian population experienced dental and oral health problems. In West Nusa Tenggara, Bima Regency recorded a prevalence of dental and oral health problems of 72% and utilization of dental health services of 2.85%, and 3.89% of people brush their teeth properly. The percentage of correct brushing time is still very low, which is 4.36% for the age group of 55-64 years, with the behavior of brushing teeth at 86.77% (Vamos, Walsh, et al., 2015).

Everyone will experience physical and mental changes as they age because aging is inevitable. Changes in oral tissues, such as pale mucosal dry mouth, thinning of the mucosa, attrition, and tooth loss, are also typical of the aging process and changes in body tissue function (Zimmerman, Sloane, Cohen, & Barrick, 2014). Malnutrition, balance problems, sudden confusion, and slow motion due to physical changes are serious health problems for the elderly. In addition, some diseases that often attack the elderly include hypertension, hearing and vision problems, dementia, osteoporosis, memory decline, and dental health problems (Buglar, White, & Robinson, 2010).

Dental hygiene or oral hygiene is a problem that must be considered by the elderly, because it is one of the factors that can cause various diseases of the oral cavity, especially dental caries, periodontal disease, and other infectious diseases, including tooth loss (Antonarakis, 2011). Dental caries is experienced by 96.7% of the Indonesian population, with a prevalence of 95.0% at the age of >65 years and 96.8% at the age of 55-64 years. In addition, there are problems with oral tissue, with a prevalence of periodontitis of 75.9% at the age of 55-64 years and 66.0% at the age of >65 years (Poul Erik Petersen & Torres, 1999).

Expanding health care through family-centered care demonstrates the importance of patient care programs. A partnership approach to health care decision-making between families and the provision of health services is the definition of Family-centered care itself. When it comes to providing health services, the family acts as a central treatment center and can also identify health problems, decide the best course of action for fellow family members, care for family members, and can use nearby health facilities (Jönsson & Abrahamsson, 2020).

Behavior is the result of all kinds of human experiences and interactions with the surrounding environment which manifest in the form of knowledge, attitudes, and actions. Behavior is the response of the individual to stimuli that come from outside or from within himself. Actions that are carried out continuously will give rise to habits that prove that actions carried out continuously will form habits that eventually become permanent behaviors (Poul Erik Petersen & Yamamoto, 2005).

Behavior can be divided into two, namely (1) Passive or closed form (Covert behavior), limited to attention, perception, knowledge or awareness, and attitudes that occur in someone who receives a stimulus and cannot be observed by others. (2) Overt behavior is a response to

a stimulus seen in the form of action or practice, which can easily be observed by others (Watt, 2005).

Behavior change occurs through a process of learning, practice, and experience. Success in changing behavior can be influenced by the knowledge gained from the learning process to be able to respond to problems. This effort needs to be made to impart habits to improve his skills (Yazdani, Vehkalahti, Nouri, & Murtomaa, 2009).

Behavior change theory proves that 21 days of behavior change requires 3 stages for a person to change his behavior. The first 7 days are introductory, the second 7 days are revision and practice and the third 7 days are reinforcement of behaviors that have been changed to become stable or as permanent new habits (González Ariza et al., 2012).

One of the causes of dental and oral health problems in society is behavioral factors or attitudes to neglect dental and oral hygiene. This is based on a lack of knowledge about oral and dental health. In connection with the lack of knowledge and attitude towards dental and oral health, there can be a decrease in the degree of hygiene of the oral cavity. The most obvious object seen from the poor degree of oral hygiene is that there is plaque accumulation on the surface of the teeth and there is food residue or debris that is not clean when brushing teeth due to low knowledge and attitudes about dental and oral hygiene that affect improper brushing actions so that the debris that should be lost when brushing teeth still accumulates on the surface of the teeth. The solution that can be done to increase knowledge in maintaining dental and oral health is to conduct dental health education (Vyas, Talati, & Naik, 2014).

Dental health education (PKG) is an educational process that arises based on the need to improve dental and oral health and improve the standard of living. In providing dental health education, tools or media are needed that can be used to facilitate the delivery of material and make it easier for the public to understand what the speaker is explaining. Media that is usually used in dental health education efforts is using audio, video, and audio-video media.18 Various dental and oral health service programs continue to be improved to reduce dental and oral health problems, especially dental caries. Health service efforts are carried out through promotive, preventive, curative, and rehabilitative approaches both in an integrated, comprehensive and sustainable manner, but in health development, there are still problems.

The use of media has experienced rapid development and has touched various aspects of life and one of them is in the world of education. Health promotion media have previously applied technology such as using audio, video, and combining the two, but the application of these technologies does not have such a big impact. The basis of the problem is that the use of promotional media does not provide opportunities for the target to interact with the learning material being presented.

The current 4.0 era of technology has a major impact on society, especially in the health sector. Requiring the public to obtain dental and oral health information independently that can be accessed wherever and whenever they are, the development of the Ed-Dhentys model as an effort to change behavior in the implementation of oral hygiene in the elderly through a family-

centered care approach with communication, information and education programs carried out using modern media, namely the internet.

The Ed-Dhentys model for the elderly is designed through a family-centered care approach. Ed-Dhentys (Education Dental Health System) includes assessment, recording (examination of the condition of elderly teeth), planning, implementation, and evaluation can be done by someone who can know and be able to care for fellow family members. Where the condition of the elderly has experienced a decline in physical condition, memory disorders, anxiety, senile dementia, and others. So that the elderly can no longer care for and maintain their health independently and need help from family members. So the researchers designed an approach through family-centered care because the role of family members in the elderly environment is very important for the capital implementation of dental and oral health care for the elderly in changing the behavior of oral hygiene.

Based on this background, researchers are interested in developing an information technology-based dental and oral health education model (Ed-Dhentys) to help the elderly in improving oral hygiene behavior independently.

METHOD

The method used in this study, namely using research and development methods (Research and Development). Research and development or Research and Development (R&D) is a step to develop new products or improve existing products to be accounted for. The research and development method is a research method used to produce a certain product by testing the effectiveness of the product.

This research will be conducted on the elderly group in Bima Regency, West Nusa Tenggara from March 2023 to April 2023. The choice of this place was made due to the lack of health promotion activities, especially dental and oral health promotion that reached the area.

Population is the entire object of research or object studied. The population in this study is the elderly in Bima Regency. The population in this study is the elderly from Sape District and the elderly from Lambu District totaling 150 elderly.

The sample is the object under study and is considered representative of the entire population. This sampling is carried out in such a way that a sample is obtained that can truly describe the true state of the population. Sampling in this study using non-probability sampling techniques is a technique that does not provide equal opportunities for every member of the population with the consideration of researchers. The Non-Probably Sampling method in this study uses a sampling technique, namely Random Sampling.

Research data comes from various sources collected using various techniques during research activities, the data used by researchers is data based on the following sources: Primary data and Secondary data.

Data obtained from the results of the questionnaire are carried out through data examination, questionnaire grouping, and data preparation in the form of knowledge distribution tables, attitudes, actions, and Debris Index scores. The management of data analysis in this study uses the SPSS 24.0 for Windows program with tests: Normality Test, Univariate Test, and Bivariate Analysis.

RESULT AND DISCUSSION

A. Model Ed-Dhentys

The increasing number of elderly population will cause problems, one of which is reduced self-care in the elderly about dental and oral hygiene. Poor oral hygiene can cause heart disease and other health, in addition to physical decline such as difficulties in communication and socializing experienced by the elderly. Any type of serious dental health problem in the mouth will cause an oral infection that causes respiratory problems in the elderly. The elderly are at risk of dental and oral health problems due to a lack of knowledge about oral hygiene, inability to perform oral care, or changes in the integrity of teeth and mucosa due to disease. The implementation of oral hygiene is an action that needs to be done to maintain cleanliness and freshness of the mouth. For this reason, it is necessary to carry out dental and oral health education for the elderly.

The validation results from several experts show that the average value of the three experts is 92% with a very decent category and the value of the p-value is 0.002 ($p < 0.005$) which means that the Ed-Dhentys model is very suitable to be used as an educational medium for dental and oral health in the elderly. This is considered important in developing an educational model to assess the feasibility of the theory, concepts developed, and the feasibility of the model itself so that the resulting model can be useful for its use.

The application of the Ed-Dhentys model in this intervention group can be used as a medium as a promotive and preventive medium that can be used during dental health promotion activities that have an attractive appearance and easy-to-understand material so that the elderly can carry out excellent and appropriate oral hygiene behavior.

B. Test the Effectiveness of the Model on the Knowledge of the Elderly

The use of the educational model as a medium is very important because it is one of the factors in the success of health counseling. The results of testing the effectiveness of data on paired variables using the Wilcoxon test found that the p-value in the intervention group increased knowledge with a value of ($p < 0.05$) which means that the Ed-Dhentys model applied to the intervention group is effective in increasing knowledge in preventing dental and oral disease in the elderly. As well as in the control group given the PowerPoint slide treatment.

The increase in knowledge that occurred in the intervention group was due to the Ed-Dhentys model developed based on target needs and education packaged into an interactive, interesting application that was easy to understand. The material contained in the Ed-Dhentys model in the form of understanding, causes, and prevention of dental and oral diseases is not only in the form of writing but is accompanied by modules and videos that are very interactive as well as the display of the model developed is very interesting in terms of appearance and use.

C. Test the effectiveness of the model on the attitude of the elderly

The results of the data effectiveness test on paired variables using the Wilcoxon test showed a p-value in the intervention group ($p<0.05$), which means that the application of the Ed-Dhentys model is effective in improving oral hygiene implementation attitudes in the elderly. While in the control group, the p-value was ($P>0.05$) which means that the application

of power point slides in the control group was not effective in improving the attitude of oral hygiene implementation in the elderly. The success of the application of the Ed-Dhentys model can also be seen from the results of the non-performance test using mann whitney in the post-test group with a value of ($p < 0.05$) which means that the Ed-Dhentys model is more effective in its application in improving the attitude of the elderly in implementing oral hygiene compared to giving PowerPoint slides in the control group.

The increase in attitude occurred in the intervention group because the Ed-Dhentys model had interactive material and material on the implementation of oral hygiene that was packaged as attractive as possible so that users did not get bored in reading the material contained in the developed model. Changes in attitudes that occur in the intervention group are caused by factors that affect the attitude of the target, namely the media developed is a media that can convey information and material in an interesting, concise, and easy to understand. The use of packaged media is not just a media or educational model, but an intermediary carrying information that is designed in such a way as to be interesting and useful for its use. The use of media not only attracts the attention of the target but clarifies the picture from all points of view that were once the target still does not understand and understand the consequences of opening a new point of view on the material in educational media.

D. Test the effectiveness of the model on the skills of brushing elderly teeth

The results of the effectiveness test of toothbrushing skill data on paired variables using the Wilcoxon test showed p-values in the intervention and control groups showed ($p<0.05$), which means that the application of the Ed-Dhentys model and PowerPoint slides are effective in improving elderly toothbrushing skills in carrying out oral hygiene. These results are also in line with the results of an unpaired test using the Mann-Whitney test which shows that ($p<0.05$) which means that the application of the Ed-Dhentys model and PowerPoint slides is effective in improving elderly toothbrushing skills in the implementation of oral hygiene, from the results of the difference between the two it was found that the application of the Ed-Dhentys model is more effective than PowerPoint slides. Toothbrushing skills are things carried out by health-related targets, including preventive, curative, and rehabilitative measures.

E. Test the effectiveness of the model on reducing debris index in the elderly

The results of the debris index data effectiveness test on paired variables using the Wilcoxon test showed a p-value in the intervention group ($p<0.05$) which means that the Ed-Dhentys model is effective in reducing debris scores in the elderly. While in the control group, the p-value of ($p>0.05$) means that the PowerPoint slide used in the control group was not effective in reducing debris scores in the elderly. The success of the Ed-Dhentys model in efforts to minimize debris scores is evidenced by the development of new models that are more interesting and interactive.

CONCLUSION

Based on the results of this study, it can be concluded that the Ed-Dhentys model is feasible and effective for improving behavior in implementing oral hygiene in the elderly. This is proven:

1. Model Ed-Dhentys through family-centered care is relevant as an educational medium for the elderly, as evidenced by a p-value of 0.0001 ($p<0.005$).

2. Model Ed-Dhentys on improving behavior in the implementation of oral hygiene of the elderly:
   a. Model Ed-Dhentys through family-centered care effectively increases the knowledge of the elderly in the implementation of oral hygiene of the elderly which is significantly evidenced by the measurement value after the intervention of 0.000.
   b. Model Ed-Dhentys through family-centered care effectively improves the attitude of the elderly in the implementation of oral hygiene of the elderly which is significantly evidenced by the measurement value after the intervention of 0.014.
   c. Model Ed-Dhentys through family-centered care effectively improves the skills of brushing elderly teeth in the implementation of oral hygiene which is significant as evidenced by the measurement value after the intervention of 0.000.
   d. Model Ed-Dhentys through family-centered care effectively reduced the debris index score in the elderly which was significantly evidenced by the measurement value after the intervention of 0.002.

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