

The Validity of EDUCHE (*Education Card Healthy*) for Increasing Physical Activity in Adolescents

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ABSTRACT

In general, the physical activity level of adolescents in Indonesia is still below the recommended level of 60 minutes moderate to vigorous intensity physical activity per day. This is concerning because low physical activity is one of the main risk factors for non-communicable diseases. Therefore, it is important to develop programs to increase the physical activity in adolescents. An educational physical activity program (education card healthy/eduche) has been developed to increase the physical activity of junior high school-students. The purpose of this study was to evaluate the content validity of the program. The content validity was assessed using the Aikens V formula for evaluating five aspects (i.e, layout, illustration, format, content/material, and language) conducted by three experts of physical fitness. A validity coefficient above 0.920 was considered as valid. The validation coefficients for layout, illustration, format, content, and language were 1.000, 0.920, 0.834, 0.920, and 0.920, respectively. The content validity for overall aspect was 0.920. It can be concluded that, in general, eduche is valid for increasing the physical activity among adolescents with junior high school age. However, the format of eduche needs further improvement before the program implementation.

Keywords: Validity formula Aiken's V, Eduche, Physical activity, Adolescent

1. INTRODUCTION

Physical inactivity is increasing among adolescents in several countries including in Indonesia. It is one of the main risk factors for non-communicable diseases (NCD), which is 50% of the incidence of disease in the world today. Physical inactivity is known to increase the risk of several NCDs such as breast cancer (21- 25%), heart disease (30%), stroke (27%), and diabetes mellitus (20- 30%) [1, 2, 3]. On the other hand, regular physical activity has been shown to prevent and treat several types of NCD and can reduce the risk of death from cardiovascular disease [1, 4, 5, 6, 7]. It is estimated that 6 out of 10 deaths from NCD are caused by lack of physical activity [1].

World Health Organization (World Health Organization) information from 2018 to 2020 shows an increasing trend in the proportion of adolescents with physical activity categories under WHO recommendations, which is 70% in 2018 to 81% in 2020 [1, 8]. In other words, about three out of four teenagers have not done the physical activity that has been recommended by the World Health Organization. Physical inactivity is defined as physical activity that is less than the recommended activity. WHO

recommends moderate or high intensity physical activity at least 60 minutes per day for children and adolescents [1].

This lack of physical activity occurs in both boys and girls, namely 78% in boys and 84% in girls. Lack of physical activity in adolescents can be found in developed to developing countries including Indonesia [8]. One of the efforts to overcome obesity is contained in the global target of Sustainable Development Goals (SDGs). The global target of SDGs contained in the Action Plan on Physical Activity 2018–2030 is to reduce the prevalence of physical inactivity both in adults and in adolescents by 15% in 2030 [1]. Efforts made by the Ministry of Health so far to improve the degree of public health by providing text modules to adolescents in Junior High School (SMP)/equivalent. Given the problem of obesity in adolescents its implications for the risk of degenerative diseases to death, it is necessary to prevent it immediately [9,10]. One effort that can be done is to promote health education related to physical activity in adolescents to increase school-based physical activity [11]. This is important, because the

higher the age of school children, the behavior of physical activity tends to decrease [12]. To increase its effectiveness, the educational program that is carried out needs to be developed based on the theory of behavior change [13,14].

There are many theories of behavior change that have been developed so far, but the theory of behavior change SCT is one of the recommended theories to be applied to physical activity programs associated with obesity prevention in adolescents [15,16,17,18]. Researchers developed SCT- based eduche as an effort to increase low physical activity among adolescents. This study aimed to evaluate the content validity of the eduche using the Aiken's V formula to measure aspects of layout, illustration, format, content/material, and language.

2. METHODS

2.1. Research Design

This study was a cross-sectional observational study conducted in August 2021 assessing content validity of eduche (an education card healthy program). The protocol in this study has been approved by the UGM Ethics Commission with approval No. KE/FK/1052/EC/2021.

2.2. Eduche Programs, Validators, and Instruments

Eduche is a program that aims to increase physical activity in junior high school age adolescents. Eduche was developed through several stages including the literature reviews method with the type of narrative review [19], by reviewing articles, journals, and textbooks related to assessment instruments and SCT construction

materials (Social Cognitive Theory) of existing adolescent physical activity. Furthermore, after the research team formulated assessment instruments and appropriate materials to increase physical activity in adolescents accompanied by display concepts, illustrations and language arrangements arranged in eduche. Eduche contains educational materials about physical activity based on the SCT construct, which is programmed for 24 weeks, where baseline data collection is carried out in the preparation week, 12th week and 24th week. Adolescent physical activity based on the SCT construct assessed by the validator contains the constructs of self-efficacy, outcome expectation, and self-regulation. The assessed constructs describe the daily activities of adolescents, starting with measuring physical activity (pretest) and continuing with an exercise program. At the end of the exercise program session each day, record physical activity in the notebook that has been provided, the daily notes are recapitulated and become a weekly progress record in the weekly notebook as well as record body weight at the end of the week to see the effect of the program on physical activity. For the first week of implementation of the program the measurement results are used as (post-test). Furthermore, the teenager did this activity repeatedly for 24 weeks, which was then measured by physical activity at the end of the program implementation period. The research team asked three experts who are professors in the field of physical fitness to assess the validity of the Eduche program from the aspects of layout, illustration, format, content/material, and language. Details of the assessment aspects are in Table 1.

Table 1. Assessment aspects

No. item	Aspects of assessment	Description
1.	<i>Lay out</i>	Attractive for teenagers, display images that support understanding of the material in the module, typing accuracy, consistency, use of title spacing, subtitles, display of type and letters according to the lattice material with knowledge about the benefits of physical exercise in managing obesity
2.	Illustration	Clarity of appearance, ease of understanding Eduche aspects assessed by statements/questions presented in increasing the confidence of adolescents in physical activity in sports
3.	Format	Clarity of material, attractiveness, clarity of numbering system, suitability of type and size of letters
4.	Content/material <i>Eduche</i>	The material presented in the learning is related to the assessment of knowledge about the benefits of the activity
5.	Language	Use of language that is in accordance with EYD, simple sentence structure, easy-to-understand communicative discussion in statements/questions to increase adolescent confidence in physical activity in sports

2.3. Data Collection and Analysis

The validity of the content of the eduche was analyzed using the Aiken's V formula. At this stage, the eduche document was assessed by the validator using a questionnaire containing the aspects of the assessment mentioned above. The assessment uses a rating scale of 1-5. The rating scale is 1-5, namely STB = Very Bad = 1; TB=Not Good=2; KB=Not Good=3; B=Good=4; and SB=Very Good=5. After the score was obtained from the validator, it was then analyzed using the Aiken's V formula to determine the validity of eduche in increasing physical activity in adolescents. According to Aikens, if there are 3 validators assuming an error of 5% the instrument is said to be valid, the validity coefficient value is at least 0.920. The formula for Aiken's V is as follows [20]:

$$V = (\sum (r_i - l_o)) / [n(c-1)]$$

Information:

- V = rater agreement index on aspect validity
- r = the number provided by the validator
- l_o = the lowest number of validity assessments
- c = highest validity rating score
- n = the number of validators who do the assessment

Table 2. Validation results with formula Aiken's

No. Item	Aspects of assessment	Validator			Validity Index per item	Categori per item	Validity Index	categori	p value
		1	2	3					
1.	Lay out	5	5	5	1,000	high	0,920	high	0,032
2.	Illustration	5	4	5	0,920	high			
3.	Format	3	5	5	0,834	high			
4.	Content/material Eduche	5	5	5	0,920	high			
5.	Language	4	5	4	0,920	high			

Information: categori: <0,4: low, 0,4-0,8: medium, >0,8: high validator 3, valid if p<0,05 nilai Aiken's V=0,920 (Aiken, 1985)

Table 2 shows that there are five aspects of assessment in the validation of the eduche instrument. Of the five aspects of this assessment, four of them with Aiken's V coefficient value > 0.8 which indicates a high item category, but one item is still in the medium category with Aiken's V coefficient value of 0.834. This aspect of the assessment is contained in the format. This means that there needs to be a slight improvement in the numbering system components and the font size that is displayed.

4. DISCUSSION

The results showed the first aspect of the assessment of the Aiken's V coefficient value in the optimal layout.

3. RESULTS

Based on the thematic analysis, four game media products were produced as physical education learning materials for physical fitness for children with special needs, as follows: (1) a draft of a running train game model, (2) a draft of wood saw game model, (3) a draft of a tire pumping game model, and (4) the draft model of the waving palm tree game.

In the post-production and quality check stages, the initial product of the Eduche module which was developed in the early stages was validated by experts to determine the validity of the initial product and obtain input for improvement of the initial product developed. In this study, the validator consisted of three physical activity experts. Evaluation of eduche products by studying the content of the material in eduche is associated with problems of adolescent sports physical activity and its impact on increasing obesity among adolescents. The data from the material expert validation on the initial product of the Eduche module is shown in Table 2.

This aspect of layout assessment shows the suitability of the image display with the characteristics of teenagers. This suitability makes it easier to understand the material. The second assessment aspect of Aiken's V coefficient value is 0.920 in the illustration. This aspect shows that the statements/questions presented in the eduche instrument have been able to increase adolescents' confidence in physical activity. The three assessment aspects of Aiken's V coefficient value are 0.834. This aspect is the format, with the coefficient value showing that this aspect is able to increase attractiveness, clarity of the numbering system, suitability of types, but some parts need to increase the font size so that all physical activity material items can be conveyed properly. The fourth assessment aspect of

Aiken's V coefficient value is 0.920. This fourth aspect is related to the content/material of the eduche instrument. With this coefficient value, it shows that the content/material in the eduche instrument is very suitable for the problem of physical activity and is able to increase physical activity in adolescents. The fifth assessment aspect of Aiken's V coefficient value is 0.920. This aspect is an aspect of language. With this coefficient value, it shows that the language aspect of the eduche instrument which contains the sentence structure, and the discussion in the communicative instrument is easy to understand, so that it can increase the youth's confidence to do physical activities. Instrument experts argue that valid and valid instruments are called standard instruments, because the process goes through standardization activities in research. A standard instrument is an instrument that: (a) is compiled by experts who compose the instrument and is calibrated, analyzed and improved, (b) has clear application and scoring instructions, (c) has a norm reference for interpreting a score. Thus, the standard instrument is an instrument that has been developed empirically through several tests. The standard instrument has some restrictions, both regarding the content, implementation of measurements and measurement results [21]. The standardization of a measuring equipment/instrument involves some cases. The identity of the standard instrument is: (a) technically qualified assessment aspects, (b) clear administration and evaluation, (c) the existence of certain norms and understanding, (d) the presence of instructions and other instrument equipment.

AUTHORS' CONTRIBUTIONS

Author 1: Team leader in the preparation of proposals to articles, initiating and developing research problem ideas, responsible for collecting and analyzing quantitative data. Author 2: Correcting the language/sentence of proposals, and articles, responsible for the technical collection and analysis of quantitative data Author 3: Collection of primary, and secondary data, monitoring and evaluation, completeness, and improvement of articles.

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