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Artikel Penelitian

Pengembangan dan Validasi Instrumen untuk Mengukur Pengetahuan, Sikap, dan Perilaku Merokok pada Mahasiswa

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ABSTRAK

Berhenti merokok sangat penting untuk mengurangi angka kesakitan dan kematian akibat merokok. Tujuan dari penelitian ini adalah untuk mengembangkan instrumen baru untuk mengukur pengetahuan, sikap, dan praktik merokok pada mahasiswa, motivasi, dan pendapat mereka tentang berhenti merokok oleh apoteker. Penelitian ini dilakukan dalam dua tahap, pengembangan instrumen dan *judgemental evidence*. Panel yang terdiri dari 3 orang ahli (psikolog, apoteker, mahasiswa perokok) digunakan untuk memvalidasi instrumen melalui ukuran kuantitatif. Sedangkan 30 responden digunakan untuk membuktikan validitas kuesioner. Instrumen yang dikembangkan terdiri dari 5 domain dan 53 item pertanyaan. Kelima domain tersebut adalah: 1) pengetahuan; 2) sikap; 3) perilaku; 4) motivasi berhenti merokok; 5) pendapat tentang bantuan apoteker untuk berhenti merokok. Instrumen yang dikembangkan menunjukkan validitas konten item individual yang tinggi (kisaran I-CVI: 0,50 hingga 1,00) dan validitas konten keseluruhan yang tinggi (S-CVI/UA = 0.96; S-CVI/Ave = 0.98), relevansi item baik (Kappa: 1), dan jelas (Kejelasan: 2.93). Instrumen ini dianggap reliabel dengan *Cronbach alpha* untuk masing-masing domain pengetahuan, sikap, praktik, motivasi, dan opini masing-masing sebesar 0,76; 0,76; 0,79; 0,83; dan 0,79. Dapat disimpulkan bahwa instrumen tersebut menunjukkan konten item yang tinggi.

Kata kunci: berhenti merokok, kuesioner, apoteker, motivasi

Development and Validation of Instrument to Measure Knowledge, Attitude, and Practice of Smoking in Students

ABSTRACT

Quit smoking is very important to reduce morbidity and mortality caused by smoking. The purpose of this study was to develop a new tool to measure the knowledge, attitude, and practice of smoking in students, their motivations, and opinions on smoking cessation by pharmacists. This study was conducted in two phases, instrument development and judgmental evidence. A panel of 3 experts (psychologist, pharmacist, student smoker) was used to validate the instrument through quantitative measures. Whereas 30 respondents were used to justify the reliability of the questionnaire. The instrument consists of 5 domains and 53 questions. The 5 domains are: 1) knowledge; 2) attitude; 3) practice; 4) motivation of quitting smoking; 5) opinion on the help of pharmacist to quit smoking. The developed tool showed high content validity of individual items (I-CVI range: 0.50 to 1.00) and high overall content validity (S-CVI/UA = 0.96; S-CVI/Ave = 0.98), the relevance of items was good (Kappa: 1), and clear (Clarity: 2.93). The tool was deemed reliable with Cronbach alpha for each domains of knowledge, attitude, practice, motivation, and opinion were 0.76; 0.76; 0.79; 0.83; and 0.79 respectively. It can be concluded that the instrument demonstrated high item-content.

Keywords: *quit smoking, questionnaire, pharmacist, motivation*

1. INTRODUCTION

Smoking is the leading cause of preventable death. Smoking is considered a major risk factor that causes fatal diseases such as coronary heart disease, hypertension, bronchitis, and several types of cancer such as upper respiratory tract and oral cancer (1). In Indonesia, 225,700 deaths per year are caused by smoking (2). The percentage of smoking among those aged 20 – 24 years in 2021 is 26.97% (3). In Surakarta, the percentage of smokers aged 15 – 24 is 14.90% (4). In general, in this age category, the majority of Indonesian people are pursuing higher education as students. So students have quite a big opportunity to become active smokers.

Many students still have poor knowledge and behavior about smoking and low motivation to quit smoking. Knowledge, attitudes and behavior will influence the smoking cessation process. Sairo et al.'s research (5) shows that 45.7% of students have poor knowledge

about smoking. Meanwhile, research by Latif et al. (6) shows that students have a good level of knowledge about the harm of smoking. As many as 64% of students have a positive attitude towards smoking (7). As many as 61.8% of students have negative attitudes about smoking (8). Woelandari's research (9) shows that 57% of the respondents (students) are motivated to stop smoking, while 43% are not motivated to stop smoking. 76.2% of students have a good opinion of smoking cessation counseling carried out by health workers (10). A simple way to reduce mortality and morbidity due to tobacco use is to stop smoking (11). Health workers have an important role to play in increasing motivation to quit smoking (12). As health workers, pharmacists can participate in providing both pharmacological and non-pharmacological counseling. Non-pharmacological counseling, for example by providing smoking cessation counseling. Smoking cessation counseling that can be carried out by pharmacists regarding smoking cessation includes explaining the negative impacts of smoking, how to avoid the desire to smoke, the benefits of quitting smoking, and explaining how or steps to stop smoking. Compared to other health workers, pharmacists are easier for the public to find because they do not need to make an appointment in advance (11). As many as 79.07% of respondents experienced an increase in knowledge of the dangers of smoking and motivation to stop smoking after pharmacist education was carried out by pharmacists (13).

Knowing the level of knowledge, attitudes and behavior regarding smoking in students aims to be able to develop effective strategies or methods so that the smoking habit of students can be controlled. If there are no appropriate steps or strategies to reduce cigarette consumption, the number of deaths will continue to increase. This study aims to develop instruments to determine knowledge, attitudes, behavior about smoking, motivation to stop smoking, and students' opinions about the role of pharmacists in helping them stop smoking.

2. RESEARCH METHODOLOGY

The research was carried out in accordance with the ethical clearance letter No. 3754/B.1/KEPK-FKUMS/X/2021 by the UMS Faculty of Medicine. The development and validation of the questionnaire were conducted based on procedure described by Stein et al. [14] and Armstrong et al. [15], which involving instrument design and attaining judgmental evidence. Questionnaire design was performed in two-steps. The first step was content and domain specification as well as item generation and instrument construction [16]. The second step was judgmental evidence (content validity). This step was conducted with a panel of experts [16] which was continued with questionnaire reliability evaluation with 30 respondents.

2.1. Instrument design

Content and Domain Specification & Item Generation

Items were generated from the literature retrieved from a PubMed and a Google scholar search to identify publications that evaluated with key words: knowledge AND attitude AND practice AND motivation AND student smoking AND smoking cessation OR stop smoking. The screened literatures were used to develop the instrument.

The 53 items were then categorized under five domains in the preliminary version: 1) knowledge; 2) attitude; 3) practice; 4) motivation of quitting smoking; 5) opinion on the help of pharmacist to quit smoking.

Instrument construction

The method was adopted from Stone; the first version of this questionnaire was distributed to an academic as advisory committee for feedback [17]. A three-member committee was asked to evaluate the format, domains, and items of the instrument. The committee was comprised of academics in the field of clinical pharmacy. Each domain and item was reviewed for structure and clarity, redundant items were eliminated, and ambiguous phrasing were modified.

2.2. Judgmental evidence (content validity)

The new questionnaire must be tested to ensure a instrument is valid [18, 19]. Validity is defined as the extent to which the instrument measures what it is intended to [20].

Content validity

There are multiple methods for testing content validity. This study used one method that using empirical techniques to calculate the index of content validity (CVI) using the Item-CVI (I-CVI) and the Scale-level-CVI (S-CVI) [16] as well as the content validity ratio (CVR) [15, 16].

A cover letter and the detailed items of the instrument were included with the content validity survey explaining why experts were invited to contribute, along with instructions on how to rate each item. To evaluate whether items were relevant, clear and essential, experts were given a sheet with the following four intended evaluations: 1) the relevance of each question in the questionnaire; 2) the clarity of each question; 3) the essentiality of each question; and 4) recommendations for improvement of each

question. For the relevancy scale, a 4-point Likert scale was used (Responses: 1 = not relevant to 4 = very relevant). Ratings of 1 and 2 are reflected content invalid while ratings of 3 and 4 are considered content valid [21]. A 3-point Likert scale was used for the clarity and essentiality scale. The clarity scale was: 1 = not clear, 2 = item needs some revision; and 3 = very clear, and for essentiality: 1 = not essential; 2 = useful, but not essential; and 3 = essential [15, 16]. Additional comments and recommendations by the experts were written on the sheet the survey.

Content validity was determined using a number of experts (n = 3) that included academics in the field of psychology EP, S.Si., M.Psi, Psychologist, academics in the field of pharmacy apt. DO, S.Farm., M.Sc, and student smoker from UMS Civil Engineering student.

Reliability

Reliability is the reliability of an instrument showing measurement results that do not contain bias or are free from measurement error (error free), so that it can guarantee a constant and stable measurement even if measurements are carried out twice or more with the same instrument (22). This test was carried out on 30 smoking engineering students using the Cronbach's Alpha method. It is said to be reliable if the value of Cronbach's Alpha is > 0.60 (23).

3. RESULTS AND DISCUSSION

Validations of the questionnaire were conducted using the Content Validity Index (CVI) method. This method is used to ensure the contents of the questionnaire are relevant and in accordance with the research objectives. There are several methods to test content validity. This research uses the content validity index (CVI) method which consists of I-CVI, S-CVI/UA, S-CVI/Ave, Kappa and Aiken's V. The statistical techniques used are as follows:

1. I-CVI: I-CVI is used to measure the relevance of each question item. 51 (96.2%) questions were relevant with an I-CVI score = 1.00 and 2 (3.8%) questions were irrelevant with an I-CVI score = 0.67. The 2 question items were changed according to recommendations from experts so that the question items could still be used.
2. S-CVI: S-CVI is used to measure the overall relevance of questionnaire items. The S-CVI/Ave of this study was 0.98 and the value for S-CVI/UA was 0.96. If the S-CVI/Ave value is ≥ 0.9 and the S-CVI/UA value is ≥ 0.8 then it has very good content validity (Shi et al., 2012). S-CVI/UA is calculated by the total UA score/total question items (53 items). S-CVI/Ave is calculated by the total I-CVI score/total question items (53 items).
3. Kappa. The formula for calculating Kappa (24) is:

$$K = \frac{(\text{ICVI} - \text{Pc})}{1 - \text{Pc}}$$

With Pc = [N!/A!(N-A)!]*0.5N (16). In this formula Pc = probability of chance agreement; N = number of experts; and A = number of experts who agree that the item is relevant. A Kappa value > 0.74 is considered excellent; 0.60 – 0.74 is considered good and < 0.59 is sufficient. In the research, the Kappa calculation results for 51 questions were very good with a Kappa value of 1.00 and 2 question items were sufficient with a Kappa value of 0.467.
4. Aiken's V: The important aspect of each question item is determined by calculating Aiken's V as follows (25):

$$V = \frac{\sum s}{[N\,(C-1)]} \quad \text{with} \quad s = r - Lo.$$

In this formula:
V : Aiken's V coefficient value
Lo: Lowest assessment number (for example 1)
C: Highest assessment number (for example 3)
R: Number given by the Expert
N : Number of assessors/Experts

5. From the Aiken's V calculation that was carried out from 53 question items, there were 6 unimportant question items and 47 important question items. These 6 questions have been changed according to recommendations from experts so that these question items can still be used. The results of Aiken's calculations are assessed using the Lawshe score table (26) and for 3 experts the score is 1.
6. Clarity of Results; Used to determine the clarity of questionnaire items. The clarity test calculation is by dividing the sum of the assessments of the three experts divided by the number of experts. Forty-six items have an average score of 3, there are 6 items with an average score of 2.67, and there is 1 item with an average score of 2. It is said to be clear if the average score is 3. From the calculation results there are 7 items that has a score <3, then the item is changed according to advice from the expert. The average clarity score of the 53 question items was 2.93.

Table 1. Blueprint of the questionnaire, favorable, unfavorable questions in the domains of knowledge, attitudes, behavior about smoking, motivation to stop smoking, and opinions on smoking cessation counseling by pharmacists

Domain		
Knowledge		
	Favorable	*Unfavorable*
a. The influence of smoking to health	8	6
b. Cigarette content	2	2
c. Duration of smoking and smoking cessation efforts	-	3
Total items	21 items	
Attitudes		
	Favorable	*Unfavorable*
a. Smoking cessation	5	1
b. Smoking perceptions	3	4
c. Smoking in public	-	1
Total items	14 items	
Practices		
	Favorable	*Unfavorable*
a. Experience of smoking behavior	6	-
b. Smoking behavior in the last 1 (one) month	3	-
Total items	9	
Motivation	*Favorable*	*Unfavorable*
Motivation to quit smoking	5	-
Total items	5	
Opinions	*Favorable*	*Unfavorable*
Opinion on the help of pharmacist to quit smoking	4	-
Total items	4 items	

This study developed and provided content validation of a new tool to measure the knowledge, attitude, and practice of smoking in students, their motivations, and opinions on smoking cessation by pharmacists. The most common method for measuring content validity is calculating the Item-level CVI (I-CVI), however, an alternative, unacknowledged method to measure content validity is Scale-level CVI (S-CVI), which can be calculated using S-CVI/UA or S-CVI/Ave. The number of experts (n = 3) was considered adequate for content validation as the number of raters ranges from a minimum of 3 to a maximum of 10 [16, 27].

A less common way to calculate content validity is to use the CVR approach. This method determines how many evaluators mark an item as essential. The complexity of conducting numerous rounds of cognitive interviews was to decide what information was relevant and when information was no longer considered important in tool development.

The development and evaluation of the tool to measure knowledge, attitude, and practice of smoking in students, their motivation to quit smoking, as well as their opinion on the help of pharmacists to quit smoking demonstrated high item-content. It is expected that this tool might be used to help the stake holders to develop strategies to help students stop smoking.

Limitations

With any preliminary questionnaire there were some limitations to its design. The limitation of this study is length of the questionnaire. The questionnaire may take about 30 to 40 min to complete.

Table 2. Cronbach's Alpha values from the domains of knowledge, attitudes, behavior about smoking, motivation to stop smoking, and opinions on smoking cessation counseling by pharmacists (N: 30 students)

Domain	*Cronbach's Alpha*	Interpretation
Knowledge	0,749	Reliable
Attitude	0,763	
Practice	0,793	
Motivation to quit smoking	0,831	
Opinion on the help of pharmacist to quit smoking.	0,797	

4. CONCLUSIONS

The development and evaluation of the tool to measure knowledge, attitude, and practice of smoking in students, their motivation to quit smoking, and their opinion on the help of pharmacists to quit smoking demonstrated high item-content. It is expected that this tool might be used to help the stake holders to develop strategies to help students stop smoking.

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7. CONFLICT OF INTEREST

All authors declare that there is no potential conflict of interest with the research, authorship, and/or publication of this article.

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