

Development and Testing of the Psychometric Properties of Thai Nurses' Attitudes toward Alcohol-dependent Patients Scale

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ABSTRACT

Background: The attitudes of nurses can impact quality of patient care. **Aim:** To develop and test the psychometric properties of Thai nurses' attitudes toward alcohol-dependent patients scale. **Method:** Instrument development research design was conducted in two phases. Phase 1 was focus group interviews to better understand the meaning and concept of attitudes of nurses toward alcohol-dependent patients, creating components of attitude and developing specific scale items. Phase 2 was the evaluation of psychometric properties of the scale through field-testing for construct validity and reliability. Data was analyzed using the Pearson correlation coefficient test, t-test, factor analysis technique with varimax rotation, and Cronbach's alpha coefficient test. **Results:** 28 items showed good item discrimination power. The item-total correlations showed medium to high levels of correlation with factor loadings ≥ 0.44 , and displayed a total variance of 73.19%. Exploratory factor analysis revealed 5 components: nurses' opinion alcohol-dependent patients in terms of behavior, beliefs, opinion on personalities, feeling about image, and opinion on care. The reliability coefficient alpha of Cronbach was 0.96. **Conclusion:** Nurses' attitudes toward alcohol-dependent patients scale shows high validity, high reliability, and could be used as a scale of Thai nurses' attitudes toward alcohol-dependent patients.

Keywords: alcohol dependent patients, attitudes, nurses, psychometric properties, scale

Introduction

Alcohol consumption is a main factor for burden of disease. The World Health Organization (WHO) estimates that 76.3 million people in the world have been affected by alcohol abuse and dependence [1]. Around 5% of Thai people were classified to be alcohol dependent according to a report by the Integrated Movement on Alcohol Problems – Health in 2012 (IMAP-Health). A study of burden of disease among Thai population in 2009 found that alcohol dependence and harmful alcohol use was the number one factor among 10 causes of burden of disease [2]. Alcohol dependence is a chronic disease and alcohol relapse can occur anytime; it is often combined with other physical or psychiatric co-morbid diseases leading to complicated treatment and care. The prevalence of alcohol dependence or alcohol related

problems in government psychiatric hospitals in Thailand is the second highest after schizophrenia. In the last 5 years at Suan Prung Psychiatric Hospital in Northern Thailand, a 700-bed tertiary care facility, 45 percent of alcohol-dependent patients have been re-admitted within 1 year [3]. According to two studies, "The History and Future of "Aftercare" by White and Godley and "Alcohol relapse repetition, gender, and predictive validity" by Zywiak et al., alcohol relapse is most often found during the first 1-2 months after discharge out of the hospital [4,5]. The high-risk period of alcohol relapse continues over 12 months after treatment [5]. Previous studies indicate that alcohol dependence affects nurses' attitudes, particularly when patients relapse. Basic training of nurses in Thailand does not sufficiently cover the skills and knowledge needed to treat complicated problems of alcohol-dependent patients. Even when they are trained, many nurses do not believe that their interventions have influence on changing the drinking behaviors of their patients, nor are they confident to screen and give intervention [6,7]. Unlike other types of treatment in hospitals, nurses see the same alcohol relapsing patients return frequently. Some patients begin

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drinking again immediately after being discharged from the hospital. These events can cause negative attitudes among nurses that are expressed by boredom, annoyance, dislike, disdain, or blame toward their patients. The impacts of negative attitudes of nurses towards patients include avoidance of making professional relationships with patients, judging on the morality of patients or being pessimistic about the chances for their patients to recover, all of which can affect quality of care [8]. Awareness of negative attitudes toward care of alcohol-dependent patients is therefore an important issue for the nursing profession. In order to improve quality of care for alcohol-dependent patients, the development of a scale measuring nurses' attitudes toward alcohol-dependent patients is required. A literature review found three studies about scales of nurses' attitudes toward alcohol-dependent patients. The first study was from Brazil in 1979 by Campbell and Stanley. This scale is comprised of 80 items which cover five components of nurses' attitude towards alcohol and related problems: the work and interpersonal relationships of the alcoholic, etiology, disease, the repercussions resulting from the use/abuse of alcohol, and the use of alcoholic beverage [9]. The second study was also from Brazil. This scale is comprised of 84 items and identifies five attitude subscales that cover five components: attitude toward alcoholic patients, attitude toward the etiology of alcoholism, attitude toward alcoholism as a disease, attitude toward the consequences of alcohol use/abuse, and attitude toward alcoholic beverages [10]. These scales attempt to develop an assessment of the nurses' attitudes toward alcohol, alcoholism, and alcoholics, but are not specific for alcohol-dependent patients. The third study was developed with nursing students in Brazil. The questionnaire is comprised of 80 items that cover three components: work and interpersonal relations of the alcoholic, etiology, and alcoholic drinks [11]. To evaluate the adequacy of any existing instrument, population is a required issue of consideration. This means the instrument needs to be developed for a particular population and needs to be specific to individuals or groups. In other words, the instrument needs to be tested in the field with particular population bases with the objective of instrument development. As a result, instruments often cannot be reused for different types of populations without considerable modification [12]. Thus, the three existing nurses' attitudes scales are not appropriate to apply to the nursing profession in Thailand. A review of existing literature did not reveal any scale used for measuring Thai nurses' attitude toward alcohol-dependent patients. To assess Thai nurses' attitudes toward alcohol-dependent patients, a specific scale is

needed with high validity and reliability. The scale also should have a short number of questions but still cover all necessary concepts and components. The objective of this study is to develop and test the psychometric properties of the nurses' attitudes toward alcohol-dependent patients scale based on a Thai context.

Background and Conceptual Framework

Attitude is an enduring system of positive or negative evaluations, emotional feelings, and pro or con action tendencies that functions in the social sphere. It consists of three components: affective, cognitive, and behavior [13]. The definition of attitude proposed in the dictionary is manner, disposition, feeling, position, or thinking with regard to persons or nothing; tendency or orientation, especially of the mind [14]. Nursing care delivery to patients with alcohol dependence has been documented in the literature. Alcohol-dependent patients who are hospitalized are likely to experience alcohol withdrawal syndrome because the onset of alcohol withdrawal is usually between six and 24 hours after the last drink [15]. The three goals of treatment of alcohol withdrawal syndrome are initiating abstinence, reducing withdrawal symptoms and severe complications, and retaining the patient in treatment. To help patients to continue reduction in alcohol consumption and maintain alcohol abstinence after the withdrawal phase, nurses are expected to provide counseling interventions, psychosocial counseling, and engage patients into self-help groups [16]. The results of these nursing practices for alcohol-dependent patients may let nurses fail to engage with patients and may be uncertain whether this is within their scope of nursing practice, or they may perceive a lack of knowledge and skills in identifying and responding to affected patients [16]. Furthermore, according to an addiction terminology, it has been found that addiction affects attitudes of professions toward patients [17]. The consequences of nurses' attitudes toward their patients can be identified as follows: quality of care, level of recognition of addiction as a treatable chronic condition, judgments, and stereotyped perceptions [7,18,19]. Previous studies about attitude of nurses toward alcohol-dependent patients reports that nurses have varying attitudes. Factors that influence nurses' attitude toward alcohol-dependent patients, whether positive or negative, include symptoms of alcohol problems, pattern of alcohol use, nurses' knowledge, nurses' beliefs about their roles and impact of their intervention on patients' drinking behaviors change [6,7,9]. Other personal factors include the nurses' age, their own drinking habits, and belief about whether

patients can be helped [18]. Understanding the attitude of nurses towards alcohol-dependent patients is therefore necessary because these patients demonstrate relatively high hospital utilization rates. Negative attitudes of nurses can impact quality of care, lessen recognition of addiction as a treatable chronic condition, bias judgments, and stereotype perceptions. Because of the impacts of negative attitudes of nurses toward their patients, a new scale for assessing nurses' attitudes toward alcohol-dependent patients can provide a clear picture of manners of thinking, feeling, and behaving that reflects the state of mind of Thai nurses. It also can identify the level of motivation necessary to provide quality of care. The ultimate goal of assessing nurses' attitudes is raising awareness of professional nurses toward the alcohol-dependent patients in order to foster more positive attitudes and more appropriate nursing care. The objectives of this study is to develop a scale of nurses' attitudes toward alcohol-dependent patients for Thai nurses, and to test its psychometric properties with professional nurses all over Thailand who have at least 2 years' experience caring for alcohol-dependent patients. The result of developing a quality scale and attitude outcomes among nurses will be a baseline of information for nursing administrators to adjust future training and supervision to improve and maintain quality of nursing care for alcohol-dependent patients among professional nurses in Thailand.

Procedures for Instrument Development

Design and procedures: The instrument developmental research design established the nurses' attitudes toward alcohol-dependent patients scale (NAADS) in two phases: (1) the construction of the initial scale and (2) the evaluation of its psychometric properties based on concepts from Waltz et al. [12], Burns and Grove [20], and DeVellis [21]. The first phase consisted of four steps including generating an item pool, reviewing for content validity, reviewing for clarity and readability, and pre-testing. The second phase included field-testing for item analysis and constructing validity tests with factor analysis, and testing reliability using Cronbach's alpha coefficient. The phases and steps of developing the NAADS are shown in Figure 1.

Methods

Study Sample and Recruitment: There were two groups of samples. Phase 1 group consisted of professional nurses from psychiatric hospitals, drug and alcohol treatment hospitals, and community hospitals, with three subgroups for focus group

interviewing (25 nurses), reviewing for clarity and readability (5 nurses), and pre-testing (140 nurses). Samples were recruited by purposive sampling method. Phase 2 group consisted of professional nurses from regional hospitals, general hospitals, and community hospitals (Figure 2). The total sample from the three levels of hospital were 1,459 professional nurses for field-testing for item analysis, construct validity testing with factor analysis and contrast group approach, and testing of Cronbach's alpha reliability coefficient. Samples were recruited by systematic sampling method. Completed data was analyzed for 1,391 cases. Inclusion criteria for sample selection was having at least two years of experience in providing care for alcohol-dependent patients and being willing to participate in this study.

Instrument and Data Collection: Three research instruments were used in this study—Demographics Data Forms, the Semi-structure of Focus Group Interview Guide, and the Nurses' Attitudes toward Alcohol-dependent Patients Scale (NAADS). The details of each instrument are described as follows:

1) The Demographic Data Forms were developed by the researchers to be used for professional nurses who participated in the phase of construction of the NAADS. All were written with close-ended and open-ended questions. Questions included sex, marital status, education, hospital employment, an experience in caring for alcohol-dependent patients.

2) The Semi-Structure of Focus Group Interview Guide developed by the researchers was reviewed for content validity by three experts from the Faculty of Nursing of Chiang Mai University, Maharakarm University, and Payap University respectively. The focus group interviews were done by researchers at the staff meeting room of the alcohol patient unit at Suan Prung Psychiatric Hospital and Thanyarak Chiangmai Hospital, and at the staff meeting room at Sanpatong Community Hospital. Interviews were completed 3 times with each meeting lasting between 1.5 and 1.75 hours. Each interview was tape recorded after consent was granted by participants. The principle question asked, "How do you think other people view alcohol-dependent patients?" The probe questions asked "What positive aspects do you think others see in alcohol-dependent patients?" and "What negative aspects do you think others see in alcohol-dependent patients?" For the creation of the initial item pool, two strategies were used: Focus-group interviews and a literature review that was conducted by searching with keywords "attitude" from the scientific databases of Science Direct, PubMed, and CINAHL and Thai database E-Thesis using research between 2001 and 2015.

3) The Nurses' Attitudes toward Alcohol-dependent Patients Scale (NAADS) was developed from Phase I study using a Likert Scale with 5 choices ranging from strongly disagree, slightly disagree, neutral agreement, slightly agree, and strongly agree. In order to develop the NAADS scale, three factors were considered. First, the principle behind creating [12,20,21] initial item pools is to develop a high internal consistency of the scale by developing as many items as possible. The researcher should create 3-4 times as many items based on the number of questions desired in the scale. Furthermore, questions should be written equally with positive and negative connotations for each item. Finally, the items in the scale should cover the main components of the concept based on the scale (Burns & Grove, 2001; DeVellis, 2003; Waltz et al., 2005). This scale was sent by post to the hospitals that met the inclusion criteria with a request to sign a consent form. During data collection, participants were able to refuse to answer the question of the NAADS without any consequences. Data collection took place from June to September, 2014.

Data Analysis: Demographic data was analyzed using descriptive statistics. The Content Validity Index (CVI) was used to analyze the opinion of 6 experts in content validity and the content analysis was taken from data from focus group interviews. An analysis of the construct validity of the Nurses' Attitudes toward Alcohol-dependent Patients Scale used factor analysis. Quality of the scale items was tested using descriptive statistics and t-test, and the reliability of the scale used Chronbach's alpha reliability coefficient testing.

Results

The results of the initial construction of the Nurses' Attitudes toward Alcohol-dependent Patients Scale (NAADS) based on literature review and focus group interviews revealed 89 items with three components: feelings, thinking, and nursing practice with 33 positive items and 56 negative items. The Item-CVI = 0.98 and the Scale-CVI = 0.98. To evaluate the psychometric properties of the NAADS, a principle components factor analysis technique with varimax rotation was performed to examine the factor loadings, eigen values, proportion of variance, and scree test. Before determining the results obtained from a factor analysis, two assumptions were tested. The first assumption tested was that there is a linear relationship among all pairs of variables. The second assumption tested was the Kaiser-Meyer-Olkin Measure showing the adequacy of sampling size [22]. Item analysis was performed to evaluate the quality of

each item by computing item mean, item-total correlation, and inter-item correlation. Results showed that the mean of each item showed 2.42-3.72. This finding indicates that the mean score of some items are close to the center of the range of five scores, and those items can detect certain values of the construct [21]. The item-total correlation when considering Cronbach's alpha if deleted that item shows a medium to high level of correlation ($r = 0.54-0.81$), and the inter-item correlation shows a low to high level of correlation ($r = 0.23-0.89$), which means each individual item correlates substantially with the collection of remaining items [21]. Moreover, the correlation among each component with total scales scores show medium to high level ($r = 0.85$ and 0.93 , respectively). There is a significant difference between groups of two subjects with high score (Mean \pm SD = 94.23 ± 20.35 , $n = 35$) and low score (Mean \pm SD = 59.65 ± 10.15 , $n = 35$) of the NAADS ($t = -8.99$, $p < 0.001$). Results indicate that the NAADS differentiated those with a positive attitude from those with negative attitude toward alcohol-dependent patients. To be retained of the number of factors, researchers are considered the components with eigen values greater than 1, the scree plot shows the sharp descent before the eigen values level off, and the components that account for at least 70% total variability [22]. Furthermore, the quality of each item has also been considered. The items that show item-subscale correlation and subscale-total correlation with correlation greater than or equal to 0.40 have been retained. The research results revealed that the NAADS has five components, 28 items had factor loadings ranking from 0.44 to 0.84 and displayed a total variance of 73.19% (Table 2). The resulting five components are as follows:

Component I: opinions on the behavior of alcohol-dependent patients consists of eight items and displays a variance of 23.01%

Component II: beliefs about alcohol-dependent patients consists of six items and displays a variance of 15.95%

Component III: opinions on personalities of alcohol-dependent patients consists of seven items and displays a variance of 14.52%

Component IV: feelings about image of alcohol-dependent patients consists of five items and displays a variance of 13.47%

Component V: opinions on caring for alcohol-dependent patients consists of two items and displays a variance of 6.22%

The reliability of the NAADS was computed through the internal consistency for the overall scale, with results showing Cronbach's alpha reliability coefficient

= 0.96, and components 1-5 showed reliability coefficient at 0.95, 0.89, 0.91, 0.86, and 0.80, respectively. This means the NAADS has a high internal consistency.

Discussion

The research results revealed five-components split into 28 items for the NAADS that measures nurses' opinions on the behavior of alcohol-dependent patients, beliefs about alcohol-dependent patients, opinions on personalities of alcohol-dependent patients, feelings about the image of alcohol-dependent patients, and opinions on caring for alcohol-dependent patients. Items loading on the five components in the analyses presented in the high percent of the total variance (73.19%). These findings indicate that the five components solution is appropriate and meets the rule of thumb in principle components analysis based on factor analysis--the number of factors to keep in the principal components analysis is to retain with account for at least 70% [22]. Moreover, each component is related to the concept of "attitude", which consists of three components: affective, cognitive, and behavior [13,23]. This finding suggested that the content of the NAADS is associated with the defining attribute of the concept of "attitude". Thus, this scale has ability to specify that is the major characteristic of a good scale. These findings contrast with previous studies of Vargas [10] in terms of number of item and characteristic of the component. His findings showed that "the Scale of Attitudes towards Alcohol, Alcoholism and Alcoholics" consist of 84 items, and the five components are (1) the alcoholics: work and interpersonal relationship, (2) Etiology of alcoholism,

(3) attitude towards alcoholism as a disease,(4) attitudes toward the consequences of alcohol use/abuse, and (5) attitudes toward alcoholic beverages. The main reason may be related to study purposes. This study aimed to develop the scale of nurses' attitudes toward alcohol-dependent patients, whereas the two previous studies focused on alcohol, alcoholism and alcoholics. Item analysis results of the mean of 28 items indicated that a mean close to the center of the range of five scores, then the items can detect certain values of the construct [21]. The item-total correlations showed medium to high level of correlation and the inter-item correlation showed low to high level of correlation which means each individual item almost correlates substantially with the collection of remaining items [21], but might indicate redundancy in the subscale. For example, the following question under component factor of behaviors may be asking for the same type of information between question 1, "touchy", and question 2, "penny outcry". In addition, under the component of personalities, similar information may be addressed between questions 2, "weak", and question 5, "incompetent". Therefore, it can be assumed that some items in the scale are not entirely distinct. The results also indicated that the NAADS differentiated those with a positive attitude from those with negative attitude toward alcohol-dependent patients. These findings supported the construct validity of the NAADS. Finally, the NAADS demonstrated high reliability, which indicates that there is good internal consistency among the items in the scale [24]. According to the research results, it was possible to say that the NAADS has adequate psychometric properties and consists of appropriate factors.

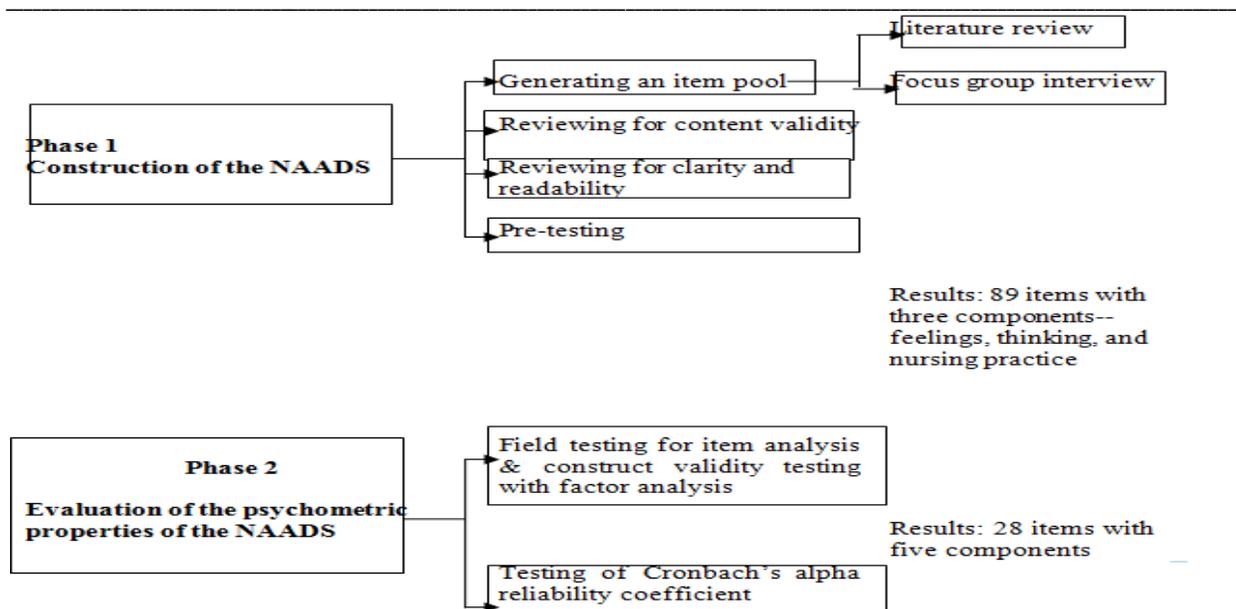


Fig 1: The process of developing the nurses’ attitudes toward alcohol-dependent patients scale (NAADS)

Table 1: Demographic Data of Participants Enrolled in Focus Group Interview, Review Items of the Scale, and Pre-testing

Demographic Data	Participants Number (percentage)		
	Enrolled in focus group interviews (n = 26)	Enrolled in the review items of the scale (n = 15)	Enrolled in the pre-testing (n = 140)
Gender			
Male	3 (11.5)	-	15(10.7)
Female	23 (88.5)	15 (100.0)	125(89.3)
Age	Mean = 39.3, SD = 7.7 Min = 27, Max = 53	Mean = 41.4, SD = 6.9 Min = 26, Max = 58	
Education			
Bachelor degree	12 (46.2)	5(33.3)	96(68.6)
Master degree	14 (53.8)	10(66.7)	44(31.4)
Job experience			
2-5 years	19 (73.1)	12(80.0)	60(42.9)
≥ 6 years	7 (26.9)	3(20.0)	80(57.1)

Table 2: Item analysis and Exploratory Factor Analysis of Nurses' Attitudes toward Alcohol-dependent Patients Scale

	NAADS Scale	M(SD)	Corrected item-total correlation	Alpha if item deleted	Factor loading
Opinion on the behavior of alcohol-dependent patients					
1.	Touchy	3.58 (1.29)	.67	.97	0.84
2.	Penny outcry	3.27 (1.32)	.66	.97	0.82
3.	Uncultured	3.72 (1.28)	.59	.97	0.78
4.	Vulgar	3.04 (1.32)	.64	.97	0.78
5.	Aggressive	2.71 (1.17)	.68	.96	0.78
6.	Stubborn	2.76 (1.17)	.60	.97	0.77
7.	Tease	2.93 (1.18)	.75	.96	0.56
8.	Ignore their health care	3.20 (1.22)	.81	.96	0.51
Percent of variance = 23.01					
Beliefs about alcohol-dependent patients					
9.	Cannot stop drinking	3.19 (1.22)	.80	.96	0.78
10.	Do not follow what they know about to quit drinking	2.83 (1.15)	.78	.96	0.75
11.	Administrators disappointed	2.89 (1.15)	.79	.96	0.72
12.	Noncompliance to treatment	2.78 (1.15)	.78	.96	0.68
13.	A burden on society	2.42 (1.14)	.68	.96	0.62
14.	Create problems for themselves	3.27 (1.26)	.78	.96	0.44
Percent of variance = 15.95					
Opinions on personalities of alcohol-dependent patients					
15.	Lack of life energy	2.91 (1.20)	.75	.96	0.83
16.	Weak	2.64 (1.17)	.76	.96	0.81
17.	Sensitive	3.51 (1.18)	.73	.96	0.78
18.	Failure in life	3.19 (1.14)	.62	.97	0.60
19.	Incompetent	2.75 (1.09)	.55	.97	0.52
20.	No responsibility	2.78 (1.04)	.54	.97	0.50
21.	No goal in life	2.95 (1.17)	.78	.96	0.45
Percent of variance = 14.52					
Feelings about image of alcohol-dependent patients					
22.	So pity	3.16 (1.15)	.72	.96	0.81
23.	Offensive	3.06 (1.16)	.77	.96	0.79
24.	Awesome	2.76 (1.09)	.73	.96	0.62
25.	Nonsense	2.57 (1.08)	.65	.97	0.51
26.	Distrustful	2.85 (1.14)	.67	.97	0.50
Percent of variance = 13.47					
Opinion on caring for alcohol-dependent patients					
27.	Difficult care	2.75 (1.15)	.60	.97	0.74
28.	The burden of care	2.79 (1.17)	.74	.96	0.58
Percent of variance = 6.22					
Total of percent of variance = 73.19					
Cronbach's alpha = 0.96					

Table 3: Description, Administration, and Scoring of the Instrument

Scale	Target group	Objective of the scale	Time of administration	Type of those measured	Number of items	How to collect data	Scoring and Interpretation of results
Nurses' Attitudes toward Alcohol-dependent Patients Scale (NAADS) Criterion-referenced measure	Nurses who responsibility for alcohol-dependent patients nursing care	To assess attitude of nurses toward alcohol-dependent patients	5-10 minutes	Alcohol-dependent patients	28 items Range = 28-140	Self-report Or Interview	Negative items Answer 1 = 5score Answer 2= 4score Answer 3= 3score Answer 4= 2score Answer 5= 1 score Scores-interpretation >4.5= Strongly positive attitude 3.5-4.5 = Positive attitude 2.5-3.5 = Neutral attitude 1.5-2.5 = Negative attitude <1.5= Strongly negative attitude

Limitations

The item-total correlations show medium to high level of correlation and the inter-item correlations show low to high level of correlation, which should be considered the items-redundancy among the sub-scale. Therefore, items within each component should be further examined.

Conclusion

The nurses' attitudes toward alcohol-dependent patients scale consists of 28 items; five components in a questionnaire measures attitude of Thai nurses toward alcohol-dependent patients. The NAAADS was developed through a literature review and a qualitative study. An adequate sample was used to test the

psychometric properties of the scale and results indicate this scale appear with high validity and high reliability, which could be used as a nursing measurement. Further studies should refine this scale and strengthen its psychometric properties.

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