Development and Psychometric Evaluation of Intention to Drugs Avoidance Scale (IDAS) for Thai Adolescents*

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Abstract

Purpose: The purpose of this study was to develop and evaluate psychometric properties of the Intention to Drugs Avoidance Scale (IDAS) for Thai adolescents.

Design: A methodological research was used to develop a newly intention to drug avoidance scale for Thai adolescents. Both qualitative and quantitative methods were used for data collection.

Methods: The development of the IDAS consisted of determination of content domains, items generation, and then psychometric evaluation regarding content validity, construct validities in terms of exploratory factor analysis (EFA) and known groups, and reliability. Three hundred and sixty-nine Thai adolescents with no history of drug use were stratified random sampling from high schools in every parts of Thailand as a sample for construct validity test of the scale. Another 60 Thai adolescents were recruited from drug treatment center (n = 30) and a high school (n = 30) in the south of Thailand for field testing and test-retest.

Main findings: The final version of the 22 items of the IDAS has 2 factors. The first factor, desire and commitment to avoid drugs, was comprised of 15 items that explained 42.26% of the variance with the factor loadings from .54 to .86. The second one was readiness to avoid drugs, which had 7 items with 10.73% of the variance and the factor loadings from .55 to .86. In addition, the construct validity of this instrument by using known groups indicated that there was a significant difference between adolescents who used and did not use drug. Alpha coefficient as indicating internal consistency reliability yielded the value of .94 and the stability which demonstrated by test-retest reliability has a high stability reliability ($r = .77$, $p = < .01$) over a two-week period.

Conclusion and recommendations: The result revealed that the IDAS for Thai adolescents had 2 factors with a valid and reliable properties for evaluation of intention to drugs avoidance of Thai adolescents. It should be beneficial for researcher and health care providers in using this tool in the future.

Keywords: intention, drugs avoidance, adolescents, development, psychometric

Nursing Science Journal of Thailand. 2019;37(3):4-17

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Received: 9 June 2019 / Revised: 6 August 2019 / Accepted: 8 August 2019

การพัฒนาและประเมินคุณภาพของแบบประเมินความตั้งใจในการหลีกเลี่ยงยาเสพติดของวัยรุ่นไทย*

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บทคัดย่อ

วัตถุประสงค์: เพื่อพัฒนาและประเมินคุณภาพแบบประเมินความตั้งใจในการหลีกเลี่ยงยาเสพติดของวัยรุ่นไทย

รูปแบบการวิจัย: การวิจัยเพื่อพัฒนาเครื่องมือโดยใช้ทั้งวิธีการเชิงคุณภาพและปริมาณในการเก็บรวบรวมข้อมูล

วิธีดำเนินการวิจัย: การพัฒนาแบบประเมินประกอบด้วย การกำหนดเนื้อหา การสร้างข้อคำถาม และการทดสอบคุณภาพเบื้องต้นด้วยการวิเคราะห์เชิงโครงสร้างของแบบประเมิน โดยใช้การวิเคราะห์องค์ประกอบเชิงสำรวจ (EFA) และการใช้เทคนิคกลุ่มรู้ชัด และการทดสอบซ้ำ กลุ่มตัวอย่างประกอบด้วยนักเรียนจากโรงเรียนมัธยมศึกษาที่ไม่มีประวัติการใช้ยาเสพติดจากทุกภาคของประเทศไทย ซึ่งได้จากการสุ่มแบบแบ่งชั้น จำนวน 369 คน ในการทดสอบความตรงเชิงโครงสร้างของเครื่องมือ และวัยรุ่นจำนวน 60 คน แบ่งเป็นมีประวัติการใช้ยาจากสถานบำบัดในภาคใต้ (30 คน) และนักเรียนจากโรงเรียนมัธยมในภาคใต้ (30 คน) ในการทดสอบที่ใช้เทคนิคกลุ่มรู้ชัดและการทดสอบซ้ำ

ผลการวิจัย: พบว่าการตรวจสอบคุณภาพเครื่องมือของแบบประเมินฉบับล่าสุด มีข้อคำถามจำนวน 22 ข้อ แบ่งเป็น 2 องค์ประกอบ 1) ความต้องการและความปรารถนาในการหลีกเลี่ยงยาเสพติด จำนวน 15 ข้อ อธิบายความแปรปรวนขององค์ประกอบเท่ากับร้อยละ 42.26 น้ำหนักองค์ประกอบอยู่ในช่วง .54 - .86 2) ความมุ่งมั่นในการหลีกเลี่ยงยาเสพติดจำนวน 7 ข้อ อธิบายความแปรปรวนขององค์ประกอบเท่ากับร้อยละ 10.73 และน้ำหนักองค์ประกอบอยู่ในช่วง .55 - .86 สำหรับผลการหาความตรงโดยใช้เทคนิคการรู้ชัด พบว่ามีความแตกต่างของความตั้งใจในการหลีกเลี่ยงยาเสพติดของกลุ่มวัยรุ่นที่ไม่ใช้ยาเสพติด และกลุ่มวัยรุ่นที่ใช้ยาเสพติดอย่างมีนัยสำคัญทางสถิติ ค่าสัมประสิทธิ์แอลฟ่าของครอนบาคทั้งชุด เท่ากับ .94 ผลความคงที่ โดยการทดสอบซ้ำในระยะเวลา 2 สัปดาห์ พบว่ามีความคงที่ในระดับสูง ($r = .77$, $p = < .01$)

สรุปและข้อเสนอแนะ: แบบประเมินความตั้งใจในการหลีกเลี่ยงยาเสพติดของวัยรุ่นไทยมี 2 องค์ประกอบที่มีความเที่ยงและความตรงเพียงพอที่จะใช้ในการประเมินความตั้งใจในการหลีกเลี่ยงยาเสพติด ซึ่งน่าจะเป็นประโยชน์สำหรับนักวิจัยและผู้สนใจในการนำไปประยุกต์ใช้ต่อไป

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Nursing Science Journal of Thailand. 2019;37(3):4-17

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Background and Significance

Adolescence remains an exciting period of transition in the life cycle of humans as it provides for a period of expanded growth just after childhood. During adolescence, young people are opened to the possibility of identity formation, self-exploring, spiritual growth and becoming independence from adults. As young people mature from childhood to adulthood, they experience remarkable physical, behavioral, social, and spiritual changes[1]. Drug or substance abuse is considered as a critical health related social and economic problem in every country. It is prevalent globally with an estimated 120 million users of drugs such as cocaine, heroin, and other synthetic drugs[2]. In particular, the global statistics on substance abuse among adolescents report 56 millions of users; whereas that in Thailand is 1.7 million young people (aged 12-24 years) use drugs[3]. World Health Organization (WHO) views addiction as the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs[2]. Long term misuse of drugs can result in dopamine imbalance in neurotransmitters, which results in severe psychiatric or mood disorders as well as psychosis (paranoia disorder, violent behavior, and depression disorders), physical (accidental injury, asthma, pain-related diagnoses, cardiopulmonary damage)[4].

The intention to avoid drug was a strong predictive factor for substance uses[5]. Recent drug relapse statistics show that more than 85% of individuals relapsed and come back to drug use in the year after treatment. Researchers estimate that more than 2/3 of individuals in recovery relapse within weeks to months of beginning addiction treatment[6]. In contrast, the persons who had intention and self-efficacy for prevention in methamphetamine and other drugs were significantly in low relapse rate[7]. Therefore, the intention is very important factor of stopping drug use.

Preventing substance use disorders and related issues in adolescents and young adults is important for activity and physical health. The classic categories of prevention include primary prevention aiming to prevent disease or injury before it ever occurs, secondary prevention with a goal to reduce the impact of disease or injury that has already occurred, and tertiary prevention, as controlling relapse of diseases leading to the prevention of more severe problems[8]. Behaviors and symptoms that signal the development of a behavioral disorder often manifest two to four years before a disorder is occurred[8]. In addition, persons with mental health problems are more likely to use alcohol and drugs, which leading to causes of death in the world. However, substance misuse behaviors are modifiable and

preventable. The efforts could make a difference to reduce these deaths[2]. Compared to the treatment, prevention has more benefits in term of time-saving, effectiveness, and financial benefits. One of prevention strategies is to promote intention to avoid drug abuse since behavioral intention would act as a protective factor for avoiding drug abuse among adolescents as well as preventing other high-risk situations[9].

From the literature review, the scales related to intention mostly focused on intention to treatment such as the circumstances motivation readiness and suitability scale (CMRS), adolescent substance abuse goal commitment questionnaire (ASAGC), the drug avoidance self-efficacy scale (DASES), and the stages of change readiness and treatment eagerness scale (SOCRATES); these scales were mostly developed under the context of a western society[10-13], which may not be able to capture the Thai context that is different from Western context[14-16]. Therefore, there is a need to develop and evaluate the psychometric properties of intention to avoid drug abuse scale for Thai adolescents in general.

Objectives

1. To develop the Intention to Drug Avoidance Scale (IDAS) for Thai adolescents.

2. To evaluate the psychometric properties of the Intention to Drug Avoidance Scale (IDAS) for Thai adolescents.

Research Question

1. What were the appropriate components of the IDAS?

2. What were the psychometric properties of the IDAS?

Methodology

This study was a methodological research to develop a newly intention to drug avoidance scale for Thai adolescents. Both qualitative and quantitative methods were used for data collection.

Sampling

Participants of this study were Thai students aged 12-18 years old, and living in Thailand. Five groups of participants were recruited into this study at different steps consisted of 1) ten Thai adolescents with no history of drug use were purposively selected for individual interviews; 2) thirty participants were purposively selected for pre-testing; 3) three hundreds and ninety participants were randomly selected from all of six regions (central, northern, northeastern, western, eastern, and southern) of Thailand for field-test; 4) sixty participants were purposively selected for known group

technique; and 5) thirty participants were purposively selected for test-retest.

Ethical Considerations

The proposal of the study and the consent forms were approved by the Social and Behavioral Sciences Institutional Review Board (IRB) of Prince of Songkla University (COA. No.PSU IRB 2018-NSt016) and Thanyarak Songkhla Hospital. Each potential subject was informed about the purpose of this study, the procedure, and benefits of this study. In addition, potential adolescent subjects were verbally informed about the purpose of the study, what involvement they were asked to, issues of anonymity and confidentiality, and the right to withdraw at any time without repercussions.

Data Collection

The counseling teachers, who served as the research assistants, contacted the students' guardians and sent a letter explaining the purpose of the study, the procedure and benefits. In addition, potential adolescent subjects were verbally informed about the purpose of the study, what involvement they were asked to, anonymity and confidentiality issues, and the right to withdraw at any time without repercussions. Parents who allowed their children to participate in this study were asked to sign a consent form. Upon the parents' approval, adolescents, who consented to take part in the study, were asked to sign a consent form.

Data Analysis

Descriptive statistics were used to analyze the demographic characteristics of subjects. The psychometric testing of IDAS was analyzed as follows: content validity was evaluated by the five experts and the content validity index (CVI) was calculated; construct validity was performed using exploratory factor analysis (EFA) and known group technique; and internal consistency and stability were evaluated for reliability of the IDAS.

Findings

The two phases of tool development for the IDAS were as a follows.

Phase 1: Development of the Intention to Drug Avoidance Scale (IDAS)

Step 1. Determination of content domain: This step involved the extensive review of the literature, concept analysis[17], and individual interviews related to intention to drugs avoidance in adolescents consisted of:

1. Desire to stay away from drugs and to not take drugs which consisted of 1) setting individual goals to stay away from drugs and to not take drugs; 2) motivation to accomplish goals; and 3) self-control to stay away from

drugs and to not take drugs.

2. Commitment to stay away from drugs and to not take drugs consisted of 1) commitment to stay away from drugs and to not take drugs; and 2) commitment to manage drug triggers.

3. Willingness to stay away from drugs and to not take drugs consisted of 1) negative attitudes toward drugs/drug users; 2) sense of social responsibility; and 3) adequate knowledge related to drugs.

Step 2. Items generation: A large pooled items were developed for each component of the intention to drug avoidance of adolescents. The total number of items in the initial pooled items was 75 items and the numbers of items in each component were as follows: 1) Desire to stay away from drugs and to not take drugs comprised of 16 items; 2) Commitment to stay away from drugs and to not take drugs even in difficult situations comprised of 28 items; 3) Willingness to stay away from drugs and to not take drugs comprised of 31 items.

Step 3. Scale format determination: The scale format of the IDAS was a 5-point Likert scale. The five categories were chosen from 1 = not at all true to 5 = extremely true (1 = not at all true, 2 = slightly true, 3 = moderately true, 4 = very true, and 5 = extremely true).

The aim of this step was to determine a content validity index (CVI). Seventy-five (item pool) items of the IDAS version 1 were submitted to five experts for review, commentary, and identification of all of the items, ensuring that the items in the scale demonstrated content adequacy[18]. The suggestions from the experts included the revision of some items that were not related to the concept of intention to drug avoidance. In addition, the component 1, or desire to stay away from drugs and to not take drugs, was not comprehensive enough.

After editing the items, there were 40 items in total of the IDAS, and the 5 experts again evaluated the 40 items of the IDAS and suggested checking the grammar of each item sentence, some items had to be deleted because they had the same meaning, and questions needed to be modified and added to suit the adolescence context. The CVI of the IDAS (40 items) included item content validity index (I-CVI) of .64, universal agreement (S-CVI/UA) of .65, and S-CVI/Ave (average) of .60. According to Lynn[19], it is that I-CVIs should be no lower than .78, and many writers have indicated that an S-CVI of .80 or higher is acceptable[20-21].

After expert validation, the suggestions were discussed among the researchers and some items were either revised or deleted.

Finally, there were 27 items of the IDAS for determination of the CVI. Then the last version was sent to the same 5 experts for revision.

Phase 2: Psychometric evaluation phase

Step 1. Determination of the CVI: From examination of the content validity index of IDAS version 2 (27 items), it found that I-CVI was 1, S-CVI/UA (universal agreement) was 1, and S-CVI/Ave (average) was 1.

Step 2. Pre-Testing: The second version of the 27-item IDAS was used to perform the pre-testing with 30 adolescents.

The alpha coefficient of the entire scale was .86. In addition, an average inter-items correlation between .31-.70 is desirable for item analysis. Cronbach's alpha coefficient in each component was as follows: component 1 (desire to stay away from drugs and to not take drugs) with 4 items, α = .73; component 2 (commitment to stay away from drugs and to not take drugs) with 18 items, α = .79; and component 3 (willingness to stay away from drugs and to not take drugs) with 5 items, α = .62.

Step 3. Field Testing: The IDAS version 2 (27 items) was distributed to 390 Thai adolescents from six regions of Thailand: North, North-East, East, West, Central, and South (65 adolescents in each region). Stratified random sampling was used in this stage. The return rate of the questionnaires was 100%, 21 respondents were deleted due to thier history of using drugs (methamphetamine, kratom), thus the total of 369 questionnaires were analyzed.

From 369 samples, 275 (74.5%) adolescents were female, 211 (57.2%) adolescents were 12-15 years old, 225 (61.0%) adolescents were Buddhists, 192 (51.0%) adolescents were studying in junior high school (Matayom 1-3), 309 (83.7%) adolescents had never been persuaded to take drugs, 327 (88.6%) of them were not smoking, 291 (78.9%) of them had friends using drugs, and 182 (49.3%) of them were not sure if they lived in areas associated with drug use.

Internal consistency reliability of the IDAS version 2 was evaluated using Cronbach's alpha coefficient. The alpha of the total scale was .92. The Cronbach's alpha coefficient was .81 for component 1(desire to stay away from drugs and to not take drugs), .93 for component 2 (commitment to stay away from drugs and to not take drugs), and .83 for component 3 (willingness to stay away from drugs and to not take drugs).

The 27 items of the IDAS were tested for the assumption of EFA which consisted of the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. The Kaiser-Meyer-Olkin (KMO) reflected an adequacy of sample for factor analysis at .87. An overall significance of high

correlations within a correlation's matrix ($\chi 2 = 6897.041$, $p < .00$) was displayed through use of Bartlett's test of sphericity.

An initial test for factor extraction used an eigenvalue greater than 1, and the scree plot, factor loading, and total variance were explained. In this step, an eigenvalue greater than 1 (1.01 - 11.41) resulted in 5 factors. The total percentage of the variance explained was 64.49%, and the factor loading ranged from .48 - .84. Furthermore, scree plot examination (Figure 1) indicated that two to five factors should undergo investigation to select the best factor structures.

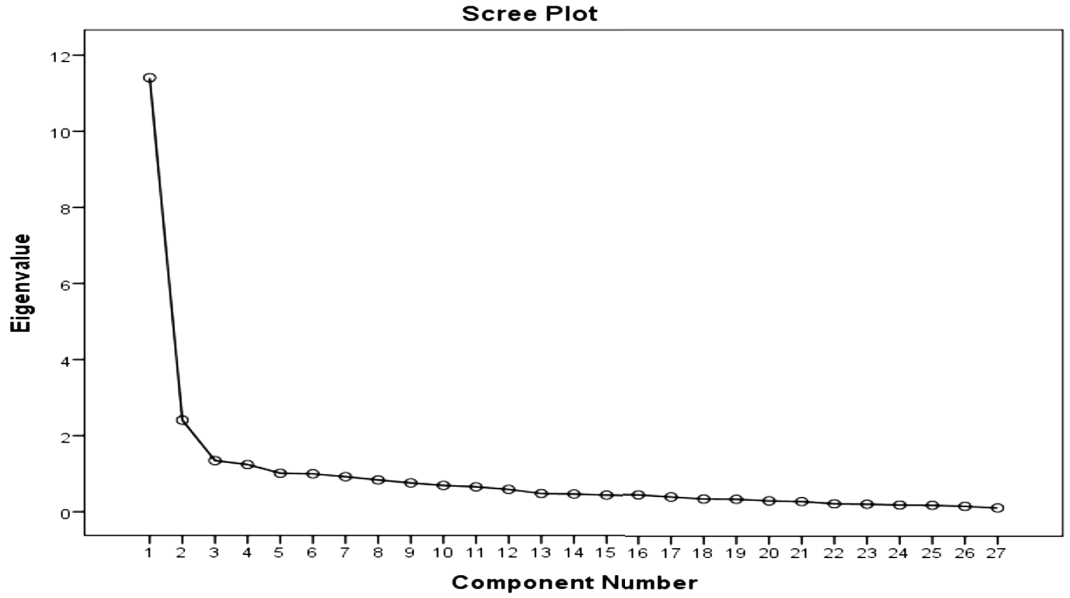

Figure 1: The Scree Plot of the IDAS version 2 (27 items)

The varimax method was used to conduct the rotation of an orthogonal type. After rotation, the first factor consisted of 15 items, and the second factor 7 items, with total variances explained of 54.99%, and with a cutoff point of .30[22-23].

Two-factor structure were found to conform to the set criteria including 1) eigenvalue greater than 1, 2) the scree plot (Figure 1) showing the breaks at 2 and 3 factors, 3) total variance explained of 54.99%, 4) factor loading ranging from .51 - .84, 5) theoretical interpretability, 6) parsimony, and 7) internal consistency of the total scale and of each factor. The 5 items with factors loading ranging from .35-.40 were deleted due to theoretical interpretation suggesting that the factor loading cutoff point was increased to .50 in order to reduce side loading[23]. Finally, the two-factor structure with 22 items accounted for 54.99% of variance with eigenvalues ranging from 2.36 - 9.74, and factor loading ranging

from .54 - .86.

The result of this two-factor version included: 1) Desire and commitment to avoid drugs, which consisted of 15 items, account of 42.26% of variance and alpha coefficient of the scale was .93, and 2) Readiness to avoid drugs, which consisted of 7 items, account of 10.73% of variance and alpha coefficient of the scale was .86 (Table 1).

Table 1: Principal component analysis with varimax rotation: Factor loading of the IDAS (n = 369)

Item No	Item Statement	Factor Loading
Factor 1: Desire and commitment to avoid drugs *(Eigenvalue = 9.74, Percent of variance = 42.26, Alpha coefficients = .93)*		
1.	I would avoid and not be involved with drugs in any case, I would set a goal that is strong and hope to become a good person who takes responsibility in the community.	.65
2.	I would avoid and be not involved with drugs in any case, I would do everything without causing harm to myself, other people and the community to achieve the goal of my life.	.72
3.	I would avoid triggers by staying away from drug users, not go to party with drugs, or other events that might lead to drug abuse.	.69
4.	To avoid drug abuse, I would take care of myself and usually remind myself to be in a drug-free environment.	.66
5.	I would tolerate any pressure that might lead to substance abuse.	.77
6.	If I have any problems, I will deal with those issues without using drugs even in drug-related situations.	.86
7.	If I face a high risk situation of drug abuse, I will not hesitate (give up) to avoid drugs.	.78
8.	Despite many barriers that make it difficult to avoid drugs, I still intend to overcome those barriers.	.74
9.	Despite the difficult situations and pressure on me, I would not take any drug.	.64
10.	Even if I have stress, I will not solve the problem by using drugs.	.67
11.	To change my emotions such as depression, I will apply other ways, such as working out, reading books, instead of using any drugs.	.58
12.	I would not stay alone in a situation that provides the opportunity to think about drug abuse.	.54
13.	I would immediately say no when friends offer me any drugs.	.55
14.	I would not take any drugs, however, my location is associated with drug abuse, specifically drug dealers and drug users.	.57
15.	Even though I have money and know the area where drugs are sold, I will not definitely buy any.	.58

Table 1 (continued)

Item No	Item Statement	Factor Loading
Factor 2: Readiness to avoid drugs		
	(Eigenvalue = 2.39, Percent of variance = 10.73, Alpha coefficients = .86)	
1.	I would avoid using drugs by trying to find alternative activities to inhibit drug abuse.	.55
2.	I would avoid participating or spending time with persons who use a drug.	.66
3.	I am ready to avoid and not be involved with any drug by gaining knowledge of the pros and cons of drug abuse and the ways to avoid it.	.67
4.	I am ready to avoid and not be involved with any drug by talking to educated people who are experts in drug abuse.	.82
5.	I am ready to avoid and not be involved with any drugs by practicing an important life-skill that would prevent me from abusing drugs such as refusal skills, and emotional management skills.	.76
6.	I am ready to do any activities that will help me to not be involved with drugs.	.73
7.	I ready to avoid drugs by finding occasions to participate with people who have experienced successful ways to avoid using drugs.	.70

Step 4. Post Testing: The IDAS final version (22 items) was examined for the construct validity of the scale using known group technique and stability using test-retest evaluation. Sixty students comprised of 30 adolescents with drug use and 30 students with no drug use. Due to normality issue, Mann-Whitney U Test and Spearman product-moment correlation were used for data analysis. The result showed that the first group (use drug) had lower scores of desire to avoid drugs ($z = -6.48$, $p < .05$), and readiness to avoid drugs ($z = -6.18$, $p < .05$) than the second group (not use), and the total score of the intention to drug avoidance scale of the two groups indicated that the first group had a lower score of intention to drug avoidance than group 2 at significance level .05 ($z = -6.45$, $p < .001$). The stability of the IDAS using test-retest was .77 ($p < .01$).

Discussion

The discussion section is made up of three parts: 1) content validity of IDAS, 2) construct validity of the IDAS, and 3) reliability of the IDAS.

1. Content validity of the IDAS

The content validity indices of the 27 items of IDAS (I-CVI) was 1, and the content validity index for the whole scale of intention to drug avoidance (S-CVI) revealed that S-CVI/UA (universal agreement) was 1 and

S-CVI/AV (average) was 1. For an accepted level of content validity is compute to be .80[19,21,24]. Content validity by experts was supported and sufficient to test in the next step. Therefore, the CVIs supported that the IDAS had satisfactory evidence as a newly developed scale for measuring intention to drug avoidance in Thai adolescents.

2. Construct validity of the IDAS

The construct validity of the IDAS was investigated using exploratory factor analysis (EFA) resulting in an outcome of satisfactory. It contained two factors comprising of 22 items which suited this present study as each factor was acceptable with moderate and high factor loadings[25]. In addition, the majority of the factors accounted for at least 5% of variance and all had eigenvalues greater than 1. As a variance explained between 40-60 % is considered sufficient in social science[26], the construct of IDAS was suitable to assess intention to drug avoidance for Thai adolescents as it accounted for 54.99% of total variance.

In addition, the construct validity by know group technique also confirmed that the IDAS has an acceptable construct of the scale since it can differentiate the adolescents who had used drugs, in regards to the intention to drug avoidance, with low intention to drug avoidance. A high degree of construct validity is increased when the scores of dissimilar groups are very different on items that have high relevance to one group but not to the other[27].

3. The reliability of the IDAS

In regards to the reliability, there were two types of reliability testing in this study; that is, internal consistency and stability reliability of the IDAS.

The internal consistency used the Cronbach's alpha coefficient which was performed on two instances of pre-test and field test. The results of the reliability showed that the Cronbach's alpha coefficient of the pre-testing (the IDAS version 2) was .86, and field-test (the IDAS version 2) was .94. The total result of the reliability of the IDAS was also higher than .7 which is a highly acceptable internal consistency for a newly constructed measurement. The measurement scale that achieves an alpha coefficient between 0.80 - 0.90 is considered as very good[28]. The overall internal consistency of the IDAS with 22 items in the final version showed the alpha coefficient of each factor ranged from .86 - .93.

For scale development, test-retest reliability is the method usually used to evaluate how constant scores remain from one time to another. The high correlation

represents the high confident that the phenomenon has remained stable over time[28]. This study showed an acceptable value for newly developed scale[27].

Conclusion and Recommendations

The IDAS is a valid and reliable measure in evaluating the intention to drug avoidance of adolescents in Thailand. The final version of the Intention to Drug Avoidance Scale (IDAS) composed of 22 items with two factors and the total variance explained of 54.99%. Factor loadings of the IDAS ranged from .54-.86. The results of the two factors consisted of: Factor 1- desire and commitment to avoid drug (15 items) with factor loading ranging from .54-.86 and accounted for 42.26% of variance with an eigenvalue of 9.74; and Factor 2 - readiness to avoid drug (7 items) with factor loading ranging from .55-.82 and accounted for 10.73 % of variance with an eigenvalue of 2.36.

The findings of this study will certainly benefit adolescents' discipline in education, practice, and administration. Nursing staff can use the IDAS as a guideline for evaluating adolescents' intention to avoid drugs leading to preventive interventions for substance use in adolescence for planning, promoting the desire, and readiness to avoid drug abuse in each adolescent.

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