Testing the Validity and Reliability of Drug Addiction Recovery Instrument in Male Drug User in CCRC

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***Abstract*- Drug addiction recovery is a fundamental factor for drug users to restart normal life and get back to the society. It is also a vital stage of drug treatment as it can be an indication or evidence whether the procedures used during treatment is suitable or not in helping addicts from drug problem. This study has been purposely conducted as to develop a drug addiction recovery instrument and to measure the recuperation level of drug addicts who were treated in the rehabilitation centre. The study is conducted to test the validity and reliability of DART instruments involving four component consisting of DDA, DPRA, DRA, and CMSA. Therefore, the factors contributing to drug addiction recovery based on conceptual framework derived from previous studies conducted by other researchers. The results show that the DART instrument had high Cronbach's alpha values of 0.790 (DDA), 0.873 (DPRA), 0.881 (DRA), 0.845 (CMSA). PCA analysis has been used to evaluate these items either necessary to be retained or dropped. The results of the study found that all the items built have met the measurement characteristics of an instrument and can be used as a tool to measure the drug recovery addiction level.**

***Keywords*- Addiction Recovery, Drug Dependency, Drug Abuse Possible Relapse, Drug Resiliency and Client Mental Strength**

I. INTRODUCTION

Drug recovery is personal and a process of individual change that focuses more on attitudes, values, goals, skills and roles ([1] [2]). Recovery also refers to a new meaning in one's life after successfully overcoming the 'tragedy' of drug addiction ([3] [4]). Being able to cope with addiction can mean that drug addicts are going through a difficult phase and this can lead to better change in their lives. Drug addicts often want to stay in recovery by finding suitable and loved jobs in the community to continue their lives [5]. There had three stages of recovery are early recovery, middle recovery and late recovery [6]. Although the role of institutional orientation in drug rehabilitation is known to be important, there are internal and external factors that have been identified as influencing addiction recovery processes.

Addiction recovery is different according to the modules and programs that have been set for each rehabilitation centre in Malaysia. In this country, rehabilitation centre are divided into two types of centre: government rehabilitation centre and private drug rehabilitation centre. These institutions are helping drug addicts cope with the programs and modules that have been provided. The process of addiction recovery is based on the type of drug used based on the behaviour of drug addicts as a result of drug addiction [7]. A Drug Addiction Recovery Assessment Instrument is to measure the stage of drug addiction recovery among drug addicts based on the context of Malaysia environment. This study helps the government under the National Anti-Drugs Agency (NADA) and Private Drug Rehabilitation Centre to develop instrument and analyse the stage of addiction recovery in drug addict. This study highlights four component namely drug dependence, possible relapses of drug abuse, drug resiliency and client's mental strength based on conceptual framework derived from previous studies conducted by other researchers

II. LITERATURE REVIEW

Based on above definitions, the Drug Addiction Recovery Assessment component in this scale includes the following sub scale:

Drug Dependency: Drug dependence is closely linked to psychology [8]. Individuals involved in this situation are always happy and in a comfortable state enjoying the satisfaction of continuous drug taking. Mental state is one of the most affected parts of the substance (drug) consumption while physical is a very strong factor in the reliance on continuous or repeated drug use. There are two possible explanations for drug dependence, namely physical and psychological dependence [9].

In this study dependence on drugs was measured by internal factors and external factors. Internal Factors are the internal factors of an individual since they are in the womb until birth. Internal factors are the inherent and inherited traits of an individual who can control human development. In this study, internal (internal) factors include the development of an individual in terms of personality and environment. On the contrary, according to [10] concluded that there is in fact evidence for an addictive personality that precedes addiction. However, she argues that although addicts tend to have addictive personality traits, addiction to drugs and/or alcohol does not cause the development of an addictive personality. Theory explaining the relationship between personality and substance dependence is extensive and continues to be imperative to the effective and comprehensive treatment of those with drug and alcohol problems [11].

External factors of an individual that is through the experience and environment of the individual. The

environment refers to all the experiences an individual has to face regardless of home, neighbour, community or wherever he or she is. For example, family practices can be learned at home and taken outside. Furthermore, peers can also influence an individual's lifestyle and relationships. Drug dependence is strongly associated with both internal and external factors in drug addiction recovery.

For the component of drug abuse possible relapse, relapses occur due to one's inability to explain life and peace without drugs. Previous studies have shown that there are two ways to look at recurring addict situations. Relapse can be understood as discrete events that occur with drug abuse. In this type of repeated discrete event, the distinction is made between the first use of individual drugs, the abuse and the first use of other psychoactive drugs. Individuals who take drugs will be more likely to return to drug abuse. From a process perspective, an individual will experience addiction as a process that evolves over time, with relapses being shaped in many ways. Relapses may be interpreted as drug use for a specified period of time as a return to the basic level of pre-treatment or as a return to the level of drug use that sets the criteria set for the quantity or duration of drug use [12]. Hence, in this study drug abuse possible relapse was measured by emotion, self- control, Self – Efficacy, and self-confident.

According to ([13] [14] [15] [16] [17] [18]) negative emotions are among the factors contributing to the former addict's return to relapsing behaviour. Other relapse factor is self-efficacy, defined as a degree to which an individual feels confident and capable performing certain behaviour in a specific situational context ([19] [20] [21]. The drug addicts are receiving treatment and rehabilitation of drug rehabilitation centres have a poor psychological state [22]. According to a study conducted by ([23] [24] [25]) it is also explained that self-confident can reduce reliance and thus help them recover from the effects of drugs.

Force or known as resilience is a word derived from Latin Resilience referring to an elastic and elastic condition. Resilience has been defined as the ability to with stand stress. Individuals who persist in their capacity may be called 'stoic,' not weak 'or' invincible [26]. Endurance terminology generally refers to the ability to bounce back or agility from any resistance, pressure, or trauma, and to successfully cope with and adapt to difficult situations [27]. Resilience is a person's quality in terms of their ability to cope with suffering [28]. Resilience is to gain the ability of individuals to survive or to adapt situations that lead stress and suffering in their lives. Therefore, based on the above statement, resilience is an individual's ability to adapt their situation by treating them in a healthier and more productive way to improve them in order to overcome the stresses of daily life they experience. For the construct drug resiliency was measured by strength, ability and competency. A characteristic of personality that can be categorized as resilience is strength in oneself ([29] [30]). A study conducted by, the drug or spiritual rehabilitation program in fact helps to develop strong addictions and personal characteristics of addicts. Ability means intelligence, willingness, ability, efficiency, mental and energy making. Resilience is the ability to respond positively to the immediate stress of adversity (failure, setback, loss,) on an ongoing basis. Competence is the ability, knowledge and skills to do something efficiently and successfully. Competence discusses the relationship between social efficiency in the process of resilience. Resilience is one that enhances one's ability to succeed in life's challenges and with high risk [31].

Moreover, mental strength is the ability of a person's mind to continually work toward an individual's goals or changes in them regardless of the obstacles in their life. Mental strength is a skill that an individual can develop by making mental strength a practice in one's life. Every decision made by an individual involves feelings and thoughts that enable the individual to develop mental strength. The most important thing for building mental strength is to gain wisdom, to interact with others and to think differently. Wisdom is one of the characteristics of building or developing mental strength by level of self-knowledge. An individual should not live without relying on others. If an individual is not dependent on others, then they are able to identify their own well-being and reinforce existing mental sharpness to strengthen their mental strength by taking care of themselves without relying on others. In this study mental strength was measured by self-esteem, autonomy and purpose in life.

Self-esteem is an attitude of one's own, both positive and negative [32]. [33] Self-esteem is an individual's self-esteem as evidenced by his or her. Autonomy refers to biological autonomy, mental autonomy. Emotional and psychological and this sub relate with mental strength. According to [34], Mental autonomy in which a truly intelligent perspective must be autonomous in itself. According to [35] state that a person's life satisfaction refers to an individual's acceptance of his or her life situation and the extent to which a person achieves what he or she wants to achieve. According to [36] also life satisfaction is a person's level of happiness for themselves and their lives. The three of sub domain very related to know the level mental strength in drug addict.

III. METHODOLOGY

3.1 Quantitative method

The research design is based on the choice of place and the respondents of the present study ([37] [38]). In this study, the researcher used the quantitative method and the method of stamping the instrument of assessment based on the previous studies that have been developed overseas. This study used dichotomous measurements of "Yes" or "No" and the provision of correct scoring according to the context of the environment in Malaysia. In accordance with the study, it is to test and analyze the instruments developed by researchers. This study is based on the statistics released by the National Anti-Drugs Agency (NADA) involving new and more serious cases including studies while discussing drug addiction in Malaysia.

3.2 Population and Sampling

Samples are selected from the age of 25 and above at CCRC. The respondents of the study are determined from the previous studies that have been researched by previous researchers on the issue of drug addiction recovery. The survey respondents for this study consists of (N= 123) respondents and only (N=40) survey respondents involve in the pilot study. The sample size is chosen proposed the regulations in determining sample size which indicates that the sample size that is greater than 30 and less than 500 is suitable for most researchers.

Data collection for both levels is based on each item in the questionnaire. This selected technique has been allowing a number of well-researched items to be presented to the respondents of the study. This method of data collection is particularly useful in making decisions and examining or looking at what, how, and why people think about the ideas introduced in the instrument. The meeting is used to discuss the appropriate steps and characteristics they need to achieve drug addiction recovery. This study also follows by another researcher [39] who argues that the collection of data through this method improves direct contact with respondents and increase the validity of the questionnaire. About 123 respondents are being surveyed at the rehabilitation center in Besut, Terengganu. The questionnaire is distributed in group according to the age and is answered individually by the respondents.

3.3 Instrumentation

DART instrument was developed based on conceptual framework derived from previous studies conducted by other researchers related to context of the environment in Malaysia. The researcher intended to introduce the addiction recovery which can be measured by individual. It was developed from several main components which is related to drug dependence, possible relapses of drug abuse, drug resiliency and mental strength. For the first component, addiction recovery emphasises the foundation of addiction recovery that requires someone to have internal factor and external factor. Hence, every sub scale consists of 10 items. Second component which is drug possible relapse test consists of four sub scale, which are emotion, self- control, self- efficacy and self-confident. Similarly, there are 20 items for this component. For every sub scale are emotion (4 item), self-control (4 item), self- efficacy (5 item) and self-confident (5 item). Another component is drug resiliency aspect which also contains 20 items and for every scale are strength (6 item), ability (7 item) and competency (7 item). For the component mental strength in involve 20 item and every sub scale are self-esteem (9 item), autonomy (5 item) and purpose in life (6 item). The total for the questions are 80 items which act as the contributors of drug addiction recovery.

This instrument investigates the aspects such as drug dependency, drug possible relapse, drug resiliency and mental strength whether the relationship to control addiction in drug addict to achieve drug recovery. Prior to data collection process, the process of evaluation of content validity is an integral exercise to gauge the extent to which an item developed is essential in measuring the sub scale-in question. The content validation method in the development of the DART has assisted the researchers to select the items which would be retained in the try out procedure of the test development. Thus, to evaluate all these items, the researcher has selected and appointed a total of eight expert panels for evaluation process for the purpose of content validity. Facial validity also needs to be done with involves a number of experts appointed in their field to assess accuracy languages, phrases and sentences [40].

IV. RESULTS

4.1 Language Experts validity

In the context of this study, all the professional experts appointed were those involved directly in the field and working in the field [41]. This is because, according to [42], among the things that should be considered in the selection of expert panels are depending on his area of expertise, work experience and also the number of his publications. In this study, the shortest period of expert panel experience in the field was 13 years while the oldest is 30 years. Researchers have met with all experts who have been appointed by explaining about the background of the study, definition operational as well as component that the researcher has done. In addition, a panel of experts has also provided all relevant documents for evaluation purposes either in the form of comments, corrections or suggestions. The validity of the instrument consists of four components, namely DDA, DPRA, DRA and CMSA has produced a questionnaire which includes 80 items modified from questionnaires made by previous researchers. Validation of each component and these items are endorsed by several experts including Professor, Associate Professor and lecturers from Universiti Sultan Zainal Abidin (UniSZA), Universiti Malaysia Terengganu (UMT), and Universiti Pendidikan Sultan Idris (UPSI).

4.2 Content validity (Principle Component Analysis)

The Results of the Kaiser-Meyer-Olkin (KMO) and Bartlett test on DDA, DPRA, DRA and CMSA significant KMO value is significant with KMO value of 0.70 ($p < 0.05$). These results indicate that the instrument has sufficient ability factor values and a continuum factor analysis. The Bartlett test also shows significant results with a mean of 0.00 ($p < .0.05$). This value shows that the correlation matrix is significantly different from the identity matrix where the correlation between items is zero and the correlation value between items is high enough to produce a factor of reasonable analysis. Based on the Drug Dependency Assessment Analysis, after varimax rotation is demonstrated through Rotated Component Matrix to identify the relationship between drug addiction recovery levels by drug dependence assessment in identifying items for DART in Malaysia based on the concept of environment in this country. After varimax rotation is performed by constructing a drug

dependency assessment consisting of 20 items, only six VFs representing 23.65% of the variance of the total data are selected because the eigenvalue is greater than 1 (> 1.0).

Table 1.1: Drug Dependency Assessment (DDA)

DDA	Factor					
	1	2	3	4	5	6
DD 1						0.894
DD 2		0.387				
DD 3						0.691
DD 4		0.629				
DD 5					0.604	
DD 6						0.465
DD 7					0.743	
DD 8				0.836		
DD 9	0.624					
DD 10	-0.602					
DD 11			0.600			
DD 12		0.550				
DD 13		0.741				
DD 14			0.510			
DD 15		0.682				
DD 16		0.639				
DD 17			0.555			
DD 18			0.761			
DD 19			0.519			
DD 20			0.763			

Factor shortcut values can be identified even if the cumulative variance value is less than 70%. In addition, VFs with absolute values which is greater than 0.70 (> 0.70) are defined as strong values of the variables exhibiting moderate to strong loading factors. Based on Table 1.1 shows 20 items for DDA values exceeding the limits of 0.387 to 0.894. This item is a significant involving 20 items in the assessment of drug dependence.

Then, Table 1.2 shows the results using PCA method using varietal rotation. The Bartlett's test of sphericity revealed that the data obtained through instrumentation or variable items involves the DPRA in measuring addiction recovery levels of respondents in a rehabilitation center is eligible for sphericity with an observation value of 875.092. The Kaiser Meyer-Olkin (KMO) test is conducted to measure sampling adequacy. This matrix function measures the sampling adequacy of each variable involving positive and negative divergence from partial deformation beyond the diagonal. Based on the Kaiser-Meyer-Olkin (KMO) test for the respondents in CCRC, they have a sufficient sample size. In this analysis of principal components (PCA), after varimax rotation evidenced through the Rotated Component Matrix is conducted to find out the relationship between the levels of drug addiction recovery through possible relapses to drugs in identifying items identified for the construction of addiction assessment instruments in Malaysia based on the concept of environment in Malaysia. After the varimax rotation is performed through a component evaluation of the possible relapses to the drug consisting of 20 items, only seven VFs represented 32.183% of the variance in the overall data is chosen because the eigenvalue is greater than 1 (> 1.0).

Factor shortcut values can be identified by using scree plot graphs although the cumulative variance value is less than 70%. In addition, VFs with absolute values greater than 0.70 (> 0.70) are defined as stronger values of the variables exhibiting moderate to strong loading factors. Other studies also state. Then, based on Table 1.3, the 20 items for drug relapsing probability (DPRA) values exceed the limits of 0.507 to 0.830. This variable is a significant variable involving 20 items in the assessment of possible relapse. All of these items can be used to analyze levels of drug addiction recovery.

Table 1.2: Drug Possible Relapse Assessment (DPRA)

DPRA	Factor				
	1	2	3	4	5
R 1		0.507			
R 2		0.509			
R 3		0.795			
R 4		0.694			
R 5		0.557			
R 6					0.790
R 7					0.597
R 8			0.830		
R 9	0.559				
R 10	0.674				
R 11		0.534			
R 12	0.508				
R 13				0.676	
R 14	0.721				
R 15	0.666				
R 16	0.747				
R 17	0.510				
R 18		0.618			
R 19				0.743	
R 20	0.621				

The Bartlett's test of sphericity revealed that data obtained through the instrument's or the framework's variables involved a drug resiliency assessment (DRA) in analysing addiction recovery levels of the respondents in rehabilitation center meeting sphericity Kaiser–Meyer-Olkin (KMO) test is

conducted to measure sampling adequacy. This matrix function measures the sampling adequacy of each variable involving positive and negative divergence from partial deformation beyond the diagonal. The analysis of principal components (PCA) after varimax rotation is proven through the Rotated Component Matrix to find out the relationship between the levels of drug addiction recovery through drug resilience in identifying items identified for the construction of addiction testing instruments in Malaysia based on the concept of environment in Malaysia.

After the varimax rotation is performed through a component evaluation of the possible relapses to the drug consisting of 20 items, only seven VFs represented 36.314% of the variance in the overall data was chosen because the eigenvalue was greater than 1 (> 1.0). Factor shortcut values can be identified by using scree plot graphs although the cumulative variance value is less than 70%. In addition, VFs with absolute values greater than 0.70 (> 0.70) are defined as stronger values of the variables exhibiting moderate to strong loading factors. Other studies also state. Then, based on table 1.3, the 20 items for the Drug Resilience Assessment for Drug (DRA) loading values exceed the limit of 0.496 to 0.862. This variable is a significant variable involving 20 items in the construction of a Drug Resilience Assessment (DRA). All of these items can be used to analyze levels of drug addiction recovery.

The Bartlett's test of sphericity revealed that data obtained through the instrument's or the framework's variables involved a drug resiliency assessment (DRA) in analysing addiction recovery levels of the respondents in rehabilitation center meeting sphericity Kaiser–Meyer-Olkin (KMO) test is conducted to measure sampling adequacy. This matrix function measures the sampling adequacy of each variable involving positive and negative divergence from partial deformation beyond the diagonal.

Table 1.3: Drug Resiliency Assessment (DRA)

DRA	Factor				
	1	2	3	4	5
RD 1			0.581		
RD 2	0.496				
RD 3				0.811	
RD 4					0.629
RD 5	0.753				
RD 6				0.610	
RD 7				0.718	
RD 8			0.862		
RD 9			0.590		
RD 10	0.762				
RD 11	0.80				
RD 12			0.677		
RD 13	0.733				
RD 14			0.637		
RD 15		0.545			
RD 16		0.778			
RD 17		0.715			
RD 18		0.630			
RD 19					0.754
RD 20		0.735			

The analysis of principal components (PCA) after varimax rotation is proven through the Rotated Component Matrix to find out the relationship between the levels of drug addiction recovery through drug resilience in identifying items identified for the construction of addiction testing instruments in Malaysia based on the concept of environment in Malaysia.

Table 1.4: Client Mental Strength Assessment

CMSA	Factor						
	1	2	3	4	5	6	7
CM 1						0.670	
CM 2						0.791	
CM 3			0.715				
CM 4							0.804
CM 5							0.757
CM 6			0.695				
CM 7	0.455						
CM 8			0.645				
CM 9				0.465			
CM 10	0.678						
CM 11	0.717						
CM 12	0.639						
CM 13		0.513					
CM 14	0.582						
CM 15			0.492				
CM16	0.575						
CM 17		0.622					
CM 18		0.715					
CM 19		0.734					
CM 20		0.629					

After the varimax rotation is performed by constructing a client's mental strength assessment of the drug consisting of 20 items, only seven VFs represented 36. 314% of the variance in the overall data is selected because the eigenvalue was greater than 1 (> 1.0). Factor shortcut values can be identified by using scree plot graphs although the cumulative variance value is less than 70%. In addition, VFs with absolute values greater than 0.70 (> 0.70) were defined as stronger values of the variables exhibiting moderate to strong

loading factors. Other studies also state. Then, based on table 1.5 shows the 20 items for client mental strength Assessment (CMSA) loading values exceeded the 0.399 to 0.883.

4.3 Phase of Reliability

Cronbach Alpha values are often being referred for measuring the internal consistency of a component ([43] [44]). Cronbach Alpha values above 0.60 are often used as an index of reliability of an instrument ([45] [46] [47]). [48] The reliability values of less than 0.60 is considered as low and unacceptable, Alpha values of 0.60 to 0.80 are acceptable while Alpha values above 0.80 are considered as good. Based on the above description, the authors used Cronbach Alpha values to determine the reliability of the questionnaire. The reliability of the Drug Addiction Recovery Test (DART) instrument is determined by using Alpha Cronbach's scores. Alpha Cronbach's for these four components is high (0.790) DDA, (0.873) DPRA, (0.881) DRA, (0.845) CMSA for all 80 items of DART instruments and modified from psychology-related instruments based on previous studies conducted by other researchers.

V. DISCUSSION

This instrument DART has a high Cronbach Alpha value of (0.790) DDA, (0.873) DPRA, (0.881) DRA and (0.845) CMSA. All of the items are based on four components and do not need to be exchanged and discarded as the whole questionnaire is still easy to be understood with a high Cronbach's alpha value of over 0.70 [49]. High Cronbach's alpha values indicate that the questionnaire has a good internal validity for each item in the questionnaire. [50] Therefore, there is no item needs to be discarded as the Cronbach's alpha for all four components is high. Measuring the level of drug addiction recovery is crucial in helping NADA and PPDP management to provide better treatment programs in the future for drug addicts to recovered completely. Therefore, the content of the measuring instrument, DART requires comprehensive definition of the theories and characteristics that describe the level of drug addiction recovery to be evaluated. Cronbach Alpha values are often being referred for measuring the internal consistency of a component ([43] [44]).

This finding reinforces the validity of the component through using PCA. Component validity or construction through PCA shows that DDA, DPRA, DRA, CMSA instruments have various dimension. In principle, factor analysis is used to isolate parameters or variables that have similarities to be in one factor [51]. The factor for the DDA instrument includes two factors which consist of internal and external factor. No questionnaire items are removed from the DDA instrument. Furthermore, DPRA in this instrument also contains four factors including emotion, self-control, self-efficacy and self-confidence. This instrument also has no questionnaire items to be discarded. The component of DRA has 20 items comprising the strength, the ability of themselves and competency factors as well as all items that can be used in the study to measure recovery level. The last component for this study is CMSA which also consists of three factors namely self-esteem, autonomy and purpose in life. The whole item can be used in this study to measure the level of mental strength of former drug addicts in recovery center. However, items with low loading factor of 0.3 and 0.4 can be considered significant item [52]. The whole item in the study can be used to measure the level of drug addict's recovery. Future studies will provide a more accurate measurement of the effectiveness of the study by increasing the number of respondents to a study of former drug addicts in rehabilitation centers across Malaysia. 80 items can be further reduced by selecting more significant and more accurate items with this study for the construction of future research instruments. Additionally, future studies will use CFA analysis to further validate this study and use other analyses to establish.

VI. CONCLUSION

Understanding the validity of instruments is important for researchers to ensure something the instrument is suitable for use as a measuring tool for the study population. While instrument reliability testing is very important in every study conducted because its function is to test every ability of the question item for the purpose of getting it consistent instrument characteristics even when used repeatedly in place, time different sample checkers This study has produced instruments to evaluate the effectiveness of drug addiction treatment centers based n former drug addicts in rehabilitation centers. DART instruments have high validity and reliability. This study found that DART instruments are equivalent to instruments used in other countries that can be used to measure and analyze levels of drug addiction recovery. These four components have sufficient measurement properties with a variety of dimensions to measure the effectiveness of the level of drug addiction recovery based on the context of Malaysia environment.

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