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Research Article

Design and Validation of a Subjective Outcome Evaluation Tool for Substance Abuse Interventions among High School Students: Positive Youth Development Model

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ABSTRACT:

Background: Evaluation of audience perspective about the quality of interventions using a reliable and valid tool is not only of great importance in assessing the program results, but this information can also be utilized to reform and promote next interventions. The present study was conducted with the aim of designing a subjective outcome evaluation tool for a positive youth development model-based intervention as well as carrying out a psychometric test on it.

Materials and Methods: This study aimed to evaluate an intervention implemented based on the positive youth development model. The students, who had participated in the program from schools in Isfahan. First, a 16-item initial researcher-made questionnaire was designed, its construct validity stages were performed using an exploratory factorial analysis, and its internal reliability was determined through calculating the Cronbach's alpha.

Results: In the psychometric testing process, the 16 items of the questionnaire were confirmed based on the exploratory factorial analysis; and the dimensions of the subjective outcome evaluation for the positive youth development model-based intervention were divided into 3 factors. The sum of all the three factors explained 62.85% of the variance of variables. The internal reliability was calculated based on a Cronbach's alpha coefficient of 0.91.

Conclusion: Due to its firm factorial structure and appropriate psychometric properties, the 16-item subjective outcome evaluation tool for the positive youth development model-based intervention is a valid and reliable instrument, and its use can be a reliable and productive reflection of the utility and quality of future interventions in this regard.

Keywords: Adolescent Health, Iran, Program Evaluation, Substance-Related Disorders

1. INTRODUCTION:

Evaluation is the broadest term used to explain the process of determining the value of, or judging about the value of something (1). In fact, evaluation is considered the most effective way to improve the quality of interventions, and makes it possible to identify strengths and weaknesses based on the results, thus trying to address the deficiencies through strengthening the positive aspects (2, 3). There is also some evidence that shows using the evaluation results will lead to improved planning and better results (4).

In all societies, achieving the maximum result through implementing interventions is highly

regarded. Of course, the effects of programs are different depending on factors such as personality traits and cultural factors (5). So far, little research has been conducted on interactions between these factors and the method of their development. Farrow et al. pointed out that what have not been taken into consideration in preventive interventions for teenagers are the costs for these interventions to become effective; and there are always gaps, in this regard, between research and application of results (6).

The positive youth development (PYD) model helps teenagers pass this period and reach adulthood through enhancing their capacities and creating a supportive environment (5). Through providing opportunities, choices, communications and necessary support, adolescence brings about health and a productive life; and through full participation of the family and society, it prevents teenagers from being involved in high-risk behaviors, and develops their skills and competencies (7). PYD potentially leads to positive outcomes for the youth. A major concern here is the quality and process of implementing such programs (8-13), and a lot of research is required to measure the effectiveness of programs in different societies (14-16).

The important point in the implementation of PYD programs is the systematic evaluation of programs. There are different strategies to evaluate programs including objective evaluation, subjective evaluation, process evaluation, and qualitative evaluation. Among these, less attention is paid to subjective evaluation than objective evaluation, whilst subjective evaluation has considerable advantages: Firstly, participants in the program, as the clients of the program, are the best options to comment on the program. Secondly, this kind of evaluation provides a general view about the value of the program (17). Thirdly, this kind of evaluation predicts objective evaluation (18). Shek et al. believe that when working with the youths, this kind of evaluation provides useful information about the effectiveness of the program (17).

Biering et al. point out that the concept of the satisfaction of children and adolescents in interventions is still undeveloped, and there are a limited number of valid tools for it (19). Although some studies on the evaluation of positive youth development (PYD) interventions have been conducted in some countries (17, 20), no research on the implementation and evaluation of PYD has so far been conducted in Iran. Therefore, considering the growing trend of high-risk behaviors, the necessity for performing effective interventions in this regard, the importance of subjective evaluation for these interventions, and lack of appropriate tools to measure it necessitate the designing of a valid and reliable questionnaire proportionate to the Iranian culture for the youths in order to perform subjective evaluation for PYD interventions.

Hence, the present study was conducted with the aim of designing a subjective outcome evaluation tool for a PYD-based intervention and carrying out a psychometric test on it. This provides researchers with basic information and evidence about the issue of working with the youths to evaluate interventional programs, and makes us better understand optimal conditions to achieve the desired effectiveness of the program.

2. Materials and Methods

2.1. Participants

This study dealt with the subjective evaluation of the interventional program for narcotic abuse based on the positive youth development (PYD) model. The study population included male and female school students, who were chosen from four secondary schools in Isfahan in the academic year 2016-2017, and who participated in the PYD interventional plan. The inclusion criteria of the study were willingness to participate in the study and being aged between 15 and 18 years. Students who were absent for two sessions of the interventions were excluded from the study. The study was conducted in coordination with the schools after being approved by the ethics committee of the university. The confidentiality of information and the aim of the study were explained to the study group, and those who were willing to

participate were enrolled in this study. Participants in the study included all male and female school students, who participated in the PYD interventional plan from four schools (94 subjects). The Kaiser-Meyer-Olkin (KMO) test was conducted to ensure the adequacy of the sample size being studied (21, 22).

2.2. Data Collection Materials

The available resources were used to design the questionnaire items; and inspired by questionnaires available in Iran and other countries, a questionnaire was designed consisting of three parts. The first part was about the participants' understanding of the program content, including 7 items such as “The educational material about narcotic abuse was compiled carefully”. The second part was about the students' understanding of the implementation of the program including 4 items such as "I actively participated in the sessions". The third part was about the participants’ understanding of the effectiveness of the program including 5 items such as “the implementation of the program improved my relationship with my parents", as well as their general satisfaction with the implementation of the 16-item program. Scoring was done based on the Likert scale from very poor to very good on a scale of 1 to 5. After the necessary explanations on how to complete the questionnaire, as well as about the objectives of the study, the questionnaire was completed by the 94 subjects participating in the interventional plan. The interventional program, which was evaluated using the questionnaire, was based on the positive youth development model, and was implemented within 12 sessions in two areas: the school and the family. Nine sessions of the intervention were related to the students, and three sessions were related to the parents.

An exploratory factorial analysis was used to determine the construct validity, and Cronbach's alpha was used to determine the internal consistency of the questionnaire. The interesting point in the factorial analysis was to deal with the Kaiser-Meyer-Olkin (KMO) sampling and Bartlett's test of sphericity. The proximity of the KMO criterion to 1 was considered as a sign of the sufficient sample size to carry out the factorial analysis. The high numeric value of chi-square in Bartlett's test, and its statistical significance were also taken into consideration (23).

2.3. Statistical analysis

The exploratory factorial analysis was carried out in the form of a principal component analysis by using varimax rotation. The collected data were analyzed using the SPSS software version 20. Descriptive tests were used to find the mean and standard deviation. $P < 0.05$ was considered as a statistically significant difference in all the tests.

3. RESULTS

Out of 94 female and male students who participated in the intervention and answered the questions of the subjective evaluation questionnaire, 53 (56.4%) were girls and 41 (43.6%) were boys with an average age of 15.84 ± 0.71. The fathers of most of them (50.5%) were self-employed, and the mothers of the majority of them (70.6%) were homemakers. Their fathers mainly had academic degrees (42.6%), and the mothers of most of them held high school diplomas (37.2%).

Table 1: The findings of the subjective evaluation of the intervention for narcotic abuse based on the positive youth development (PYD) model

No.	Components of evaluation	Percentage of answers		Mean
		Agree	Disagree	
1	The educational material was compiled carefully	74	6.2	3.94
2	The educational material was necessary for me	66.3	13.7	3.66
3	I obtained new information through participating in these training sessions.	68.7	15.6	3.72
4	What was said changed my previous view	42.5	23.4	3.30

5	I can make use of the material which has been taught	68.1	13.8	3.72
6	I actively participated in the sessions	73.4	13.6	3.93
7	The teacher was well versed in their work	80	5.3	4.20
8	The teacher taught the skills very well	74	8.4	4.03
9	The teacher had a good interaction with the students	82.1	5.8	4.18
10	The implementation of the program interested me in class and school	28.4	28.4	3.01
11	The implementation of the program improved my relationships with my classmates	39	22.1	3.22
12	The implementation of the program improved my relationships with my teachers and school officials	34.3	23.9	3.13
13	The implementation of the program improved my relationships with my parents	46.3	19	3.35
14	The implementation of the program prevented my probable tendency to narcotic abuse	46.9	18.8	3.56
15	The material having been taught, is helpful in improving my health	70.8	11.4	3.82
16	In a general view, I have a positive assessment of the program	70.8	8.3	3.95

Table 1 indicates that the students participating in the program had a positive assessment of the program (70.8%), and that the highest mean score obtained belonged to the teacher's mastery in teaching, and the lowest belonged to the effect of the intervention in making the students interested in class and school.

The results of the exploratory factor analysis on the questionnaire show that the KMO index was 0.87, which is indicative of a sufficient sample size to perform a factorial analysis. Bartlett's test of sphericity also shows the suitability of the factorial analysis for identifying the structure of the factorial model at a level of ($P < 0.001$), and is indicative of discoverable relationships between the variables, which underwent the factorial analysis. Based on the results obtained from the implementation of the factorial analysis with varimax rotation, 3 factors were obtained; the first factor with a special value of 7.33 consisted of 7 items, whose factorial loadings were variable from a minimum of 0.60 up to a maximum of 0.82. The second factor with a special value of 1.74 consisted of 4 items ranging between 0.68 and 0.75, and the third factor with a special value of 0.97 consisted of 5 items fluctuating from 0.51 to 0.71. Therefore, based on the results obtained from the exploratory factor analysis, 16 items were confirmed, and the dimensions of the PYD intervention-based subjective evaluation questionnaire were divided into three factors and the sum of all the three factors explain 62.85% of the variance of variables. The first factor with seven items was called "the perceived content of the program", the second factor with four items was called "the perceived way for implementing the program", and the third factor with 5 items was called "the utility of the program" (Table 2).

Table 2: The rotated factor matrix through the principal component analysis method and varimax rotation

Scales	Item	Component		
		Factor 1	Factor 2	Factor 3
PC	Q11	**.824**	.204	.294
	Q12	**.813**	.199	.140
	Q2	**.799**	.188	.268
	Q13	**.762**	.208	.215
	Q3	**.726**		.200

	Q5	**.692**	.257	.175
	Q4	**.607**		.458
PI	Q7		**.756**	.249
	Q6	.125	**.700**	
	Q8	.257	**.699**	.254
	Q9	.211	**.683**	.111
EF	Q16	.106	.497	**.719**
	Q15	.251	.132	**.693**
	Q14	.308		**.679**
	Q10	.514	.229	**.581**
	Q1	.329	.404	**.518**

PC, program content; PI, program implementers; EF, program effectiveness. Bold values indicate high loadings.

After conducting the factorial analysis, Cronbach's alpha coefficient was used to determine the internal reliability of the 16-item questionnaire. It was calculated in the sample of 94 high school students in Isfahan. Seven items were related to the content of the program ($\alpha = 0.90$), four items were related to the implementation of the program ($\alpha = 0.76\alpha$), and five items were related to the utility of the program ($\alpha = 0.79$) and the overall effect of the 16-item program ($\alpha = 0.91$), which was indicative of the internal consistency of the questionnaire (Table 3).

Table 3: The Cronbach's alpha coefficient for the PYD intervention-based evaluation questionnaire after the exploratory factorial analysis

Dimensions of the questionnaire	Number	Cronbach's alpha coefficient
Program content	7	0.90
Implementation of the program	4	0.76
Utility of the program	5	0.79
Overall effectiveness of the program	16	0.91

Determining the correlation showed that the program content ($r = 0.69$, $p < 0.001$) and the implementation of the program ($r = 0.58$, $p < 0.001$) had a significant relationship with the effectiveness of the program.

4. DISCUSSION

The growing trend of problems among the youths in the country, the need for performing interventions to cope with these problems, and increased emphasis on receiving feedback from those participating in interventional programs show the importance of having a valid tool for subjective evaluation in interventions, as well as carrying out psychometric tests on it (20). The subjective evaluation of interventional programs using a valid instrument and employing its results in future programs not only enhance the achievement of the objectives of the program, but also increase the demand for the implementation of programs. A literature review on studies conducted at home and abroad shows that few studies have been conducted to determine the validity of the interventional subjective evaluation questionnaire for narcotic abuse based on the positive youth development model using the exploratory factorial analysis. The present study analyzed the 16 items of the subjective evaluation tools for the positive youth development program among Isfahani adolescents using an exploratory factor analysis.

The results of the principal component analysis along with varimax rotation showed that the subjective evaluation questionnaire for the positive youth development program consisted of three factors explaining 62.85% of the total variance of the test. The three dimensions: the perceived content of the program, the perceived way of implementing the program, and the perceived utility of the program were approved,

which was consistent with the results of a study conducted by Shek et al. (5). Investigations show that these three dimensions have also been brought up in the subjective evaluation form in the PYD interventional program designed by Shek and Siu (24). Thus, consideration of these three dimensions in PYD interventional planning will result in the stronger implementation of the program and greater effectiveness of future programs.

The research findings regarding the factorial loadings of the questionnaire items (Table 2) show that the factorial loadings of the items are high (from 0.60 to 0.82); and by accepting the 0.40 limit for the factorial loadings (25), it becomes clear that each of the 16 items in the questionnaire has acceptable factor loadings (higher than 0.40). These findings suggest that based on the factorial loadings, all the questionnaire items are important, and have appropriate validity; and the questionnaire has appropriate construct validity.

The results of the correlation showed that the program content and the implementation of the program had a significant relationship with the effectiveness of the program. In addition, the study conducted by Shek et al. showed that the program content and how the teacher acted had effects on the participants' perceived effectiveness and the successful implementation of preventive programs (26, 27). Therefore, to enhance the effectiveness of the positive youth development program, it is necessary to carry out a needs assessment on the participants before developing the content and implementing the program. This way, developing the program content will be based on the participants' needs, and the program will meet these needs. Moreover, it is also possible to reduce the number of sessions required, and this way, the program will not be boring. A literature review showed that one of the drawbacks of implementing the program, which was referred to by teenagers participating in the program in the study conducted by Luk et al., was "its boredom" (28). Moreover, the interventional plan with a smaller number of sessions will make it possible for schools to cooperate more, and also "the way of implementing the program" whether attracting the participation of learners during the implementation or encouraging them to practically use the learned material is effective in achieving good results. Since the teacher's performance is evaluated in the part related to the delivery of the program, using capable and experienced teachers and diverse educational methods and techniques are effective in the perceived effectiveness of the program.

In this study, 70.4% of the students had a positive assessment of the program in general, 80% believed that the teacher was well versed, but only 28.4% believed that the implementation of the program made them more interested in class and school. Luke et al. noted that more than two-thirds of participants in the PYD interventional program were satisfied with the implementation of the program; 83.1% had a positive assessment of the teacher, which was consistent with the results obtained in our study; and 72% stated that the implementation of the program increased their interest in school and study (29), which was not consistent with the results obtained in our study. Therefore, it is suggested that in future interventions, the scope of the intervention be expanded, and training sessions specific for teachers and school officials be included in the program.

In the present study, the internal reliability coefficient of the questionnaire was 0.91, which was satisfying and represented its excellent internal consistency based on Nunnally's criterion (higher than 0.90) (30), which was consistent with the results of the study conducted by Luk et al. (0.98) (29). In addition, in the study of different areas of evaluation, the reliability values of all the items were higher than the desirable situation index (0.75), which was consistent with the results of the study conducted by Shek et al. (5). Moreover, in a review study on the results of seven studies on the validity and reliability of the teacher evaluation questionnaire, Lin reported the average internal correlation between the questionnaire items to be between 0.74 and 0.90, which was very close to the results obtained in the present study (31).

The results of the study confirm that the 16-item subjective evaluation questionnaire is a valid and reliable instrument for the subjective evaluation of the PYD model-based intervention. As Catalano et al. mention, the presence of a standard and valid tool enhances our understanding of the predictors of the program effectiveness. Therefore, the results of this study are a response to the researchers' needs for a reliable tool for the evaluation of a PYD interventional plan (32).

This questionnaire is a valid instrument in the hands of people who professionally work with the youths such as pediatricians, psychologists, social service providers, and consultants. Through this, they become aware of different dimensions of the PYD interventional program from the participants' perspective, their satisfaction with the implementation of the program, as well as the nature of the relationship between different dimensions of satisfaction with the program such as the relationship between the "program content" and the "way of its implementation".

There are three limitations in this study: First, only the students of one level participated in this study. However, it is better to consider the opinions of students in other levels as well in the next studies. Second, in this study, the 16-item evaluation form was only assessed through an exploratory factor analysis. It is recommended that, in future studies, a confirmatory factor analysis be also carried out to approve the tool. Third, students with different backgrounds such as different capabilities may have different interpretations about the effectiveness of the interventional program. Different factors such as school officials' cooperation and support in the implementation of the program have also affected students' perceived effectiveness. Thus, it is necessary to consider these factors in the next studies as well.

5. CONCLUSION:

The results show that the 16-item subjective outcome evaluation tool is a valid and reliable instrument for the subjective evaluation of the PYD-based intervention, and an easy way to survey students; and the use of this questionnaire can be a reliable and constructive reflection to improve future interventions in this regard. To improve the perceived effectiveness of the positive youth development program among adolescents, it is necessary to pay more attention to the "program content" and the "delivery of the program".

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