

## Development of cognitive behavioral module for out-of-wedlock pregnancy's depression and cognitive distortion

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### Article Info

#### Article history:

Received Jun 17, 2022

Revised Nov 19, 2022

Accepted Dec 1, 2022

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#### Keywords:

Cognitive behavioral therapy

Content validity

MKT module

Module development

Out-of-wedlock pregnancies

Reliability

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### ABSTRACT

Individuals who become pregnant out-of-wedlock require special attention because previous studies have shown that this group is prone to depression and cognitive distortion, which can have an impact on their psychological and life development. Therefore, this article discusses the process of development, validation, and reliability testing of the cognitive behavioral module (*modul kognitif tingkah laku/MKT*) to manage depression and cognitive distortion of out-of-wedlock pregnant trainees in one of the women's shelters in Malaysia. This module contains four sub-modules, namely, psychoeducational, behavioral strategies, cognitive strategies and retention of productive behavior that have been developed using the cognitive behavioral therapy (CBT) approach. The validation level assessed by seven expert panels indicated the validity value of the module content was .93. Meanwhile, the reliability test conducted using a questionnaire showed a reliability coefficient of .97. This article demonstrates how a systematic procedure can be used to develop and validate an effective module of depression and cognitive distortion before it can be administered in actual studies. The findings also prove that the MKT module can be applied by counselors or psychological officers to the problems of depression and cognitive distortion experienced by out-of-wedlock pregnant trainees in shelters.

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## 1. INTRODUCTION

The young generation is the determinant to ensuring the success of a country. Therefore, various policies have been introduced and implemented by the government for the younger generation so that positive attitudes and values can be nurtured in the daily lives of young people. Through the Malaysian Youth Policy 2015, the government set the goal to “strengthen and highlight the potential of youth human capital as a driver of national strategic development in the future guided by the Federal Constitution and National Pillars” [1]. Through the 11th Malaysia Plan (RMK11), the government is committed to strengthening human capital development to make Malaysia a people-dependent country. Unfortunately, this wish will not be achieved if the young people who are the pillars of this country continue to be involved in various social problems such as out-of-wedlock pregnancies that trigger depression and cognitive distortion problems which are the focus of this study.

Out-of-wedlock pregnancy is defined as an individual who is pregnant without marriage [2], that is, it occurs as a result of sexual intercourse between a man and a woman who do not have a valid marriage bond [3]. This includes sexual intercourse that occurs either voluntarily, or as a victim of rape or incest. In developing countries, the number of unwanted pregnancies among adolescent girls between the ages of 15 and 19 is at

least 10 million cases per year [4]. In fact, an alarming figure was obtained in which a total of 532,158 illegitimate births were recorded from 2005 to 2015 in these countries [5]. The issue of out-of-wedlock pregnancies in Malaysia is described as a worrying situation as the number of cases registered at the Malaysian Health Clinic from 2014 to 2018 although declining but still high. A total of 3,980 cases were registered in 2014, 3,980 cases in 2015, 3,938 cases in 2016, 3,694 cases in 2017 and 2,873 cases in 2018 [6].

Studies on psychological effects of out-of-wedlock pregnancies within or outside the country have increased over time. Previous studies found that adolescents pregnant out-of-wedlock face various implications in terms of thinking, emotions, and behaviors [6]. In general, unmarried mothers have lower incomes and levels of education as well as are more dependent on welfare assistance compared to married mothers [7], [8]. Individuals involved with pregnancies outside of marriage are vulnerable to emotional disturbances [9]. This statement is supported by Hodgkinson [10] who noted that this group is not ready and still young to take on the role and responsibility of a mother. Lack of psychological preparation coupled with the negative perception from the society have caused this group to fall into stress, depression, and anxiety. A study has shown that this group is affected negatively be it mentally, emotionally and psychologically [10]. This can be seen in the increase of other issues surrounding the out-of-wedlock pregnancies namely psychological stress, family crisis, academic disruption, harassment from ex-boyfriends and financial problems. [11]. In the context of this country, among the obstacles faced by pregnant women out of wedlock is poor family acceptance, as they are seen to bring a bad name to the family [12]. This challenge inevitably has psychological effects on pregnant women, such as depression, and loneliness, and if not addressed immediately may end in tragic events such as suicide [13].

Previous studies have demonstrated that out-of-wedlock pregnant individuals who are in shelters face depression problem [2], [12], [14]–[17]. According to the World Health Organization (WHO) 2017, depressed individuals will show characteristics such as sadness, loss of interest, low self-esteem, feeling guilty, changes in appetite, sleep disturbances, feeling tired, and lack of concentration. This counts as a common mental disorder. Depression can lead suicide, especially in critical cases [18]. In addition, depression is classified by the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-V) as a mood disorder in which a person experiences periods of excessive sadness or significant loss of pleasure lasting two weeks or more [19]. Moreover, among the symptoms exhibited by depressed individuals is a decline in the performance of the psychomotor activity and intellectual function [20]. If left untreated, depression has an impact on a person's capacity to perform daily obligations and chores and is intimately tied to emotional issues and human nature [21].

Besides that, past studies prove that out-of-wedlock pregnant young women who are in Malaysian shelters also suffer from cognitive distortion problems [2], [12], [22]. The term cognitive distortion first appeared during Beck's (1963) discussion in his study of depression. At the time, Beck found that his patients were often involved in systematic but erroneous patterns of cognitive processing. Beck recognized that such incorrect information processing can result in inappropriate emotions and behaviors [23], [24]. A cognitive distortion is defined as a deviation in an individual's thinking caused by incorrect or biased information processing [25]. However, according to an early definition from Aaron T. Beck, cognitive distortion is defined as "the existence of a distorted and unrealistic concept of thinking in an individual" [23]. Changes in terms of biological, physical appearance and psychological disorders will be experienced by pregnant young women, especially if the pregnancy is unplanned and unwanted. They are usually unprepared in terms of psychological, social acceptance and economic responsibility to face the realm of parenting. Depression and other mental problems, for example, cognitive distortion among adolescents should be addressed immediately because if not resolved well will harm academic performance, peer relationships as well as family issues [26]. Moreover, without proper treatment, the adult lives of these young people will also be affected [27].

In Malaysia, the study found that Malaysian out-of-wedlock shelters use modules developed by shelter management without systematic research procedures [28]. The study also found that shelters for pregnant women out-of-wedlock in Malaysia emphasize spiritual activities and several other activities [28], [29]. In general, women's shelters offer a variety of activities such as vocational classes (e.g., sewing and handicrafts), religious classes, outdoor activities, and volunteer works. Vocational classes and religious classes are usually run by volunteers. Some shelters offer skills classes supervised and certified by private colleges [30]. Moreover, self-competence development programs in women's shelters are conventional, not comprehensive and fail to capture the needs of young pregnant women [31]. Moreover, the study found that cognitive restructuring activities in shelters tended only towards religious activities. Social skills programs such as stress management, communication skills, interpersonal skills and others were not disclosed to trainees [32]. Therefore, it is suggested that trainees should be exposed to cognitive restructuring activities guided by effective CBT techniques. For example, thought and remedial activities teach sex offenders how to think in an orderly and rational way [32]. In addition, it is recommended that trainees be given exposure to cognitive therapy programs guided by a structured CBT treatment therapy protocol and appropriate to the trainee's needs [32]. This

statement is supported by the needs assessments that have been conducted and the findings of the assessment that indicate that there is a need to develop a management module for depression and cognitive distortion for individuals pregnant out-of-wedlock [28]. Therefore, this study will focus on the development of specific modules that emphasize a psychoeducational approach based on cognitive behavioral therapy (CBT). To date, researchers have not found any CBT-based modules in Malaysian women's shelters that have been developed through a process of scientific research and tested for its validity and reliability.

Cognitive behavior theory (CBT) is the theory chosen as the basis for MKT module. In the early 1960s, a form of psychotherapy called "cognitive therapy" was developed by Aaron Beck. The term "cognitive therapy" is now widely used as "cognitive behavioral therapy" by various fields of psychotherapy and this is the last term used so far [33]. The term "cognitive therapy" has been replaced by Beck with "cognitive behavioral therapy" proving that behavioral therapy has been used in conjunction with cognitive therapy in his therapeutic work [34]. Cognitive behavior theory (CBT) was chosen to underlie the development of the MKT module because the CBT approach is synonymous with the problems that are the most important issues in this study, namely depression and cognitive distortion. The CBT approach is suited for the rehabilitation of adolescents involved with sexual misconduct by restructuring their thinking capacity to control their antisocial behavior [32]. The CBT approach is characterized by a limited, structured, active period of time, 'here and now' situations that focus on how the client gives meaning to his or her life experience. CBT suggests that an individual's behavior and mood are determined by the way the individual sees the world psychologically [35]. This therapy focuses on a person's interpretation of an event or experience in his or her life that is influenced by basic beliefs, assumptions, and personal philosophies. In addition, CBT also believes that the perception of a problematic situation will have consequences on one's ideas and thoughts. This therapy believes that the primary cause of adaptive or maladaptive feelings and behaviors is due to the underlying beliefs, cognitive functions, assumptions, and personal philosophies of the individual [35].

CBT theory can be implemented in various techniques and activities that focus on thoughts, behaviors, and emotions through different approaches according to the suitability of the individual situation [36]. CBT introduces a variety of techniques. Therefore, the CBT method not only can be applied in individual and group counseling sessions, but is also suitable for individual and group guidance sessions where the main purpose is to restructure the way of thinking, form new beliefs and improve individual functionality to achieve self-stability [37]. Therefore, the novelty in this study is the development of the cognitive behavioral module (MKT) to assist trainees in out-of-wedlock pregnancy shelters in managing their issues of depression and cognitive distortion. The module construction procedure, the theory used, and the validity and reliability of the module will also be described in detail.

## 2. RESEARCH METHOD

### 2.1. The development of the MKT module (*modul kognitif tingkah laku*)

A module is defined as a teaching package related to one subject unit and requires individual teaching effort to master one content before moving on to another content [38]. In addition, a module is defined as a complete teaching and learning package with specific components such as objectives, learning materials and activities, systematic instructions and procedures in addition to assessment activities so that students can follow step by step to master a unit of learning and it can be carried out individually [39]. In developing a module, there are several applicable models of module development procedures that can be used by module developers such as module development processes [40] and module development procedures [38]. However, in this study, sidek module development model was chosen as a guide to develop the MKT module and test its validity and reliability [39]. The Module Development Process did not consider pilot testing which involves testing of validity and reliability before the actual study was conducted. Whereas module development procedures require a process of testing from time to time to meet the prescribed requirement. However, researchers used Russell's (1974) view of five conditions to test the validity of MKT modules [38].

As shown in Figure 1, sidek module development model consists of two stages with different purposes at each stage. The first stage is to produce a draft of the module which has nine steps in all. It begins by identifying the purpose of the module followed by identifying theories, rationales, philosophies, concepts, and time allocation. Then, the process continues with a needs assessment and later followed by the setting of objectives, and the selection of content, strategy, logistics and media. Finally, this stage ends with consolidating the draft of the module. In the second stage, the draft module was tested and evaluated through a pilot study. Modules that have been proven to acquire high validity and reliability are considered complete, and the last step can proceed i.e., effectiveness evaluation. After going through these two stages, the module can be used by the targeted population.

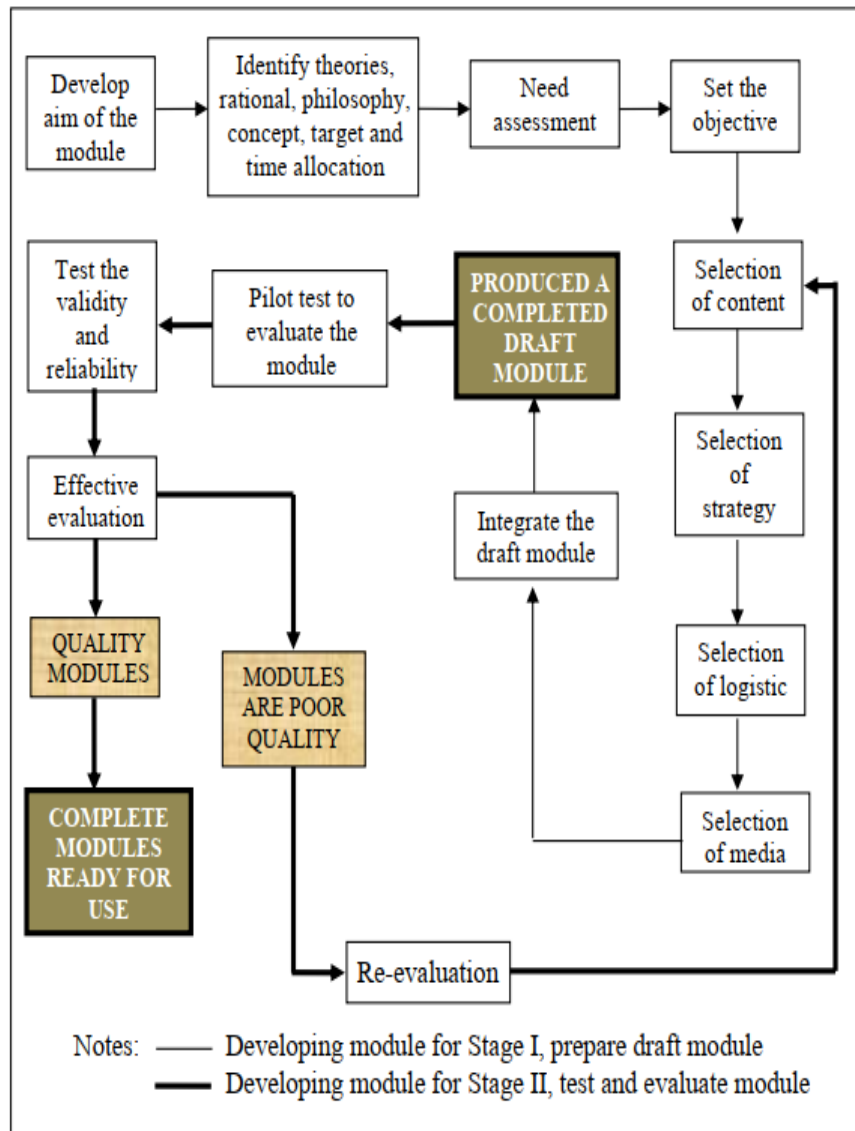


Figure 1. Sidek's module development model [39]

To produce quality modules, the sidek module development model has placed emphasis on the process of testing the validity and reliability of modules. Module validity testing was implemented by appointing several experts in the field of study to evaluate the overall content of the module. Meanwhile, the module reliability test was tested on samples that had similar characteristics to the actual study sample. The sample underwent module-based training and subsequently, module objectives were assessed. If the validity and reliability test results meet the requirements, then, the researchers can proceed with the actual study by using the module, otherwise, the researchers need to re-evaluate the steps in module development.

In addition, the sidek module development model has been used by many studies, specifically to develop the career readiness module for university students [41], employees' stress management [42], mindfulness module [43] and students' career exploration module [44]. Thus, the researchers found that the sidek module development model not only helps in developing modules but is also practical to use as a basic reference especially in developing the content of the cognitive behavior module (MKT) and at the same time, produce quality modules. The module can be considered a complete module and ready to be used in the actual studies if the testing of its validity and reliability yield high results [39]. Figure 2 shows the flow process of testing the validity and reliability of the MKT module which has been adapted from Mahfar [45]. However, if the values of validity and reliability do not meet the requirements, the content of the module should be reviewed before the module is administered in the actual study. The researchers have complied all these while developing the MKT module.

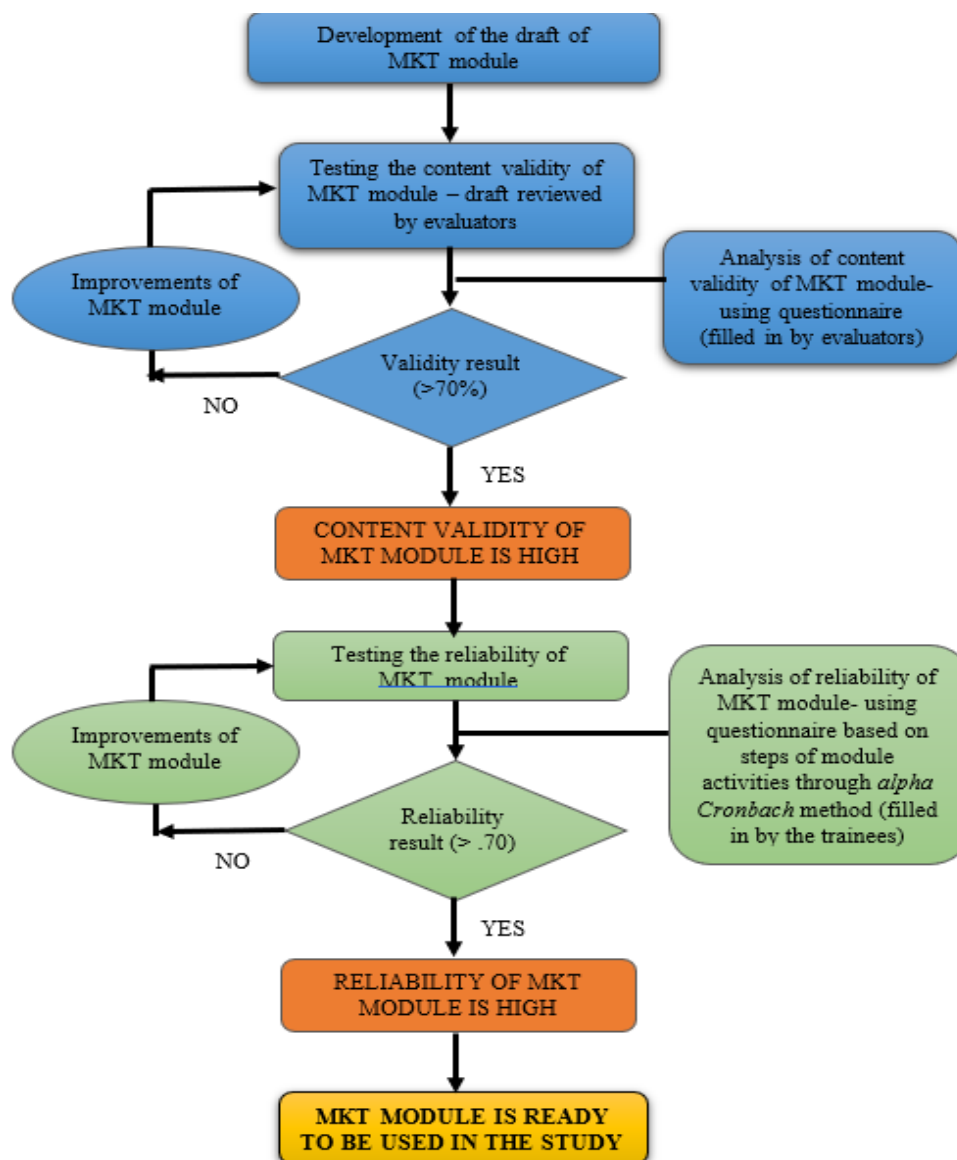


Figure 2. A flow process of testing the validity and reliability for the MKT module [45]

## 2.2. Cognitive behavior theory (CBT) as the basic theory of the MKT module

The cognitive behavioral module (MKT) was developed by Aaron Beck in 1963 based on the principles of cognitive behavioral theory (CBT) in which Beck argued that negative thinking styles and self-criticism are attributable to mental filtering in which perceptions of self, environment, future is deviated [46]. Individuals regard this mental filtering as a deeper cognitive structure known as schema, which evokes negative thoughts on a daily basis. Based on this theory, thoughts are seen to play a major role in a person's emotions and behavior.

The activities in the MKT module were adapted from cognitive therapy: Basics and beyond by Beck and Beck [33]. In addition, the content of this module is also adapted from the cognitive behavioral group therapy: challenges and opportunities, by Ingrid Söchting [47]. The approach in MKT module is in the form of group guidance and the explanation by Söchting is suitable as a guide in developing the activities in this module. The basic concepts of CBT have been considered as the basis for the development of the content in the module, namely automatic thoughts, scheme, logical errors and cognitive triad [48]. In addition, 6 of the 22 activities in the MKT module were self-developed by researchers and 16 other activities were adapted from figures in the field of CBT [49]–[53] and had been modified in line with the environment, culture and norms of the society of this country.

The cognitive behavior module (MKT) includes four sub-modules namely: i) psychoeducational ii) behavioral strategy iii) cognitive strategy and iv) retention of productive behavior. The Psychoeducational sub-

module is a specialized sub-module to channel information to participants about the concept of cognitive behavioral theory (CBT), the concept of depression and the concept of cognitive distortion. This sub-module will be implemented in 2 sessions with 3 activities in total. This psychoeducational element is also applied throughout the coaching sessions with the help of teaching materials and related homework assignments.

After participants are explained of the concept of CBT, the symptoms and effects of depression and the types of cognitive distortion in the first sub-module, the Behavioral Strategies sub-module will follow. Although Beck's cognitive model emphasizes the role of thought on individual emotions and behavior, in this case, behavioral activation needs to be addressed first [47]. This is because, for the target group experiencing depression and cognitive distortion, cognitive strategies involving thought-challenging activities can be stressful for some participants experiencing confusion and difficulty concentrating. Therefore, the activation of energy because of physical activities performed can help participants concentrate and be fully involved in cognitive strategies later. Simple, relaxing activities, (e.g., relaxation activities) do not require deep thinking abilities, yet remain focused making it easier for participants to engage in the beginning of a group session where each participant still feels alienated from each other. This sub-module is implemented in 1 session with 2 activities in total.

The focus of the third sub-module namely cognitive strategy is to identify, challenge, and replace participants dysfunctional thinking with more functional or more adaptive thinking. This sub-module covers cognitive restructuring activities that are changing a person's negative thoughts and interpretations [53]. Cognitive restructuring helps respondents to be more flexible in the way they think and not rely on "first" interpretations or understandings of what is going on around them. Various forms of cognitive activities were provided to increase participants' awareness of the content of their thinking. The cognitive strategy sub-module is the most important part of this module. This sub-module is implemented in 6 sessions with 12 activities in total.

Furthermore, in the last sub-module namely retention of productive behavior, participants will learn how to maintain beneficial, productive, and positive behaviors by way of getting rid of negative or disruptive behaviors [53]. The maintenance of this productive behavior will only be successful after the individual has mastered the cognitive skills in the previous sub-modules [53]. Next, the participants were also guided with mental and emotional preparation to continue to rise in spirit even after completing the training at the shelter. Participants were guided to have life goals and strong reasons to continue to strive to recover from the depression and cognitive distortion they experienced. Methods of preventing relapse of depression and cognitive distortion were also taught to the participants. This sub-module is implemented in 3 sessions with 5 activities in total. Table 1 shows the content of the MKT module in a detailed summary.

Table 1. Summary of the MKT module content

Sub-Modules	Unit	Activities	Time (minutes)		
1. Psychoeducational	Introduction to CBT, Depression and Cognitive Distortion	1. <i>Tak kenal maka tak cinta</i>	120 minutes		
		2. Oh, it's worth it!	60 minutes		
		3. Mix and match	60 minutes		
2. Behavioral Strategy	Depression (somatic/vegetative, cognitive/affective aspects)	4. What's new?	60 minutes		
		5. Relaxation	60 minutes		
3. Cognitive Strategy	Automatic thoughts Cognitive distortion: - Arbitrary inference - Selective abstraction - Dichotomous thinking - Personalization - Magnification - Minimization  Depression: - Cognitive/affective - Somatic/vegetative	6. Automatic thoughts	60 minutes		
		7. But-if	60 minutes		
		8. Trash talk	60 minutes		
		9. Inverted binoculars	60 minutes		
		10. It's just a metaphor	60 minutes		
		11. Gratitude note	60 minutes		
		12. Q's tree	60 minutes		
		13. <i>Secukup rasa</i>	60 minutes		
		14. Magic binoculars	60 minutes		
		15. Loose knots	60 minutes		
		16. Think grey	60 minutes		
		17. Persona	60 minutes		
		4. Retention of Productive Behavior	Depression and cognitive distortion Relapse prevention	18. Stand firm	60 minutes
				19. Fix that, strengthen this	60 minutes
20. Beautiful card for my great friend	60 minutes				
21. Clean it up	60 minutes				
22. Achievement and amusing	120 minutes				
Total		22 activities	1,440 minutes		

### 2.3. Participants

The content validity of the MKT module was tested by a panel of independent evaluators. The evaluators consisted of seven qualified experts from selected universities and departments. Five of the evaluators were academicians who possessed Doctor of Philosophy (PhD) in counselling and psychology fields, and two evaluators were professional counsellors with a certificate of CBT trainer. All the evaluators are registered counselors with the Malaysian Board of Counselors and has 12 to 30 years of experience and expertise in counseling and psychology, counseling development and intervention, as well as in developing modules. The process of determining the reliability of an MKT module involving the trainees in one of the shelters for out-of-wedlock pregnancy in Selangor, Malaysia. Due to the limited number of inmates, all 15 trainees aged between 17 to 26 years were selected as participants in this study. Participants involved were able to read and write, have no learning difficulties, and did not have serious psychological problems (e.g., need to rely on antidepressant medication). The trainees underwent a pilot test of the MKT module for twelve sessions.

### 2.4. Validity

Validity values were measured using content validity aimed at determining whether the activities contained in each sub-module represented a module based on cognitive behavioral theory (CBT). For that purpose, it is advisable to obtain an external evaluator who is an expert in the field being studied [54], [55]. Therefore, seven experts with extensive experience in counseling and psychology as well as module development from several universities in Malaysia were selected to evaluate this cognitive behavioral module (MKT).

Of the seven external evaluators, five of them were selected from a few educational institutions, including *Universiti Kebangsaan Malaysia* (UKM), *Universiti Putra Malaysia* (UPM), *Universiti Malaysia Perlis* (UNIMAP), *Universiti Sains Islam Malaysia* (USIM) and *Universiti Malaysia Terengganu* (UMT). They are all doctorates in counselling and psychology fields and have 15 to 30 years of experience and expertise in counseling development and intervention, as well as in developing modules. Two of these five academicians had developed CBT-based intervention modules. Two more external evaluators are Certified cognitive behavioral therapy (CBT) Trainer by the Association of Educational Counselors (PEKA) Malaysia with 12 to 20 years of experience as a counselor. One of them is also a doctorate in counselling. All seven external evaluators are counselors registered with the Malaysian Board of Counselors. The external evaluator evaluates the appropriateness of the activities used that represent each sub-module to answer the research questions posed. Next, the researchers referred to the content validity questionnaire form developed by Jamaludin Ahmad [56] based on the module validity requirements by Russell [38].

A questionnaire containing five questions using a five-point Likert scale from Strongly Agree (5) to Strongly Disagree (1) was completed by an appointed content verification expert. A good module should measure three main aspects namely content validity, reliability, and module impact [39]. However, the researchers had made some modifications to the original questionnaire to suit the objectives of the study. The questionnaire also had additional space to allow each expert to provide comments or views related to the modules provided. Furthermore, to calculate the validity of the module content, the total marks given by the experts via the Likert scale (X) were divided by the maximum score of the Likert scale (25) and subsequently multiplied by 100%.

Module content that was mastered or achieved a score of 70% was considered to have good content validity [38], [39]. Next, the score in percentage form should be converted to decimal form with 100 per cent as 1.00 and 0 per cent as .00 resembling the value of the correlation coefficient [39]. For example, a score of 90 per cent is considered to have a content validity coefficient of .90. Figure 3 shows the method of calculating the content validity of the cognitive behavior module (MKT).

$$\frac{\text{Total score by evaluator (X)}}{\text{maximum score (25)}} \times 100\% = \text{Content validity of achievement}$$

Figure 3. Formula to analyse the content validity of the MKT module

### 2.5. Reliability

Apart from having high validity, a high-reliability value is also a precondition for a good module. Reliability refers to the consistency of the measurement of a measuring instrument, i.e. it measures what needs

to be measured and ensures that the constructed measuring instrument has a consistent and reliable value [57]. The reliability of a module and the reliability of a test or measurement tool are determined by the same method [39]. This is because both the module and the instrument are developed specifically for a test. Furthermore, reliability can be determined by the extent to which participants successfully follow the steps at each activity as well as achieve the objectives of the module [38].

This questionnaire was distributed to the pilot study participants after they completed the module training. Then, the questionnaire was analyzed using Cronbach Alpha to obtain the reliability coefficient of the module. This method is based on the standard deviation of the measurement instrument and the standard deviation for different items [39]. As a result, the researchers were able to identify the weaknesses of the module in terms of the time allocation for each activity, the suitability of the module activity with the target sample, the clarity of objectives, the clarity of instructions and the activity steps and more.

### 3. RESULTS AND DISCUSSION

This section describes the analysis of the validity and reliability of the MKT module. It also discusses the results of the analysis. SPSS Version 27.0 software was used to analyze the data.

#### 3.1. MKT module content validity

Table 2 shows the analysis of cognitive behavior module (MKT) content validity based on the statement of each item. Hence, the overall score obtained for all the items was 93% which equals the coefficient of content validity of  $.93 > .70$  and proved that this module has high and good content validity. These values range from  $.91$  to  $.97$  for each item. The highest validity coefficient score of  $.97$  indicates that most experts agree with the statement that the content of the MKT Module meets its target population. This is followed by a score value of  $.94$  which refers to the content of the module that could be successfully implemented as well as it may help towards reducing participants' cognitive distortion. Meanwhile, the two statements concerning the content of the MKT Module are compatible with the time allotted and may help towards reducing participants' depression, acquired the content validity coefficients of  $.91$  accordingly.

Table 2. Analysis of the MKT Module content validity

Components of validity	%	Coefficient	Evaluators' assessment
1. MKT module content meets its population target.	97	.97	Accepted
2. MKT module content could be successfully implemented.	94	.94	Accepted
3. MKT module content is compatible with the time allotted.	91	.91	Accepted
4. MKT module content may help towards reducing participants' depression.	91	.91	Accepted
5. MKT module content may help towards reducing participants' cognitive distortion.	94	.94	Accepted
Content validity coefficient of the MKT module	93	.93	Accepted

Table 3 shows the content validity values and improvement suggestions according to every expert involved. The highest percentage assessed by two evaluators was 100% for the five statements in the overall content validity questionnaire of the MKT module. While the minimum percentage given by the evaluator was 80%. It is agreed that a 70% score is considered a higher level of achievement [39] which indicates that this module has good content validity. The findings show that all seven experts agreed that the content of the MKT Module was in line with the objectives of the module and suitable to be implemented to the trainees in the out-of-wedlock pregnant shelters. Simultaneously, the findings of this study have also shown that the content of the MKT module is of good quality because it fulfils the five criteria of content validity highlighted by Russell [39]. The criteria are the content of the module meets the target population, it can be implemented successfully to the target population, the time allotted is appropriate and it helps in reducing the trainees' depression and cognitive distortion.

Apart from the high percentage given by all the experts involved, constructive comments and suggestions for improvement were also stated in the content validation form. All comments and suggestions for improvement related to the content of the module have been considered by the researchers. Some minor amendments were made related to : i) the use of terms which need to be consistent and coincide with the CBT principles such as *Pemikiran Automatik* instead of *Fikiran Automatik*; ii) the objectives which need to be added to some activities by forming a construct from the steps of the activity; iii) add the time (hours and minutes) for the steps of each activity which needs to be detailed out and written in the module; iv) the use of language barrel which is easily understood by the respondents either in written or spoken instructions.



However, some comments cannot be attended due to several factors, for example, Evaluator 3 suggested that the order of some sub-modules need to be arranged which means the Cognitive Strategy sub-module should be implemented first, followed by the Behavioral Strategy sub-module. This suggestion is not feasible because although the basic concept of CBT emphasizes the role of thought on individual's emotions and behavior, in the issue of depression, behavioral activation must be addressed first [47]. This is because, in the Cognitive Strategies sub-module that involves thoughts-challenging activities, respondents who are depressed and cognitively distorted may encounter difficulties because of confusion and have difficulty to concentrate. Thus, the activation of energy due to physical activity in the Behavioral Strategy sub-module can later help participants concentrate and engage fully in cognitive activity in the cognitive strategy sub-module. Improvements were made before the pilot test was conducted on the respondents.

Table 3. The MKT module content validity value and the suggestions for improvement made by each evaluator

Evaluator	Content validity value (%)	Comment and improvement suggestions
Evaluator 1 <i>Universiti Malaysia Perlis</i> (UNIMAP)	100	- Congratulations on successfully developing a module that meets the principles of CBT and is in line with the objectives of the study. - The use of terms in the module must be consistent and in accordance with the principles of CBT
Evaluator 2 <i>Universiti Kebangsaan Malaysia</i> (UKM)	96	- The MKT module is developed in a structured manner, and it explains the issues/problems faced by those who are pregnant out of wedlock. - Depression and cognitive distortion variables were used as a basis in the construction of activities. The mapping between variables and constructed activities can further explain the suitability of this module. - The way the content of module activities was written is also good including the activity steps, which are explained in sequence. - Addition of objectives needs to be made on some activities. - Please enter the total number of hours for all activities.
Evaluator 3 <i>Universiti Sains Islam Malaysia</i> (USIM)	80	- This module is suitable for achieving the objectives. - Please consider changing the order of the sub-modules. It is suggested for the Cognitive Strategy sub-module to be implemented first before the Behavioral Strategy sub-module. - Make sure the researchers make a follow up with the respondents after the study is done.
Evaluator 4 <i>Universiti Putra Malaysia</i> (UPM)	92	- Congratulations. In general, the content of this module is interesting and meets the objectives. - It is suggested that some of the terms in this module use a language barrel that is easier to be understood as the target group consists of a group of pregnant women from various backgrounds. - It is also suggested that gender, feminism, and emotions to be given attention in the module activities so that they are more 'close to the heart' of the respondents. - The arrangement of activities must have continuity and good dynamics from the beginning phase to the last phase. - However, congratulations again, it is an excellent module. All the best and hopefully this module can benefit the relevant target groups.
Evaluator 5 <i>Universiti Malaysia Terengganu</i> (UMT)	100	- Overall, all activities in this MKT module are suitable and can be implemented successfully. They are able to bring a positive impact on the target group.
Evaluator 6 Ministry of Education (MOE)	92	- The objectives are explicit, achievable, measurable, and easy to implement. - The activities also focus on the main issue.
Evaluator 7 Malaysian Association of Educational Counselors (PEKA)	96	- It is suggested for the respondents to be explained of the issue of adultery and its relation to sins that can bring negative consequences.

### 3.2. MKT module reliability

Table 4 shows the overall results obtained from the MKT module's reliability test based on the statements of each item. Reliability analysis was tested using a questionnaire based on the measured module activity [39]. Fifteen respondents consisting of trainees at one of the out-of-wedlock pregnancy shelters in Selangor, Malaysia who had answered a total of 57 questions based on 22 activities in four sub-modules. Using statistical packages for social sciences (SPSS) version 27.0, the reliability coefficient value was investigated. The value indicates .97. which is considered high.

Table 4. Analysis of the MKT module reliability

MKT Sub-module	Total activities	Total items	Reliability coefficient
Sub-module 1: Psychoeducation	3	7	.74
Sub-module 2: Behavior Strategy	2	4	.89
Sub-module 3: Cognitive Strategy	12	30	.96
Sub-module 4: Retention of Productive Behavior.	5	16	.89
Total reliability coefficient of the MKT module	22	57	.97

The findings coincide with the statement that the ability of subjects to master the objectives of the module can be determined based on each step of the module activity [38]. In addition, the findings of this study also support several findings that also show acceptable reliability values and high coefficients in testing their modules [41], [42], [45], [56]. The findings of this study also prove that the respondents aged between 17 and 26 years old can understand well the instructions and procedures of each activity delivered through the same language barrel. Subsequently, they can attend to these activities according to the objectives that have been set.

Further analysis of the value of the reliability coefficient of each sub-module was also conducted. The findings show that sub-module 1 (Psychoeducation) obtained .74, sub-module 2 (Behavioral Strategies) was .89, sub-module 3 (Cognitive Strategies) was .96 and sub-module 4 (Retention of Productive Behavior) was .89. These findings prove that all the steps in the 22 activities for the four sub-modules can be followed by the participants. The findings also show that the objectives of the activity are understandable. It is certified that draft modules that have high validity and reliability after testing can be considered complete and ready for use in actual studies [39].

In terms of module development, this study is seen to have the potential in developing a CBT-based module with high validity and reliability based on sidek module development model [39] and a questionnaire referring to the activity steps proposed by Ahmad [56]. Through this study, the researchers hope to contribute to the body of knowledge in terms of methodology in developing modules in Malaysia. This study will be able to produce empirical evidence on the validity, reliability, and usefulness of the module. In addition, this research is seen to help the organizations involved, namely women's shelters to manage the problems of depression and cognitive distortion faced by their trainees. Although cases of out-of-wedlock pregnancies are uncommon in schools, this module is also recommended for use by counseling teachers to assist students involved with out-of-wedlock pregnancies in managing their depression and cognitive distortion.

Although the MKT module has high validity and reliability and can already be used in actual studies, there are some limitations that future researchers should be aware of. First, a pilot study with at least 20 participants is required to obtain good results [58]. However, the number was not obtained in this study due to the limited number of trainees in a shelter. This is related to the fact that the study was conducted while the country was still under Movement Control Order due to Covid-19, so several procedures had to be followed. Therefore, it is suggested also in future studies, that several shelters with similar characteristics should be included to improve the validity of the results. Nevertheless, this study is considered adequate because its main purpose is as a pilot study that serves to assess the validity and reliability of the MKT module as the success of previous studies involving less than 20 respondents. Among such studies are a pilot study on the effects of a cognitive group of behavioral therapy programs for pregnant women with depressed mood in Korea [59] and a study on physiotherapy-associated cognitive-behavioral therapy for patients with hemophilia [60].

Second, this study was limited to one independent variable, namely the Cognitive Behavior Module (MKT), and two dependent variables, namely depression and cognitive distortion. Other variables involving the participants such as age, race, level of education, socioeconomic status and others were not controlled in this study. Therefore, the researchers recommend that the next module developers consider the aforementioned variables to diversify the study results.

#### 4. CONCLUSION

In conclusion, this research has successfully developed a cognitive behavioral module (MKT) that has high validity and reliability by following the stages in the Sidek Module Development Model. Therefore, this module can be implemented in the actual study and is expected to have a positive impact on trainees at the out-of-wedlock pregnancy shelters in terms of managing depression and cognitive distortion as well as promoting their positive well-being. At the same time, this module can indirectly benefit to those involved.

## ACKNOWLEDGEMENTS

The authors would like to thank all participants for their generous participation in this study. The paper was funded by UTMER Grant (QJ130000.3853.18J99).




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