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POSITIVE EFFECTS OF INDIVIDUAL COGNITIVE BEHAVIOR THERAPY FOR PATIENTS WITH UNIPOLAR MOOD DISORDERS WITH SUICIDAL IDEATION IN MALAYSIA: A RANDOMISED CONTROLLED TRIAL

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Abstract

The aim of this study was to investigate the effectiveness of Individual Cognitive Behavior Therapy (ICBT) in treating patients with mood disorders with suicidal ideation. A total of 69 patients (48 females, 21 males) with the diagnoses above were randomly allocated to either the group of Treatment As Usual (TAU) + ICBT (n=33) or the TAU group (n=36). All participants completed the Beck Depression Inventory (BDI), Beck Scale for Suicide Ideation (BSS), Positive and Negative Suicide Ideation Inventory (PANSI), Beck Hopelessness Scale (BHS), and Depression Anxiety Stress Scale-21 (DASS-21).These questionnaires were administered at pre-treatment, midway through treatment (week 4), post-treatment (week 8), and at follow-ups after three months (week 20) and six months (week 32). Factorial ANOVA results showed that the TAU+ICBT patients improved significantly and at faster rate as compared to the TAU group, which showed improvement only from pre to mid treatment on DASS-D and BHS-T measures.

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The effect size (Cohen's d), for the TAU+ICBT group showed large effect (1.47) for depressive symptoms and suicidal ideation (1.00). These findings suggest that ICBT used in addition to the TAU, was effective in enhancing treatment outcome of patients with unipolar mood disorders as well as, reducing risk for suicide behavior.

1. Introduction

The World Health Organization estimates that in the year 2020, approximately 1.53 million people would die due to suicide, and 10-20 times more people would attempt suicide worldwide (WHO, 1999). Meanwhile it was estimated that depression would be the main cause of disability in the developing world by the year 2020 (Zartaloudi, 2011). In Malaysia, depression is the most common mental illness, which was reported, yet it is still under-detected and under-treated (Aishvarya et al., 2012 a, 2012b; Aishvarya et al., 2011; Deva, 2006; Kader el al., 2014; Mukhtar and Oei, 2011). The cost of depression is high and increasing worldwide especially in terms of physical and psychological burden. According to WHO (2005), one of every 100 people suffering from depressive disorder dies by suicide and 50% individuals who committed suicide had the main diagnosis of depression (Reddy, 2010). The Malaysian Psychiatric Association (2004), reported that approximately 7% to 10% of depressed patients are expected to be at risk of suicide in the next 10 to 15 years.

In term of treatment, generally psychotherapy and pharmacotherapy are associated with good outcome in treating patients with depression (Gelenberg et al., 2010; Malhi et al, 2015). In the West, several types of psychotherapy had shown to be effective in treating mood disorders. A few meta-analytic studies showed that CBT (Cognitive Behavior Therapy) is highly effective for depressive disorders (Beck, 2005; Malhi et al, 2015; Oei and Dingle, 2007), reduce relapses in

the treatment of unipolar depression (Butler et al., 2006; Cuijpers et al, 2013; Driessen and Hollon, 2010) and more effective than inter-personal therapy in severe depression (Luty et al., 2007). The efficacy of CBT was also noted in the treatment of acute depressive syndromes (Driessen and Hollon, 2010; Wampoldn et al., 2002). Meanwhile, CBT when incorporate with TAU (treatment as usual) was found to be more effective in relapse prevention of patients with bipolar disorders as compared to TAU only (Lam et al., 2003). Individual cognitive behavior therapy (ICBT) had been the main type of treatment in treating patients with depression especially depressed outpatients with no psychotic or melancholic features (Warman et al., 2005). In addition, group cognitive behavior therapy had shown to be at least, if not more effective than individual cognitive behavior therapy (Dwyer et al., 2013; Nyer et al., 2016; Oei and Dingle, 2007; Warman et al., 2005; Zettle et al., 1992).

The applicability of Beck' theory and research on treatment of mood disorders has been done among the Western populations and proven to be successful, however it is very limited in the East. Some of the studies on CBT were conducted in Asian countries as Indonesia (Hadiyono, 1998), India (Prasadarao, 1998), Hong Kong (Tang and Lee, 1998; Wong, 2009; Wong, 2011), China (Cui et al., 2016; Qian and Chen, 1998; Shen et al., 2006), and Japan (Fujisawa et al., 2010). In addition, CBT was also proven to be applicable in Asian countries with various values and culture (Hodges and Oei, 2007; Lin, 2001; Mukthar et al., 2011; Qiu, et al., 2013; Wong, 2009; Wong, 2011). In Malaysia, psychotherapy for mood disorders especially for depression, Mukhtar and Oei, 2011, reported that only two religious psychotherapy studies (Azhar and Varma, 1995; Razali et al., 1998) and one psychodynamic study (Woon and Teoh, 1976) were conducted among patients with depression. Meanwhile, group cognitive behavior therapy was conducted among Malay patients in treating depression (Mukhtar et al., 2011). The findings suggested that group cognitive behavior therapy when incorporated with treatment as usual was effective in reducing negative thoughts and maladaptive behaviors among patients with depression. To date, no single study had been done in looking at the efficacy of individual cognitive behavior therapy in the treatment of mood disorder patients with suicidal ideation in

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Malaysia. Since the patients in present study are from multicultural background, the individual approach would be more appropriate to reduce variation and other differences e.g. cultural values. So, it will be worthwhile to investigate the efficacy of ICBT in the treatment of mood disorders in Malaysia since ICBT was found to be effective in treating patients with mood disorders in the West.

In addition, very little attention was paid in the treatment of suicidal behavior, which, is closely related with mood disorder. In Malaysia, 30,000 family members or friends were estimated to be negatively affected directly or indirectly from suicidal acts every year (Ministry of Health, 2005). Besides that, the burden also involves medical cost, which, include emergency transport, rehabilitation, hospital, pharmaceutical, ancillary, and related treatment cost, as well as funeral/coroner expenses for fatalities and administrative costs. The comprehensive review of the literature on suicidal behavior in Malaysia (Aishvarya et al., 2013; Aishvarya , et al., 2014) reported that to date there is no single psychological therapy was conducted in treating patients with suicidal behavior in Malaysia as compared to the West (Coon et al., 2004; Linehan et al., 1991; Rudd et al., 1996) which were found to be effective. So, it is worth to investigate the feasibility of ICBT for treatment of patients with mood disorders with suicidal behavior in Malaysia.

Thus, the objective of this study was to evaluate the effectiveness of individual cognitive behavior therapy (ICBT), in conjunction with the Treatment As Usual (TAU), in treating outpatients with mood disorders with suicidal ideation in Malaysia. TAU + ICBT were hypothesized to be more effective than TAU alone. Patients in the TAU + ICBT group were expected to demonstrate a more reliable and clinically significant change in symptoms of depression, suicide ideation and risk factors for suicidal behavior as compared to patients in the TAU group.

2. METHOD

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2.1. Participants

A total of 69 patients (21 male 48 female) who were diagnosed with unipolar mood disorders (by their treating psychiatry based on DSM-IV-TR criteria) with suicide ideation were allocated using simple randomization method by assigning odd and even numbers to allocate cases to either the TAU+ICBT group (n = 33) or the TAU group (n =36). The randomization process was carried out by professor in psychiatry. New and old patients with the diagnosis of unipolar mood disorders were included in this study. However, the old patients were not "long standing cases" but were diagnosed within the three months before the research was started. The age of the patients ranged between 19 to 72 years with the mean age of 43.13. There were 39 (56.5%) Malays, 21(30.4%) Chinese and 9 (13.0%) Indian patients. Sixty patients (86.9%) had completed secondary education and nine (13.0%) had completed undergraduate education. The Mini International Neuropsychiatric Interview (MINI, Sheehan at el., 1998) administered by therapist (qualified clinical psychologist in Malaysia) showed that all patients were experiencing unipolar mood disorders with 45 (65.2%) experiencing major depressive disorder and the remaining 24 (34.8%) with dysthymia. The Positive and Negative Suicide Ideation Inventory (PANSI) showed that all 69 (100%) of the patients had suicide ideation.

2.2. Measures

Beck Depression Inventory (BDI)

The 21-item Beck Depression Inventory (Beck et al., 1961) was designed to assess the severity of depression. The BDI-Malay version with 20 items was used in present study. The BDI-Malay version was validated in Malaysian among the Malay population (Mukthar and Oei, 2008). The Cronbach's alpha reliability coefficient was found to be above 0.80 with good concurrent validity (Mukthar and Oei, 2008). In this study, the Cronbach's alpha reliability of BDI was 0.90.

Beck Scale for Suicide Ideation (BSS)

The Beck Scale for Suicide Ideation (Beck et al., 1979) is a 21-item self-report instrument to examine the suicide ideation in patients. All items consist of three response options ranging from

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0 - 2 and the total score ranges from 0 - 38. The average reliability coefficient for inpatient (α=.90) and outpatient (α=.87) were found to be high. In this study, the Cronbach's alpha reliability of BSS was α=.87.

Positive and Negative Suicide Ideation Inventory (PANSI)

Positive and Negative Suicide Ideation Inventory was designed to measure ideations about suicide (Osman et al., 1998). PANSI has two subscales: positive ideation (6 items), which are thoughts that act as the buffer against the suicidal behavior and negative ideations (8 items), which are thoughts, related to suicide. The PANSI was validated according to Malaysian outpatient's norms, and the Cronbach's alpha reliability of PANSI-Negative (α= 0.93) and the PANSI-Positive (α = 0.84) was found. The PANSI- Negative was also found to have good concurrent, criterion and discriminative validity (Aishvarya et al., 2015).

The Depression Anxiety Stress Scale (DASS)

The Depression Anxiety Stress Scale-21 (Lovibond and Lovibond, 1995) is used to measure symptoms of depression (7 items), anxiety (7 items), and stress (7 items) symptoms. Each item in DASS is rated based on a 4 -point scale ranging from 0 (did not apply at all) to 3 (applied to me very much, or most of the time). In Malaysia, DASS-21 had very good Cronbach alpha of .84, .74 and .79, respectively for depression, anxiety and stress subscales when it was tested in the general population (Ramli, et al., 2007). In addition, it had good factor loading values for most items (.39 to .73). Also, Oei et al., (2013) demonstrated good psychometric properties for the DASS in 6 Asian countries, including Malaysia. In this study, the DASS was validated according to Malaysian outpatients' norms and Cronbach's alpha reliability coefficient was 0.95 with good concurrent, criterion and discriminative validity.

Beck Hopelessness Scale (BHS)

The Beck Hopelessness Scale is a 20-item, self-report to measure symptoms of hopelessness about the future. This instrument has been shown to have good psychometric properties in clinical and non-clinical populations (Beck et al., 1974; Glanz et al., 1995; Steer et al., 1993).

The 7-items BHS is a form of the original 20-item-ed BHS (Beck et al., 1974) validated according to Malaysian outpatients' norms (Aishvarya, 2014). The coefficient alpha for BHS had been found to be 0.79 with good concurrent, criterion and discriminative validity (Aishvarya, 2014).

2.3. Procedure

University Kebangsaan Medical Centre, Research Ethics Committee (UKMC), Research Ethics Committee (Medical Research and Industry) and Behavioural & Social Sciences Ethical Review Committee (BSSERC), University Of Queensland approved this study. Patients were recruited from psychiatry clinics in the UKMC. Figure 1 shows the flow chat of the recruitment and allocation process of participants to the two groups. A total of 203 patients were diagnosed by their respective psychiatrist according to the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV-TR: APA, 2000). Following this, The Mini International Neuropsychiatric Interview (MINI, Sheehan at el., 1998) was administered by the first author to every 10th patient to confirm the diagnoses given by the psychiatrist. It has been recommended that second stage systematic screening in every 10th patient is sufficient if the primary screening or diagnosis is positive (e.g. Pignone et al., 2002). A Kappa value of 0.78 was found and percentage of agreement was 81.9% for patients with mood disorders. The results of Positive and Negative Suicide Ideation Inventory showed that all (N=69) patients had suicidal ideation. The cutoff point of 1.67 was used in PANSI to identify patients with suicide ideation as suggested by Osman, et al., (1998). The inclusion criteria were: 18-75 years, Bahasa Melayu or English literate was not treated with CBT and other psychological intervention e.g. structured counseling sessions before, and met the DSM-IV-TR criteria for unipolar mood disorders. Meanwhile, the exclusion criteria were other psychiatric diagnoses beside unipolar mood disorders, and not able to read, write or speak either Bahasa Melayu or English. All patients were on medication during the course of therapy and allowed to change medication as required by their psychiatrist. However, pre-existing medication regimes were reported not to have significant effect on long-term outcomes in group cognitive behavior therapy (Oei and Yeoh,

1999). Meanwhile seeking traditional supports e.g. religious/spiritual services, meditation not part of inclusive or exclusion criteria.

All sixty- nine patients were randomly allocated to either TAU+ICBT group (n=33) or TAU group (n=36). Patients in the TAU group (N=36) attended follow-up appointment with their psychiatrist but did not receive any form of psychological therapy. They were only given questionnaires at the every assessment points (pre, mid, post-treatment (week 8), follow up after 3 months (week 20) and follow up after six months (week 32). Patients in TAU group were offered CBT after the 6 months follow-up in the hospital.

Meanwhile, patients in the TAU+ICBT group (n=33) received TAU plus individual cognitive behavior therapy twice weekly for 8 consecutive weeks. Each ICBT session lasted for approximately 2 hours. The sessions were longer than the usual ICBT because these were patients with suicidal ideations and also a break of about 15 mins was factored in the session. The entire patients (n=33) in this group completed the sessions approximately in 8 months. The whole program including the follow ups were completed in one year and four months.

INSERT FIGURE 1.

2.4. Treatment

The ICBT treatment manual used in this study was modified to suits individual approach from the 4th edition GCBT manual developed by Oei (2010) for mood disorders. The original manual was in English and has been translated in Malay by Mukhtar et al., 2011. Both versions (English and Malay) were used for this study.   Previous studies using this manual showed to be effective in the treatment of patients with mood disorders (Dwyer, et al., 2013; Furlong and Oei, 2002; Mukhtar et al., 2011; Oei and Shuttlewood, 1997; Oei and Yeoh, 1999). The manual provides a total of 8 detailed GCBT sessions, which includes short lectures on specific topics, class

activities and homework tasks. In sessions 1 and 2, participants were taught general orientation to cognitive behavior therapy, the dysfunctional thoughts and behaviors related to depression in sessions three and four, participants were taught to identify their negative automatic thoughts and core dysfunctional beliefs and learn CBT techniques to help them to challenge or change their dysfunctional cognitions using the vertical arrow technique in sessions five and six. Finally in sessions seven and eight, the aspect of support system and relapse prevention were included. Each session was completed in two individual sessions with the patients in approximately four hours as the GCBT. All the twice weekly individual sessions for 8 consecutively weeks were conducted in a treatment room at psychiatric department. The sessions were conducted by the first author (AS), who holds a Master degree in Clinical Psychology (Malaysia), and a doctoral degree in psychology from University of Queensland (Australia), with 11 years clinical experience applying CBT at the UKMC in Malaysia. In addition, the author was supervised by a professor in psychiatrist in Universiti Kebangsaan Malaysia (TM) and a professor in clinical psychology from University of Queensland (TO) on weekly basis, reviewing each individual cases of intervention. Participants were told that therapist being monitored by experts on quality of intervention delivered. All the sessions were conducted either in English or Malay Language. During the sessions, the therapist regularly reinforced the skills taught, monitored patients' progress and addressed issues in the sessions and at home. The questionnaires were collected at the end of therapy sessions and at follow ups by therapist. The communication with the patients of TAU group was undertaken mainly via telephone whereby they were reminded to fill up the questionnaires at the clinic counter when they attended their appointments. Filled up questionnaires were either returned on the same day to the staffs at the psychiatric clinic or mailed to the therapist.

2.5. Statistical Analyses

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 17. The independent variables were the two treatment conditions (TAU + ICBT group and TAU group)

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and the five assessment points (pre-treatment, mid-treatment, post-treatment [week 8], three-months follow-up [week 20] and six-month follow-up [week 32]. Meanwhile the patients' total scale scores, sub scale scores and demographic variable were the dependent variables. The ten total scale measures and 11 sub scale measures were analyzed by means of two separate 2 (Participant status: TAU + CBT versus TAU) X 5 (Time: pre-treatment, mid treatment, post treatment, 3 months follow ups (week 20) and 6 months follow ups (week 32). Measures of depressive symptoms (BDI-T and DASS-D), suicide ideation symptoms (BSS-T and PANSI-T) and measures of risk factors for suicidal behavior (DASS-T, BHS-T, DASS-A and DASS-S) were analyses separately using Manova and then followed by post hoc ANOVA.

Effect size

To calculate the effect size, Cohen's's (1988) formula was used (MPRE - MPOST) / SDPRE and interpreted based on the following guidelines: trivial effect (< 0.20), small effect (≥ 0.20 and <0.50), medium effect (≥. 50 and <0.80) and large effect (≥ 0.80).

Clinical significance

In order to determine the reliability of degree of change in the pre - post treatment scores, The Reliable Change Index (RCI) was used. The RCI was done using the following formula, SE diff = SD1 $\sqrt{2}$ $\sqrt{1-r}$ (where SD1 is the SD of the baseline observation and r is Cronbach's alpha coefficient). Meanwhile the clinical significant is achieved when a participant during the therapy moves from the dysfunctional level to the functional level. The clinically significant changes were calculated using the formula (MDYSF X SDFUNC + MFUNC X SDDYSF) / (SDDYSF + SDFUNC). Participants who had achieved the reliable change and met the cut-off score for clinically significant change were considered to have recovered. The cut-off score is as proposed in each Malay version measures used in this study. As an example, for BDI, the cut off score of 36.6 were used (Mukthar and Oei, 2008)

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Intent to treat

The participants at each assessment point returned all the questionnaires. However, at the six-month follow-up, only 28 participants in TAU + ICBT group and 14 participants in TAU group returned the questionnaires. Based on this situation, the intent-to-treat- (ITT) (Kendall et al., 1999) analyses were used. In this study using the ITT method, the scores of the last assessment point (three month follow-up) were placed at the six-month follow-up where necessary. There were no significance different found in the preliminary analysis when data from participants who completed all questionnaires were compared to completers using substituted values.

Assumption testing

The Mauchy's Test of Sphericity was used to test the assumption of homogeneity of all variances and a p-value of <0.05 for all the measures were found. Hence, the Greenhouse-Geisser adjustment was used to interpret the significance levels. It was noted that all variables were well distributed with skewness and kurtosis were found to be supporting the validity of multivariate analyses. The skewness and kurtosis were well distributed.

3. RESULTS

Demographic characteristic for TAU + ICBT and TAU samples

There were no significant differences on gender, ethnicity, and educational level demographic variables for the two groups at pretreatment. Also, the pretreatment mean scores on the measures of depressive symptoms, measures of suicide ideation symptoms and measures of risk factors for suicidal behaviors did not reveal any significant differences. Thus, both groups were not significantly different before the treatment.

A total of 15 (21.7%) patients had history of suicide attempt with 8 patients in TAU+ICBT and 7 patients in the TAU group at the baseline but no significant difference between group. When patients were evaluated at post treatment (week 8), none of the patients in TAU+ICBT attempted

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suicide while in the treatment. However, 2 patients in the TAU group attempted suicide in week seven while in the 8 weeks treatment. Both patients were admitted in the psychiatric ward, closely monitored with additional care and given supportive counseling by consultant psychiatrist. Both participants was re-consented after discharged from hospital and maintained in the study as they wish.

3.1. Primary Measures: depressive symptoms & suicidal ideation

Effect of treatment and maintenance at follow-ups

The means and standard deviations of the measures of depressive symptoms are presented in Table 1. The results of the repeated measures MANOVAs for the measures for depressive symptoms revealed that there was a significant effect of participants' status on the combined measures of depressive symptoms, $(1, 67) = 5.61$, $p < 0.001$; Wilks' Lambda, main effect for time ($F = 1508.6$, $df = 1, 67$, $p < .001$); Wilks' Lambda and treatment interaction x time ($F = 81.1$, $df = 4, 64$, $p < .001$); Wilks' Lambda.

Beck Depression Inventory (BDI-T)

Table 1 presents mean scores and standard deviations for the dependent variables from pre to 6 months follow-up points. The results of the repeated measures ANOVAs revealed a significant main effect ($F = 8.58$, $df = 1,67$, $p < 0.001$), time ($F = 21.9$, $df = 4,67$, $p < 0.001$) and treatment x time interaction effects ($F = 20.1$, $df = 4,64$, $p < 0.001$) for the BD1-T scores. The post hoc ANOVA tests yielded significant decrease in BDI-T mean scores from pre to mid treatment and mid to post treatment but remained stable from post treatment to the follow-up assessment time points. Table 2 presents the number and percentage of patients who achieved reliable significant change and clinically significant change at the end of the treatment. Fourteen (42.4%) patients showed reliable significant change and sixteen (48.5%) patients showed clinically significant change in the TAU + ICBT group. In the TAU group, none of the patients showed reliable and clinically significant change while in treatment. In term of effect sizes, the TAU+ICBT group showed a

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large effect size (Cohen's d=1.47), while the TAU group was associated with a trivial effect size (Cohen's d=0.02) (see Table 3).

INSERT TABLE 1, 2 & 3

Depression Anxiety Stress Scale-Depression (DASS-D)

The results of the repeated measures ANOVAs revealed a significant main effect (*F*=0.20, *df*=1, 67, *p*<0.001), time (*F*=55.8, *df*=4,67, *p*<0.001) treatment x time interaction effects (F=51.7, df=4, 64, p<0.001) for DASS-D mean scores. As can be seen from the DASS-D mean scores dropped significantly from pre treatment (baseline) to post treatment, then remained stable from post treatment to the follow-up. Meanwhile in the TAU group, the score dropped significantly only from pre to mid treatment but showed non-significant increase from mid treatment to post treatment and remained stable for the rest of the assessment points. In the TAU+ICBT group, a total of 13 (39.4%) patients showed reliable significant change and 14 (42.2%) patients showed clinically significant change. Meanwhile, 5 (13.9%) patients showed reliable significant change and 6 (16.7%) patients showed clinically significant change in the TAU group (see Table 2). The effect sizes of TAU+ICBT group was medium (Cohen's d=0.69) and the TAU group showed trivial (Cohen's d=0.01) effect size (see Table 3).

Measures of suicide ideation symptoms

Effect of treatment and maintenance at follow-ups

Table 1 presents the mean and standard deviation of the measures of suicide ideation symptoms. The results of the repeated measures MANOVAs for the measures for suicide ideation symptoms revealed that there was a significant effect of participants' status on the combined measures of suicide ideation symptoms, (1, 67)= 9.45, p <0.001; Wilks' Lambda, main effect for time (*F*=2037.9, *df*=1, 67, *p*<.001); Wilks' Lambda and treatment interaction x time (*F*=9.45, *df*=4, 64, *p*<.001); Wilks' Lambda.

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Beck Scale for Suicide Ideation (BSS-T)

The results of repeated measures ANOVA's showed a significant main effect (F=7.18, df=1, 67, p<0.001), time (F=53.3, df=4,67, p<0.001) and treatment x time interaction effects (F=23.2, df=4,64, p<0.001) for the BSS-T mean scores. The Table 1 presents the mean scores and standard deviations for the dependent variables across the pre to 6 months follow- up points. The post hoc ANOVA tests showed a significant decrease in BSS-T mean scores from pre to mid treatment and mid to post treatment, but remained stable from post treatment to the follow-up assessment time points. A total of 13 (39.4%) patients showed reliable significant change and 15 (45.4%) patients showed clinically significant change in TAU + ICBT group as compared to TAU group, whereby 1 (2.8%) patient showed reliable significant change and 2 (5.5%) patients demonstrated clinically significant change (see Table 2). The TAU+ICBT group showed large effect size (Cohen's d=1.00) meanwhile the TAU group demonstrated small effect size (Cohen's d=0.05) (see Table 3).

Positive and Negative Suicide Ideation Scale-Total (PANSI-T)

Table 1 presents the mean scores and standard deviations for the dependent variables across the pre to 6 months follow-up points. The results of the repeated measures ANOVAs revealed a significant main effect (F=15.5, df=1, 67, p<0.001), time (F=30.0, df=4,67, p<0.001) and treatment x time interaction effects (F=24.6, df=4.64, p<0.001) for PANSI-T scores. The post hoc ANOVA test yielded significant decrease in PANSI-T mean scores from pre to mid treatment and mid to post treatment for the TAU + ICBT group, but remained stable from post treatment to the follow-up assessment time points. A total of 15 (45.4%) patients showed reliable significant change and 15 (45.4%) patients showed clinically significant change in TAU + ICBT group as compared to TAU group, whereby 1 (2.8%) patient showed reliable significant change and 2 (5.5%) patients demonstrated clinically significant change (see Table 2). PANSI showed

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large effect size (Cohen's d=1.00) for the TAU+ICBT group as compared to nil effect size in the TAU group (see Table 3).

3.2. Secondary Measures: other risk factors

Effect of treatment and maintenance at follow-ups

The means and standard deviations of scores of risk factors for suicidal behavior are presented in Table 1. The results of the repeated measures MANOVAs for the measures for risk factors for suicidal behavior revealed that there was a significant effect of participants' status on the combined measure of depressive symptoms, (1, 67)= 17.10, p <0.001; Wilks' Lambda, main effect for time (F=2086.6, df=1, 67)= p<.001);Wilks' Lambda and treatment interaction x time (F=36.1, df=4, 64, p<.001); Wilks' Lambda.

Depression Anxiety Stress Scale-Total (DASS-T)

The Table 1 presents the mean scores and standard deviations for the dependent variables across the pre to 6 months follow-up points. The results of the repeated measures ANOVA revealed a significant treatment effect (F=1.07, df=1, 67, p<0.001), time (F=111.5, df=4, 67, p<0.001) and treatment x time interaction effects (F=112.5, df=4,64, p<0.001) for the DASS-T scores. The DASS-T's mean scores decreased significantly from pre to mid treatment and mid to post treatment, but remained stable from post treatment to the follow-up assessment time points. Thirty six percent (12) of the patients showed reliable significant change and forty six percent (15) of the patients showed clinically significant change in TAU + ICBT group. However, in TAU group, only 3 percent (1) of the patients showed reliable and 6 percent (2) showed clinically significant change (see Table 2). In term of effect sizes, the TAU+ICBT group showed medium effect (Cohen's d=0.74) size as compared to small (Cohen's d=0.11) effect size for the TAU group (see Table 3).

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Beck Hopelessness Scale-Total (BHS-T)

The results of the repeated measures ANOVAs revealed a significant main effect (F=9.7, df=1, 67, p<0.01), time (F=26.9, df=4,67, p<0.001) and treatment x time interaction (F=31.3, df=4,64, p<0.001) for BHS-T mean scores. As can be seen from Table 1, mean scores showed a significant decrease from pre to mid treatment and mid to post treatment but remained stable from post treatment to the follow-up assessment time points. Table 2 shows that a total of 13 (39.4%) patients showed reliable significant change and 14 (42.2%) patients showed clinically significant change in the TAU + ICBT group. In the TAU group, there were 6 (16.6%) patients who showed reliable significant change and 7 (19.4%) patients showing clinical significant change. The effect sizes of treatment on BHS was large (Cohen's d=0.86) on the TAU+ICBT group as compared to (Cohen's d= 0.040 in the TAU group, which is small effect size (see Table 3).

Depression Anxiety Stress Scale-Anxiety (DASS-A)

Table 1 presents the mean scores and standard deviations for the dependent variables across the pre to 6 months follow-up points. The results of the repeated measures ANOVAs showed a significant main effect (F=1.80, df=1, 67, p<0.001), time (F=17.5, df=4, 67, p<0.001) and treatment x time interaction (F=14.6, df=4, 64, p<0.001) for DASS-A scores. The post hoc ANOVA test yielded significant decrease in DASS-A score from pre to mid treatment and mid to post treatment, but remained stable from post treatment to the follow-up assessment time points. As can be seen from Table 2, twelve patients (36.3%) showed reliable significant change and fourteen patients (42.4%) showed clinically significant change in TAU + CBT as compared to two patients (5.5%) showing reliable significant change and another two patients (5.5%) showing clinically significant change in the TAU group. In term of effect sizes, the TAU+ICBT showed medium effect size (Cohen's d=0.70) as compared to small effect (Cohen's d=0.50) size in the TAU group (see Table 3).

Depression Anxiety Stress Scale-Stress (DASS-S)

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The results of the repeated measures ANOVAs revealed a significant main effect (F=0.7, df=1, 67, p<0.001), time (F=21.8, df=4, 67, p<0.001) and treatment x time interaction (F=13.9, df=4, 64, p<0.001) for DASS-S scores. A significant decrease was noted in DASS-S mean scores from pre to mid treatment and mid to post treatment, but remained stable from post treatment to the follow-up assessment time points. Twelve patients (36.4%) showed reliable significant change and 15 (45.5%) patients showed clinically significant change in TAU + CBT group. However, in the TAU group, only one (2.8%) patient showed reliable significant change and two patients (5.5%) showed clinically significant change (see Table 2). The TAU+ICBT group showed medium effect size (0.72) as compared to small effect (0.03) size in the TAU group (see Table 3)

4. DISCUSSION

The aim of the present study was to evaluate the efficacy of ICBT in conjunction with the Treatment As Usual (TAU), in treating outpatients with mood disorders with suicidal ideation in Malaysia. The findings of this study were found to be supporting the hypotheses of the study. All the 8 measures used in this study showed significant improvement in the scales from pre treatment to post treatment in the TAU+ICBT group when compared to the TAU group. The TAU+ICBT group reported significant greater change in depressive symptoms, in the expected direction from pre treatment to post treatment, then the TAU group. The change was maintained at both three and six month follow-ups for both measures (BDI-T and DASS-D). Meanwhile, for the TAU group, only the DASS-D where there was a significant improvement in depressive symptoms from pre to mid treatment. The PANSI-T and DASS-T, the measures of risk factors for suicidal behavior showed significant decrease in suicide ideation symptoms in TAU+ICBT group as compared to TAU with minimal improvement. On the risk measures for suicidal behavior, all the four measures showed significant improvement in the risk factors from pre to post treatment and maintained at both three and six months follow-ups in the TAU+ICBT. However, the TAU group showed significant improvement only in reduction in hopelessness (BHS-T) from the pre to mid treatment.

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In terms of the effect sizes, 4 scales in the TAU+ICBT group (BD1-T, BSS-T, PANSI-T, and BHS-T) showed large effect sizes and another 4 scales showed medium effect sizes (DASS-D, DASS-S, DASS-A, and DASS-T). Meanwhile for TAU group, all the 8 (DASS-D, BDI-T, BSS-T, PANSI-T, BHS-T, DASS-A, DASS-S, and DASS-T) scales showed trivial effect sizes.

The BDI-T and BSS-T, which, were used as the benchmark in this study reported significant greater change in the TAU+ICBT group in the depressive and suicide ideation symptoms as compared to TAU group, which showed minimal improvement. Elkin et al., 1989 reported that using the Hamilton Rating Scale for Depression (HDRS) and BDI, the depressive symptoms reduced significantly in the treatment of depression using ICBT+TAU. Meanwhile, Dimidjian et al., 2006 also reported that using the Hamilton Rating Scale for Depression (HDRS) and the BDI, the depressive symptoms reduced significantly in the treatment of depression using ICT+TAU. In term of group therapy, Embling et al., 2002 used the BDI and Verduyn et al., 2003 used the HDRS and BDI in the treatment of depression in the GCBT+TAU and reported that the depressive symptoms reduced significantly too. Mukthar, et al., (2011) used the Beck Depression Inventory (BDI) as the depressive measure and reported significant improvement in the depressive symptoms in her GCBT+TAU for depression. In addition, Dwyer et al., 2013 reported significant improvement in the depressive symptom using the Zung Self Rating Depression Scale (Zung-SDS) in GCBT in the treatment of depression. For the suicide ideation, The Modified Scale for Suicidal Ideation (MSSI) and Suicide Probability Scale (SPS) was used by Rudd et al., (1996) to measure suicide ideation and a significant improvement in suicide ideation symptoms were reported in their ICBT+TAU group.

The significant findings were discussed separately in the following sections.

4.1. Measures of depressive symptoms

The findings of the current study on significant improvement of depressive symptoms in the TAU+ICBT, when compared to TAU are consistent with the literature (Dimidjian et al, 2006; Elkin et al., 1989; Wiles et al., 2008). In addition, this study supports the effectiveness of ICBT,

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which is associated with a reduction in scores on the BDI (De Rubeis and Crits- Christoph, 1998; Oei and Dingle, 2007) and GCBT (De Rubeis and Crits- Christoph, 1998; Dobson,1989; Kwon and Oei, 1992; Mukthar et al., 2011). The findings above were consistent with Kwon and Oei (2003) and Mukhtar et al., (2011) in GCBT whereby reductions in scores were noted in the initial stage and non-significant changes were reported between the eighth and final session. In addition, in a GCBT, Free et al., (1991) and Mukthar et al., 2011, reported that a significant reduction in depressive scores was evident by week 8 which are similar with present study. Meanwhile, the stabilization of scores at the post treatment in this study was also reported in group therapy for depression in Malaysia (Mukhtar et al., 2011). The significant improvement from pre treatment to mid treatment in TAU group for DASS-D was also noted but however stabilized for the rest of the treatment. The effect size and the reliable and clinically significant change of the TAU+ICBT group proved the strength of the effect in this study. The large Cohen's d effect size for symptoms of depression (1.47) for the TAU+ICBT group showed that patients in this group were improving better in the depressive symptoms as compared to TAU group. The GCBT for depression in Malaysia reported a large effect size for treatment, which is similar to this study (Mukthar et al., 2011). In term of reliable significant change and clinically significant change, the BDI-T showed 42.4% of reliable significant change and 48.5% showed clinically significant change. This is lower than findings of Mukthar and Oei, 2011 whereby 100% reliable significant change and 95.55% of clinically significant change were reported in the treatment of depression using group cognitive behavior therapy.

4.2. Measures of suicide ideation symptoms

The findings of current study on improvement of suicide ideation symptoms using the ICBT, are consistent with previous findings (Rudd et al., 1996; Stanley et al., 2009), whereby ICBT reduces suicidal behavior among patients with suicide ideation. According to Brown et al., 2005, the usage of ICBT approach in preventing suicidal behavior can also significantly lower on measure of depressed mood and hopelessness. The effect size of BSS-T in this study was large (1.00) with 39.4% reliable significant change and 45.5% clinically significant change. In terms

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of the effect size for treatment of suicidal behavior using ICBT and GCBT, a meta-analysis study (Tarrier et al., 2008) showed that the average effect size of 18 studies on adults were 0.78 which was found to be lower than this study.

Initially participants have difficulties to understand the association with suicidal thoughts with risk of suicide (behavior). As intervention progress participants were able to understand connection between thoughts and behavior and how restructuring thoughts will help improve behavior. Therefore, it is essential to include and elaborate the association between specific suicidal thoughts and suicidal behavior in ICBT psychoeducation session among Malaysian population. The call to adapt thoughts and physical symptom among non-western population in CBT manual well highlighted in previous study (Naeem et al., 2011). Future studies should explore possible protecting factors from suicide ideation e.g. religion and cultural value.

4.3. Measures of risk factors for suicidal behavior

All the measures of risk factors showed medium (DASS-S, DASS-A, DASS-T) to large (BHS-T) effect sizes in TAU+ICBT group as compared to the trivial effect sizes in all scales (DASS-T, DASS-S, DASS-A and BHS-T) in the TAU group. The BHS-T in the TAU group showed significant increase from pre to mid treatment and stabilized at the rest of the assessment points. The most possible explanation for this change would be due to the longer sessions with psychiatrist at the initial stages of the treatments. In term of reliable and clinical significant change, all the measures in TAU+ICBT group showed combined reliable and clinically significant change above 78% as compared to the TAU group whereby combined reliable and clinically significant were below 36%, with only one scale (BHS-T) touching 36%.

Even though the results clearly showed a greater improvement of patients in TAU+ICBT group in terms of symptoms of depression, suicide ideation and reduction on risk factors for suicidal behavior as compared to patients in TAU group whereby significant improvement was noted on 2 scales (BHS-T, DASS-D) a careful interpretation is required in the explanation of the modest improvement in the TAU group. These findings are consistent with studies, which also found

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that TAU groups did not show significant improvement in depressive symptoms as compared to CBT groups (Clarke, et al., 2016; Hallgren, et al., 2015; Mukthar, et al., 2011; Shen et al., 2006). Based on author's observation and informal reports from patient in TAU group, few reasons were identified for the minimal improvement in this group. Patients in the TAU group did not visit their psychiatrist regularly for various reasons such as forgetting their appointments, not complying with their medication and can't afford to come for the appointments. The patients in the TAU+ICBT reported that they were unlikely to miss any appointments with their psychiatrist because they could change the date of the appointment to the same day as their therapy. All the factors above may play a significant role in explaining the minimal improvement of TAU group as compared to TAU+ICBT group. It must be noted that the lack of change in the TAU group does not imply that pharmacotherapy is not effective in treating mood disorders as well as suicidal behavior.

This study provides the evidence of the usage of ICBT in Malaysia, however the cultural issues need to be taken into consideration while applying the ICBT in Malaysia. The present study tried to comply with calling for incorporating multicultural sensitivity in applying CBT (Graham et al., 2013). Malaysian, especially the Malays is quite reserved in expressing psychological problems (Eng and Oei, 1989). However, participants were respectful towards therapist. This is parallel with previous reported which finds the Malay were loyal and obedience during group session (Mukthar and Oei, 2011). Therefore, the therapist needs to be sensitive and aware of these characteristics. For an example, most of patients find Socratic dialogues and therapist's assertiveness during session were interpreted as 'rude', 'shock' and 'threatening'. The Eastern population also has difficulties to associate depression with their thoughts. It is worth noting that mood, cognition and behavior are rarely discussed in the connection of depression (Mukthar and Oei, 2011). So, the therapist should not expect patients to be too expressive about their feelings in the initial sessions. Optimal results of therapy can be obtained by using patients' dialect, simplified terms and clearer explanation on issues. In order to minimize the culture barriers, the GCBP translated by Mukthar and Oei, 2011 was adapted to cater individual real life situation.

For examples, cultural appropriate homework were used in this study. Furthermore, all the patients in this study were at least has secondary level education and their understanding about the thought process and how CBT works clearly acceptable to them. Bahasa Melayu is national language in Malaysia and everyone needs to learn the language since primary school and usually with such education level patient will have good usage of Bahasa Melayu while engaging in ICBT session. This minimizes the language barrier between patients and therapist in CBT session. Meanwhile, it is worth to note that therapist in this study has years of CBT practice and highly competent in using English, Malay and Tamil Languages. Therefore therapist factor also played important role in implementing ICBT effectively.

It is worth noting that this is the first study to compare treatment outcomes for a TAU + ICBT for mood disorders and suicide ideation and first to have assessed the changes in BDI, BSS, PANSI, DASS and other risk measures in Malaysia. In addition, the present study supported the use of ICBT in treating patients with mood disorders with suicidal behavior in Malaysia.

Past clinical trials indicate that CBT has been well studied and proven as an effective intervention for patients with depression among Caucasian. The adaption of CBT for non-western culture is possible in reducing depression (Naeem et al., 2011; Naeem at al., 2009). However, the effectiveness of CBT in various cultural setting still limited but growing. A need for incorporating multicultural sensitivity in applying CBT is important (Graham et al., 2013). Previously, group cognitive behaviour therapy has been tested and concluded as an effective approach in Malaysia (Mukthar and Oei, 2011). But for the first time, this study demonstrated the effectiveness of ICBT from Malaysian culture contexts in patients with depression and suicidal ideation. Furthermore this trial provide valuable lesson for future researcher and shed some new light in adapting culturally sensitive CBT manual for Malaysian patients with depression. However, in depth analysis of identifying specific cultural variables in applying

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ICBT among Malaysian patient, in particular how culture works in the processes of change still warrant more studies.

There were several weaknesses in the methodology. Firstly, the individual format of therapy was offered to patients, and thus the effect cannot be generalize to the group therapy for mood disorders with suicide ideation. In addition, the cost effectiveness of the research using group therapy needs to be assessed and most likely will be reduced if group therapy was conducted. Secondly, there is no measure of the contribution of medication compared to ICBT since the data on medication used during the treatment were not been collected. It would therefore be useful to investigate the control trial comparing ICBT and pharmacotherapy for treatment of mood disorders with suicide ideation. Finally, the TAU patients did not get placebo contact times. Thus it cannot be clearly said that the significant improvement in the ICBT group was solely due to ICBT treatment. The entire study population was from single institution and therapist not blind to group condition. Therefore it might increase treatment "contamination" between intervention and control participants.   The first author of this study conducted the treatment as well as collected data, which could have caused biasness. Future studies need to ensure that the therapist is not involved in data collection. Another limitation of this study includes lack of information regarding the TAU patients.   More information should be gathered in the future study in order to look at the effectiveness of ICBT+TAU in the treatment process. The present study has some ethical issues which need a carefully consideration for future research. One of the important ethical issues is related to two participants in TAU group were attempted suicidal. In present study, both participants were admitted in psychiatric ward with additional support. But, the good clinical practice will be excluding them from trial and enroll them into ICBT or other effective psychological services which may interrupted because participants in TAU group .   Finally, the small sample size with wide age range was inadequate to test the cultural heterogeneity to look at the cultural differences in Malaysia and this should be considered seriously in the future research.

5. Conclusions

In summary, the findings of the current study supported the results of other similar studies involving adults in which psychosocial intervention, in particular ICBT, were shown to be effective in the treatment of depressive symptoms (; DeRubeis and Crits Christoph, 1998; Elkin et al., 1989; Warman et al., 2005). This study also supports the results of Rudd et al., (1996), whereby ICBT were shown to be effective in treatment of depressive symptoms with suicidal ideation. Since this clinical trial was done among three major ethnic groups in Malaysia, it has additional contribution to the growing literature examining the treatment of depression and also suicidal behavior on Eastern ethnic and cultural groups since group cognitive behavior therapy was reported to be effective in the treatment of depression among Malay patients in Malaysia (Mukhtar et al., 2011). In a nutshell, this study provided results supporting the application of ICBT for the treatment of major depressive disorders or dysthymia with suicidal ideation in Malaysia.

Declaration of Interest

None.

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Figure 1. Consort flowchart of ICBT study

| Enrolment | Assessed for eligibility n=203 | Excluded n=134 Did not meet inclusion criteria n=120 Declined d to participate n=14 |

Randomized n=69

Allocation

Allocated to TAU + ICBT n=33
Received intervention n=33
Did not receive intervention n=0

Allocated to TAU group n=36
Received treatment as usual n=36

Follow-up 1

Lost to follow-up n=0
Discontinued intervention n=0

Lost to follow-up n=0
Discontinued intervention n=0

Follow-up 2

Lost to follow-up n=0
Discontinued intervention n=0

Lost to follow-up n=0
Discontinued intervention n=0

Follow-up 3

Lost to follow-up n=5
Discontinued intervention n=0

Lost to follow-up n=22
Discontinued intervention n=0

Analysis

Analysed n=28
Excluded from analysis=0

Analysed n=14
Excluded from analysis=0

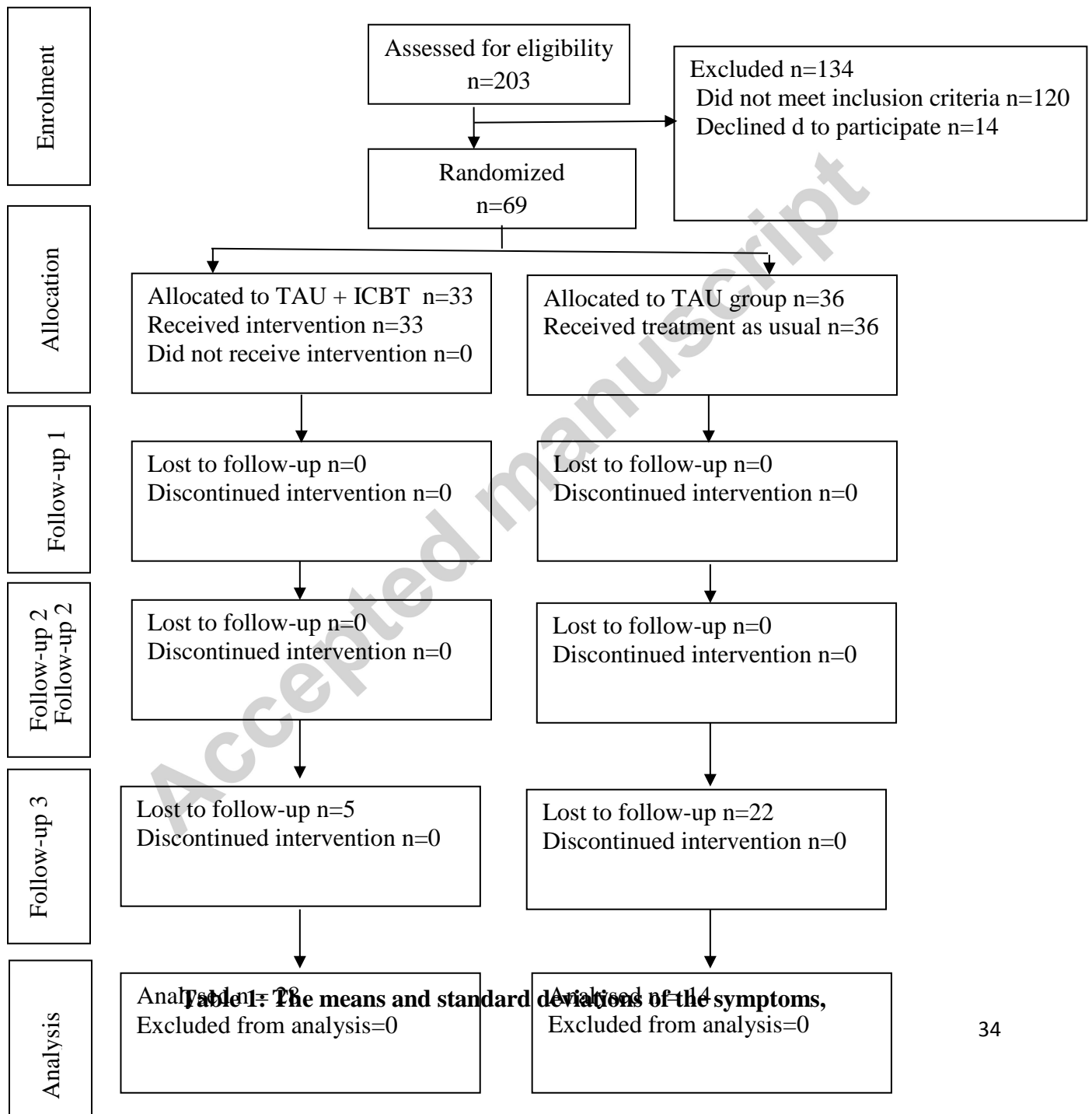**Table 1. The means and standard deviations of the symptoms,**

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Table 1: The means and standard deviations of the symptoms, risk and protective variables for the TAU+ICBT and TAU groups in the ICBT treatment of mood disorders with suicide ideation overtime.

Treatment	N	Pre treatment		Mid treatment (week 4)		Post treatment (week 8)		Follow-up (week 20 / 3 months)		Follow-up (week 32 / 6 months)	
Measures of depressive symptoms											
BDI-T											
TAU+ICBT	33	41.39	(4.69)	37.30	(5.12)	34.48	(4.03)	34.33	(4.09)	34.30	(4.13)
TAU	36	39.55	(3.93)	39.05	(4.24	39.47	(4.06)	39.30	(4.27)	39.36	(4.36)
DASS - D											
TAU+ICBT	33	10.12	(3.14)	8.15	(3.02)	7.96	(3.24)	7.90	(3.25)	7.90	(3.26)
TAU	36	8.94	(5.27)	8.00	(5.26)	8.88	(5.46)	8.84	(5.46)	8.86	(5.61)
Measures of suicide ideation symptoms											
BSS-T											
TAU+ICBT	33	28.00	(3.91)	26.06	(3.93)	24.06	(5.01)	23.78	(3.99)	24.06	(3.51)
TAU	36	28.66	(5.06)	28.11	(4.77)	28.42	(5.03)	28.38	(4.56)	26.61	(7.56)
PANSI - T											
TAU+ICBT	33	2.37	(0.64)	1.91	(0.31)	1.72	(0.29)	1.72	(0.29)	1.73	(0.30)
TAU	36	2.38	(0.62)	2.37	(0.62)	2.38	(0.62)	2.38	(0.63)	2.38	(0.65)
Measures of risk factors for suicidal behavior											
DASS - T											
TAU+ICBT	33	18.18	(9.51)	14.42	(8.59)	11.15	(7.81)	11.06	(7.72)	10.96	(7.80)
TAU	36	15.50	(10.68)	15.55	(10.44)	15.64	(10.43)	15.53	(10.65)	15.42	(10.47)
BHS - T											
TAU+ICBT	33	2.52	(2.00)	1.52	(1.48)	0.79	(1.11)	0.82	(1.07)	0.79	(1.05
TAU	36	2.42	(2.07)	2.22	(1.89)	2.33	(1.80)	2.34	(1.65)	2.35	(1.65)
DASS - A											
TAU+ICBT	33	11.21	(1.26)	10.51	(1.22)	10.33	(1.40)	10.27	(1.52)	10.24	(1.56)
TAU	36	11.02	(1.71)	11.02	(1.62)	10.94	(1.65)	11.00	(1.67)	11.00	(1.63)
DASS - S											
TAU+ICBT	33	6.75	(1.90)	5.72	(2.29)	5.39	(2.72)	5.39	(2.72)	5.33	(2.78)
TAU	36	6.02	(2.48)	5.75	(2.28)	5.94	(2.35)	5.83	(2.46)	5.83	(2.46)

Note : Data are presented as M (SD) unless otherwise indicated. N- Number; BDI-T- Beck Depression Inventory Total; BSS-T- Beck Scale For Suicide Ideation Total; DASS-T- Depression Anxiety Stress Scale Total; PANSI-N-T- Positive and Negative Suicide Ideation -Negative Total; BHS-T- Beck Hopelessness Scale Total ; DASS-D-Depression Anxiety Stress Scale-Depression Subscale; DASS-S-Depression Anxiety Stress Scale-Stress Subscale; DASS-A-Depression Anxiety Stress Scale-Anxiety Subscale.

Table 2: Percentage of patients demonstrating clinically significant and reliable change

Table 3 : Effect sizes (Cohen's d) for the TAU and TAU+ICBT groups for each of the dependent variable in pre to post 6 months change

Highlights

- First randomized control trial provides scientific evidence on the effectiveness of Individual Cognitive Behavior Therapy (ICBT) in treating patients with mood disorders with suicidal ideation from psychiatric setting with unique multicultural background.
- The finding shows ICBT is an effective treatment tools when used in addition to the Treatment as usual (TAU) group.
- In addition, 42.4% of the patients in TAU+ICBT group showed reliable and 48.5% showed clinically significant change for depressive symptoms as well as 39.4% reliable and 45.4% clinically significant change in suicidal ideation symptoms.
- The discussion highlights cultural sensitivity and other related issues and the important of incorporating multicultural sensitivity in applying CBT.

Table 2: Percentage of patients demonstrating clinically significant and reliable change

Measures	Non significant change % (n)	Reliable significant change % (*n*)	Clinically significant change % (*n*)
Measures of depressive symptoms			
Beck Depression Inventory-T			
TAU + ICBT	9.0 (3)	42.4 (14)	48.5 (16)
TAU	36 (100%)	Nil	Nil
Depression Anxiety Stress Scale- Depression (DASS-D)			
TAU + ICBT	18.2 (6)	39.4 (13)	42.2 (14)
TAU	69.5 (25)	13.9 (5)	16.7 (6)
Measures of suicide ideation symptoms			
Beck Scale For Suicide Ideation-T			
TAU+ICBT	15.1 (5)	39.4 (13)	45.4 (15)
TAU	91.6 (33)	2.8 (1)	5.5 (2)
Positive and Negative Suicide Ideation Scale-T			
TAU+ICBT	9.0 (3)	45.4 (15)	45.4 (15)
TAU	91.6 (33)	2.8 (1)	5.5 (2)
Measures of risk factors for suicidal behavior			
Depression, Anxiety and Stress Scale-T			

TAU+ICBT	18.1 (6)	36.4 (12)	45.5 (15)
TAU	91.6 (33)	2.8 (1)	5.5 (2)

Beck Hopelessness Scale-T

TAU+ICBT	18.2 (6)	39.4 (13)	42.2 (14)
TAU	63.8 (23)	16.6 (6)	19.4 (7)

Depression, Anxiety and Stress Scale-A

TAU+ICBT	21.2 (7)	36.3 (12)	42.4 (14)
TAU	88.9 (32)	5.5 (2)	5.5 (2)

Depression, Anxiety and Stress Scale-S

TAU+ICBT	18.1 (6)	36.4 (12)	45.5 (15)
TAU	91.6 (33)	2.8 (1)	5.5 (2)

Table 3 : Effect sizes (Cohen's d) for the TAU and TAU+ICBT groups for each of the dependent variable in pre to post 6 months change

Measure	Group	*D*
Measures of depressive symptoms		
Beck Depression Inventory -(BDI-T)	TAU+ICBT	1.47
	TAU	0.02
Depression Anxiety Stress Scale -Depression (DASS-D)	TAU+ICBT	0.69
	TAU	0.01
Measures of suicide ideation symptoms		
Beck Scale for Suicide Ideation -(BSS-T)	TAU+ICBT	1.00
	TAU	0.05
Positive and Negative Suicide Ideation Inventory-(PANSI-T)	TAU+ICBT	1.0
	TAU	Nil
Measures of risk factors for suicidal behaviour		
Depression Anxiety Stress Scale -(DASS-T)	TAU+ICBT	0.74
	TAU	0.11
Beck Hopelessness Scale-(BHS-T)	TAU+ICBT	0.86
	TAU	0.04
Depression Anxiety Stress Scale - Anxiety (DASS -A)	TAU+ICBT	0.70
	TAU	0.05
Depression Anxiety Stress Scale - Stress (DASS -S)	TAU+ICBT	0.72
	TAU	0.03