

## RESEARCH ARTICLE



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# The Effect of Psychoeducation for Depression: A Meta-Analysis 2010-2016

## Abstract

**Background/Objective:** Depression is a global mental health problem. Therefore, mental health professionals need to develop interventions that are evidence-based and cost-effective. One of the psychosocial interventions is psychoeducation. However, a recent Google search on the effect of psychoeducation for depression suggests conflicting results calling for an analysis of studies to establish psychoeducation effectiveness. The goal of the meta-analysis is to examine randomized controlled trials (RCTs) overall effectiveness of psychoeducation for depression.

**Methods:** EBSCOhost, PsychINFO, and Science Direct databases were searched using the keywords 'psychoeducation,' 'group psychoeducation,' 'mental health education,' 'depression,' 'depressive disorder,' and 'dysthymia' with year restriction of 2010-2016. In this meta-analysis, the effect size (using Hedges'  $g$  value),  $Q$  statistics, and  $I^2$  were calculated under the random effects model aided by CMA v.3. To test for publication bias, trim-and-fill analysis, and fail-safe  $N$  were computed too.

**Results:** A total of 1,560 patients from 11 studies were included in this analysis. Post-intervention results had Hedges'  $g$ -value of -0.293 (95% CI= -0.552—0.035) of psychoeducation for depression meaning low effect. Although notably, the overall effect size leans towards psychoeducation. The  $p$ -value is significant at .05 level, favoring psychoeducation ( $p=0.026$ ). The studies were also found to be highly heterogeneous ( $Q_{(10)} = 55.467, p<.05, I^2 = 81.971$ ) under the random effects model, suggesting high inconsistency on the studies included in this meta-analysis. In testing for publication bias, the imputed effect size using trim-and-fill approach was -0.38558 (95% CI= -0.64926- -0.12189) while the result of fail-safe  $N$  suggested that 48 nil or null results would be needed to increase the  $p$ -value associated with the average effect above an alpha level of 0.05.

**Conclusions:** This meta-analysis may suggest that psychoeducation has low effect on depression. Longer and more interactive approach can be done to ensure its long-term and maximal effectiveness. Publication bias is unlikely in this meta-

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analysis. The findings provide valuable information for future psychoeducation to improve content, design, quality, and process that will benefit patients with depression.

**Keywords:** *Psychoeducation, Mental Health Promotion, Depression, Depressive disorders*

## Introduction

**D**epression is a global health problem. In the Philippines, depression continues to be a common mental disorder. Global school-based health survey among Filipino adolescents found out that 42% felt sadness and hopelessness in two weeks or more in 2003, 17.1% of these teenagers have suicidal ideation, and 16.7% had concrete plans for taking one's own life (Miguel-Baquilod, 2004). Tellingly, Perlas, Briones-Querijero, Abcede, Buot, Elma-Chua *et al.* (2004) documented that of 774 patients screened in selected tertiary hospitals in the Philippines, 32% suffers from depression. Regardless of age and health conditions, similar situation can be found in the following selected countries: 7.2 % in the United States (Pratt & Brody, 2014), 23.9% in China (Wang, Feng, Yang, Yang, Wang *et al.*, 2016), 23.5% in Thailand (Wongpakaran & Wongpakaran, 2012), and in Malaysia ranges from 3.9-46% (Mukhtar & PS Oei, 2011). WHO (2017a) revealed that 300 million people suffer from depression worldwide, averaging to approximately 18% between 2005-2015 (WHO, 2017b).

The above staggering statistics have much more problem to it, that is, less than 10% receives effective and evidence-based interventions (WHO, 2017a). Arguably, one of the cost-effective, evidence-based, integrative, preventive, and collaborative nursing interventions that can be done is psychoeducation (van Zoonen, Bundrock, Ebert, Smit, Reynolds *et al.*, 2014; Lukens & McFarlane, 2006). For this reason, nurses need to design and implement interventions that are proven to be promising and cost-effective. The contention of this meta-analysis is the effect of psychoeducation for depression. The rationales for this meta-analysis are: (1) a recent Google search done on meta-analysis of psychoeducation for depression was done six years ago (Donker, Griffiths, Cuijpers, and Christensen, 2009) and 18 years ago (Cuijpers, 1998), which might need an update. In their meta-analysis, both of these studies did not zero-in to randomized controlled trials which could produce more credible research findings. (2) At the same time, after the publication of those meta-analysis mentioned, there has been surge of studies examining the effectiveness of psychoeducation for depression. (3) Since the advent and increasing acceptance of psychoeducation for depression, the results were not consistent in all studies. (4) Few studies have investigated the effect of psychoeducation on other

types of depression like postnatally or comorbid chronic health conditions. Therefore, the purpose of this study was to perform a meta-analysis on reliable and valid randomized controlled trials conducted between 2010-2016 on the topic of psychoeducation for depression. It was hoped that using a more scientific and precise method; this study could provide greater insight into the effect of psychoeducation for depression.

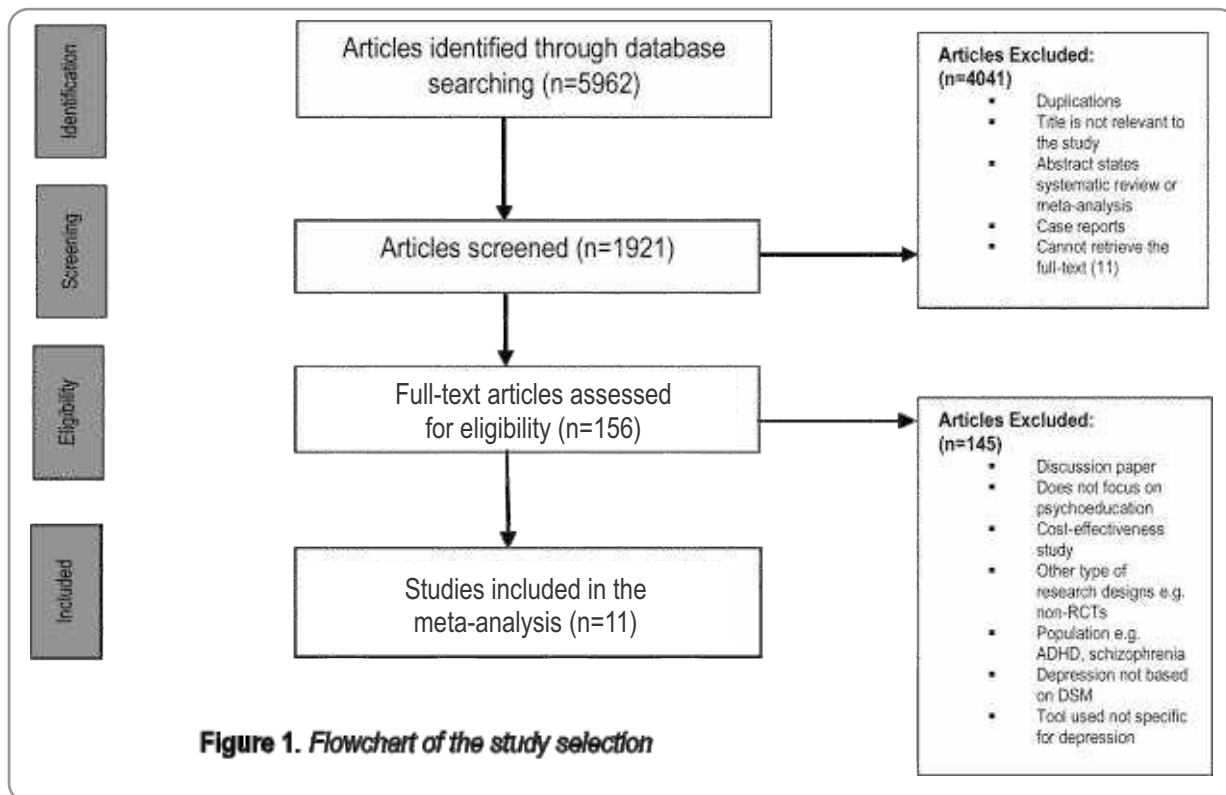
## Methodology and Methods

### Search

The study employed meta-analysis which is the quantitative method of examining and combining the results of multiple studies (Borenstein, Hedges, Higgins, & Rothstein, 2011). Searching and study selection process is patterned after van Zoonen *et al.* (2014) which are: identification, screening, eligibility, and inclusion. The studies collected were published from 2010-2016 on the topic of psychoeducation for depression. The databases search are EBSCOhost, PsychINFO, and Science Direct. In the EBSCOhost, Cochrane central register of controlled trials, Database of Abstracts of Review of Effects (DARE), CINAHL, and MEDLINE databases was housed. The studies were searched using the following search terms: psychoeducation, group psychoeducation, mental health education, depression, dysthymia, and depressive disorders. As shown in Figure 1, a total of 5,962 studies were initially identified. Notably, during screening, help from the authors' university librarian was sought to retrieve eleven full-text articles to no avail (see Figure 1). The process of searching and study selection was reviewed by two independent reviewers who suggested studies that have been overlooked but can be substantially included in this meta-analysis.

### Study Selection

The study derived its criteria for inclusion by consulting with other meta-analysis (Donker *et al.*, 2009; Feng, Chu, Chen, Chang, Chou *et al.*, 2012) plus this papers objective. The criteria for inclusion are: (1) Subjects were diagnosed with depression using the criteria set forth by the Diagnostic and Statistical Manual of Mental Disorders IV, IV-TR, or V; (2) The study is a randomized controlled trial; (3) The experiment includes two group: one is experimental, and the other is the control, of which the intervention includes psychoeducation or mental health promotion; (4) The study was written in English; (5) Interventions delivered via the internet, phone, or face-to-face; and (6) The study has sufficient data to warrant meta-analysis (e.g., sample size, percentage, t-test, p-value, and standard deviation). Studies whose outcome measurement that does not pertain to alleviating depression were excluded.



### Validity Assessment

The quality of the studies was evaluated using Cochrane Collaboration Guidelines, similar to those of Brodaty, Green, and Koschera (2003). The highest possible score is 11 with the following criteria: design, subjects, outcomes, statistics, results, and the quality as shown in Table 1. Only studies that score 7 and above are included in this meta-analysis. During analysis, the author looked to find the data that pertains to decreasing depression using psychoeducation. Leading to the deletion of certain items, outcomes, or characteristics variables if they did not appear to most of the articles. Studies were appraised by other two masters-prepared nurses (see acknowledgments) of which the Kappa value was used. Polit and Beck (2008 p. 756) defined Kappa as an “index to measure interrater agreement” of which the number of agreement is divided by number of an agreement plus disagreements. The Kappa value is 0.72 which means good reliability. After this, studies were plotted on Table 2 which has six columns: study, instrument, outcome measure, the number of subjects randomized, intervention type, and quality.

**Table 1. Criteria for Rating Quality of Studies**

| CRITERION   | SCORE |
|---|-------|
| <b>Design</b>                                       |       |
| Randomized  | 1     |
| Controlled (or comparison group used)               | 1     |
| <b>Subjects</b>                                     |       |
| Use of standardized diagnostic criteria             | 1     |
| All subjects accounted for/ withdrawals noted       | 1     |
| <b>Outcomes</b>                                     |       |
| Well-validated, reliable measures (patient)         | 1     |
| Objective outcome (decrease of depression symptoms) | 1     |
| Questionable/ unreliable outcome measures           | 0     |
| <b>Statistics</b>                                   |       |
| Statistical significance considered                 | 1     |
| Adjustment for multiple comparisons                 | 1     |
| Evidence of sufficient power                        | 1     |
| <b>Results</b>                                      |       |
| Blind ratings                                       | 1     |
| Follow-up assessment 6 months or beyond             | 1     |
| <b>Good quality</b>                                 | >7    |
| <b>Poor quality</b>                                 | <5    |

Note: The guidelines were based on the Cochrane Collaboration Guidelines in the study of Brodaty et al. (2003)

## Statistical Analysis

The Comprehensive Meta-Analysis software version 3 (Biostat, Englewood, NJ) was used to conduct the meta-analysis. Specifically, the software aids to calculate the overall effect size of psychoeducation for depression. Borenstein *et al.* (2011 p. 17) defined effect size as the “standardized mean difference.” To determine the effect of psychoeducation to depression in both the experimental and control group, the author adopted the Hedges'  $g$  value (i.e., the difference of averages divided by pooled standard deviation) by Hedges and Olkin (1985). In the same manner both homogeneity (through  $Q$  statistics) and heterogeneity (through  $I^2$ ) scores were computed. Borenstein *et al.* (2011 p. 105) expound that  $Q$  statistics is the “measure of weighted squared deviations” while  $I^2$  “measures the degree of inconsistency across studies in a meta-analysis” (Higgins, Thompson, Deeks, & Altman, 2003 p. 560). To address the issue of statistical heterogeneity raised by Higgins, Thompson, Deeks, and Altman (2002), the author used the following parameters: 0% as not heterogeneous, 25% as low, 50% moderate, and 75% as high (Higgins *et al.*, 2003). Because it is assumed that study effect size is assumed to vary from one to another, the author used random-effects model where the “summary effect is [the] estimate of the mean of the distribution of the effect sizes (Borenstein *et al.*, 2011). Duval and Tweedie's (2000) trim-and-fill analysis and Rosenthal's (1979) fail-safe  $N$  were used, computing the effect of publication bias. Trim-and-fill analysis involves removing small, extreme studies from the favorable to intervention part of the funnel plot and recomputing the effect size so as to appear symmetrical (Duval and Tweedie, 2000). The removal is the “trim” while the recomputation is the “fill” resulting to the new effect size. Lastly, Fail-safe  $N$  allows computing how many more studies are needed to be included in the meta-analysis before the  $p$ -value will become not significant (Rosenthal, 1979).

## Results

### Study Characteristics

The 11 randomized controlled trials involved 1,560 patients suffering from depression. Most studies are conducted in Europe: three in Netherlands, two in Germany, one in UK and Sweden. Also, USA, Australia, India, and Singapore had one study each included in this meta-analysis. As can be gleaned in Table 2, three studies used Beck Depression Inventory-II (BDI-II) to measure depression and two utilized Centre for Epidemiological Studies Depression Scale (CES-D). The quality of the studies was relatively high. Three studies met five Cochrane Collaboration Guidelines criteria, three met the four criteria, and three met the three criteria (see Table 2).

The collective name for the interventions done is called psychoeducation, although there are notable variations. There are studies that used the combination of cognitive behavioural therapy i.e., correcting distorted belief about the situation, self, or the world including positive (adding something good) or negative (taking away something aversive) reinforcement, and psychoeducation which includes treatment seeking, counselling, and/or mental health education (Barnhofer, Crane, Brennan, Duggan, Crane *et al.*, 2015; Kumar & Gupta, 2015; Nordmo, Sinding, Carlbring, Andersson, Havik, & Nordgreen, 2015; Stangier, Hilling, Heindenreich, Risch, Barocka, Schlosser *et al.*, 2013; Seekles, van Stratem, Beekman, van Marwijk, & Cuijpers, 2011). Ekkers, Korrelboom, Huijbrecchts, Smits, Cuijpers, and van der Gaag (2011) packaged all of these cognitive-behavioral constructs which they called Competitive Memory Training or COMET. A corollary to this, Newby, Lang, Seidler, Holmes, and Moulds (2014) developed a diary-based psychoeducation for seven days, and processing was done on the ninth-day. Different to that, Feinberg, Jones, Rotegger, Hostetler, Sakuma *et al.* (2016) instituted a partner-based psychoeducation that addresses emotional regulation, problem-solving therapy, development of constructive coping skills and determining social support system. This type of partner-based psychoeducation is substantiated by Shorey, Chan, Chong, and He (2014) adding family dynamics topics and self-efficacy. Uniquely, psychoeducation now can also be delivered through a combination of face-to-face and web-based self-help intervention, which is a multimedia, an interactive online intervention that discusses behavior and problem-solving therapy (Bundrock, Ebert, Lehr, Smit, Riper *et al.*, 2016). Finally, Meyer, Bierbrodt, Schroder, Berger, Beevers *et al.* (2015) developed an Internet-based psychoeducation for depression called 'Deprexis.'

### Synthesis of the Results

Eleven post-intervention results were included in the analysis, and it was found that psychoeducation for depression had Hedges'  $g$ -value of -0.293 (95% CI= -0.552—0.035), which has a low effect (see Figure 2). Although notably, the overall effect size leans towards favoring psychoeducation. The studies were also found to be highly heterogeneous ( $Q_{(10)} = 55.467$ ,  $p=.05$ ,  $I^2 = 81.971$ ; see Table 3) under the random effects model, suggesting high inconsistency. The author opted the random effects model because of the high heterogeneous results, even though under fixed effects model the significance level is  $p<0.01$ , this seems inappropriate to be used in the analysis. As Borenstein *et al.*, (2011 p. 6) reasoned, fixed effects model “assume that all studies in the analysis share the same true effect size, and the summary effects [is] are our estimate of this common effect size.” To highlight, the  $p$ -value is significant at .05 level (using random effects model), favoring the psychoeducation ( $p=0.026$ ); see Table 3.

Table 2. Characteristics of Included Studies

| Study                        | Instrument*    | Outcomes Measure                          | Number of Subjects Randomized† | Intervention type <sup>‡</sup>                            | Quality |
|------------------------------|----------------|---|--------------------------------|---|---------|
| Barnhofer <i>et al.</i> 2015 | BDI-II<br>SCS  | Depression<br>Suicide risk                | 80 (tmt=54, ctrl=26)           | I, T, eighth-2hour weekly                                 | 8       |
| Buntrock <i>et al.</i> 2016  | CES-D          | Depression (primary)                      | 406 (tmt=202, ctrl=204)        | I, W, six-30 minute sessions                              | 10      |
| Ekkers <i>et al.</i> 2011    | QIDS-SR<br>RRS | Depression<br>Rumination                  | 91 (tmt= 53, ctrl= 38)         | M, G, seven-90 minute sessions                            | 9       |
| Feinberg <i>et al.</i> 2016  | CES-D          | Depression<br>Maternal/ neonatal outcomes | 259 (tmt= 124, ctrl= 135)      | P, T, nine sessions weekly                                | 9       |
| Kumar & Gupta 2015           | HDRS<br>PGWBI  | Depression<br>Psychological well-being    | 80 (tmt=40, ctrl= 40)          | L, T, C, four module-based sessions                       | 7       |
| Meyer <i>et al.</i> 2015     | PHQ-9<br>SF-12 | Depression<br>Life satisfaction           | 118 (tmt= 57, ctrl= 61)        | C, W, SMS daily for 3 months                              | 10      |
| Newby <i>et al.</i> 2014     | BDI-II         | Depression                                | 40 (tmt= 20, ctrl= 20)         | C, CB, D, one-week follow-up                              | 8       |
| Nordmo <i>et al.</i> 2015    | BDI-II         | Depression (secondary)                    | 21 (tmt= 10, ctrl= 11)         | C, CB, T, 90 minutes session                              | 7       |
| Seekles <i>et al.</i> 2011   | IDS<br>SF-20   | Depression<br>Quality of Life             | 107 (tmt= 54, ctrl= 53)        | SH, T, 30 minutes for 4 weeks                             | 8       |
| Shorey <i>et al.</i> 2014    | EPDS           | Depression (secondary)                    | 112 (tmt= 61, ctrl= 61)        | I, P, T, , 90 minutes session weekly for 6 weeks          | 9       |
| Stangier <i>et al.</i> 2013  | HDRS           | Depression                                | 180 (tmt= 90, ctrl= 90)        | C, CB, T, 16- 20 minutes individual sessions for 8 months | 10      |

\* BDI-II= Beck Depression Inventory-II; CES-D= Centre for Epidemiological Studies Depression Scale; EPDS= Edinburgh Postnatal depression; HDRS= Hamilton Depression Rating Scale; IDS= Inventory of Depressive Symptomatology; PHQ-9= Patient Health Questionnaire- 9; PGWBI= Psychological General Well-Being Index; QIDS-SR= Quick Inventory of Depressive Symptomatology- Self-Report; RRS= Ruminative Response Scale; SCS= Suicide Cognitions Scale; SF- Short-form general health survey versions 12 & 20; SH= Self-help.

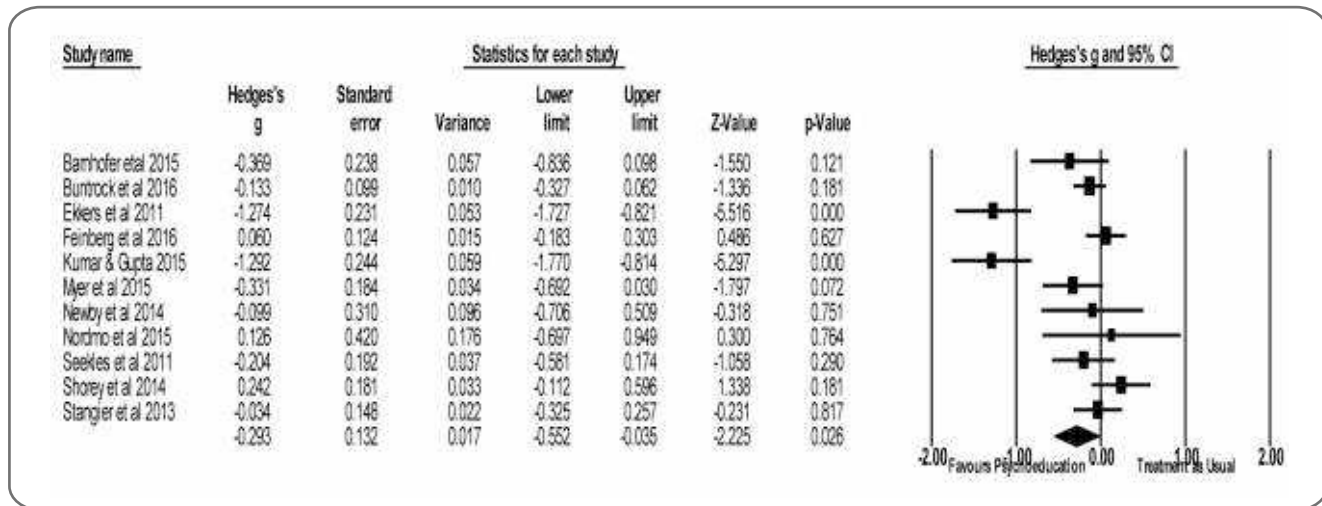
†tmt=treatment; ctrl= control

‡ C= counselling-based, CB= cognitive-behavioral psychoeducation, D- diary + processing; G= group (6-8 patients); I= interview; L= lecture-based; P- Partner-based; T= treatment seeking focus, cognitive change, & problem-solving therapy; W= Web-based guided; M= Memory competitive training.

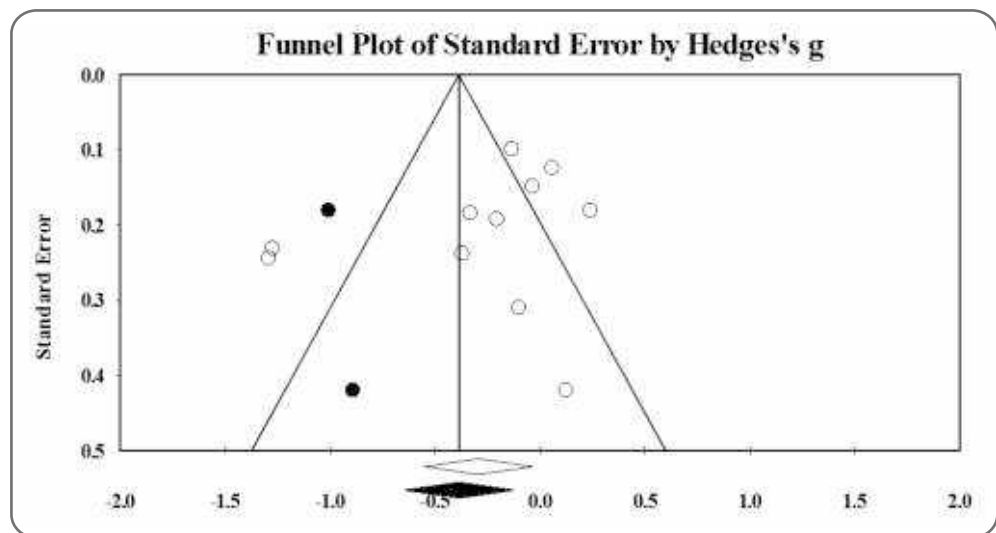
Table 3. Overall effect size of psychoeducation for depression

| Effect Size         | 95% CI         |              | Null Hypothesis |       | Homogeneity (two-tailed test) |       |        |       |                |                  |
|---------------------|----------------|--------------|-----------------|-------|-------------------------------|-------|--------|-------|----------------|------------------|
|                     | No. of Studies | Hedges' G/RD | Upper           | Lower | Z                             | P     | Q      | P     | I <sup>2</sup> | TAU <sup>2</sup> |
| Level of Depression | 11             | -0.293       | -0.552          | -0.35 | -.225                         | 0.026 | 55.467 | <0.05 | 81.971         | 0.381            |

**Figure 2.** Forest plot of overall effect size of psychoeducation for depression



**Figure 3.** Trim and Fill method using random effects model



To address possible publication bias suggesting that small studies with negative results might not have been published. Duval and Tweedie's (2000) trim-and-fill analysis shows a symmetrical effect. At first, the author expected that studies would be more towards the left suggesting more positive findings (favoring psychoeducation) were included in the analysis, rather it weighs more heavily on the right suggesting many published studies weighs against the effectiveness of psychoeducation for depression (refer to Figure 3). The imputed effect size using trim-and-fill approach was  $-0.38558$  (95% CI=  $-0.64926$ -  $-0.12189$ ), more so the two studies with filled circles in Figure 3 suggests needs for further studies favoring those of psychoeducation. The result of fail-safe N indicated that 48 nil or null results would be required to increase the p-value associated with the average effect above an alpha level of 0.05. The results of these two tests suggest less influence of publication bias.

**Discussion**

The studies included in this meta-analysis showed a low difference in the post-intervention depression scores of the control group and the experimental group. The finding suggests that psychoeducation can be used and is proved to decrease depression but to a little effect. Studies that have longer psychoeducation (Ekkers *et al.*, 2011; Kumar & Gupta, 2015) are

found to be more effective than studies that have shorter intervention span (Newby *et al.*, 2014). Implying that longer psychoeducation could leave a more permanent imprint and impact to the patient, in other words the longer and intensive psychoeducation implemented by mental health professionals to patients with depression can produce better positive outcomes. Development of constructive coping skills and awareness of social support might take time to be realized. Abrupt disconnection might be futile and could easily lead to retract to former maladaptive coping skills thus resulting in depression.

Despite its low effects findings, this meta-analysis proves that depression can be prevented, as van Zoonen *et al.* (2014) claims. Maybe not curing but more of alleviating the symptoms that beleaguer people with depression. Fortifying their coping skills,

ensuring availability of the support system, and correcting their cognitive distortions are major features of psychoeducation. This way the recurrence or relapse of depression could somehow be prevented. Corroborating the meta-analysis by Donker *et al.* (2009) saying that psychoeducation has low effect on depression further attributing their result to the type of delivery, teaching modalities, a small number of studies, and larger between-group effect sizes. More so, Tursi, Baes, Camacho, Tofoli, and Juruena (2013) in their systematic review suggests highly heterogeneous application of psychoeducation ranging from individual to group or short to long distance sessions. However, the meta-analysis by Cuijpers (1998) suggests different findings. That is, psychoeducation is effective as a therapy for depression. These studies imply that the method of delivery, quality, duration, and some patients may be important as to the effect of psychoeducation for depression.

The small number of studies may have contributed to the high heterogeneity of the findings. One plausible explanation for this heterogeneous result is the lack of consensus among mental health professionals as to the content, delivery methods, strategies, and direction of psychoeducation. The studies reviewed found out that some mental health professional uses face-to-face, others web-based, while some are self-help format which could call for a clearer demarcation of psychoeducation. For example, Luken and McFarlane (2006) acknowledges the seemingly broad applications and context-dependent properties of psychoeducation. This reasoning could open multiple doors as to the fractured delivery, faulty implementation, mismatch evaluation, and miscommunication of psychoeducation to patients with depression. Simple questions like, when are we going to relay message regarding good coping skills? How do we deliver that they have people to talk with? What are the connections between the cognitive distortions and the symptoms of depression? These questions might not be effective to patients at the apogee of their depression since they lack the cognitive devices to process them nor energy to put psychoeducation in action (Videbeck, 2014). Which is to say that proper timing, impeccable assessment, and responsive interventions might be put on the table for discussion first.

There are some limitations in this study. First, there is a high heterogeneity of the studies included. Some of these variations are the duration of the treatment, whether the patient is taking antidepressant medication or otherwise, or the cultural differences affecting the view of depression as an illness. Second, the variety of tools used to measure depression makes it prone to measurement error. Third, it is not well established in the studies included whether the patient with depression is on recovery, remission, or at episode. The stage of depression is important

because a more aggressive treatment could be needed during the depressive episode while a more logical can be more relevant during the recovery phase. Finally, the limited literature search to three major databases might have resulted to the high heterogeneity and low effect size.

## Conclusions

This meta-analysis may suggest that psychoeducation has low effect on depression. Longer and more interactive approach can be taken to ensure its effectiveness. Varied content (aside from face-to-face, counselling-based) and use of innovative approaches such as web-based or self-help psychoeducation is now gaining momentum as a diversification of mental health promotion. The author suggests incorporation of additional variables (such as exclusive web-based meta-analysis, stage or type of depression, with or without adjunct antidepressants, and other associated symptoms including suicide or rumination). The findings provide important information for future psychoeducation to improve content, design, quality, and process that will benefit patients with depression.

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