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The effectiveness of group-based behavioral activation in the treatment of depression: An updated meta-analysis of randomized controlled trial

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ABSTRACT

Background: Depression is a common mental health problem associated with significant morbidity and mortality. Amongst various psychological treatments for depression, individual behavioral activation (BA) has been shown to be effective and relatively simple in its delivery by health care providers although its effectiveness as a group based intervention requires further evidence. The objective of this study is to evaluate and update on the effectiveness of group-based BA to relieve symptoms of depression.

Methods: A meta-analysis was performed and prospective randomized trials were systematically searched from the OVID databases. The trials comparing group-based BA intervention versus usual care or waitlist controls were included. Depressive symptom measured by various validated scales was the primary outcome. As the interventions can be heterogeneous across the included studies, all analyses were performed by random-effects model.

Results: Seven randomized control trials were identified from the United States, United Kingdom, Sweden and Iran from 2003 to 2013. A total of 240 subjects were randomly assigned to group-based BA, and all participants included met the criteria for moderate to severe depression at baseline with the majority of participants being females. Participants who joined the group-based BA showed lower depressive symptoms (MD of BDI-II: −6.06 (95% CI: −8.28 to −3.85 and MD of HRSD: −2.82 (95% CI: −4.62 to −1.02)) than participants randomized to the control group with usual treatment. The group-based BA also showed significant reduction in anxiety level (MD of BAI: −3.66 (95% CI: −6.11 to −1.22)) but not quality of life according to two studies. Risk of bias was evident amongst the studies as blinding of health providers and patients were not feasible in psychological studies.

Conclusions: Group-based behavioral activation remains promising in relieving depressive symptoms for people with moderate to severe depression from this meta-analysis. Future studies should be higher quality research with larger sample size, longer follow-up periods, and synchronized clinical outcome measures. Patient feedback for group-based behavioral activation can also be further evaluated in order to ensure long term satisfaction and usage in health services.

1. Introduction

Depression is a common condition in the community and it is postulated to be the leading cause of disability by 2030 (World Health Organization, 2012). Available evidence based treatments for depression includes psychological therapy such as cognitive behavioral therapy and pharmacotherapy.

Behavioral activation (BA) is a psychological treatment shown to have similar efficacy as that of cognitive-based therapy (CBT) in treating depression (Mazzucchelli et al., 2009a; Carlbring et al., 2013; Dimidjian et al., 2006; Ekers et al., 2011a, 2011b; Gawrysiak et al., 2009; Hopko et al., 2003, 2011; Kanter et al., 2010; Moore et al., 2013; Moradveisi et al., 2013; O'Mahen et al., 2013; O'Mahen et al., 2013; Pagoto et al., 2013; Papa et al., 2013; Reynolds et al., 2011; Snarski et al., 2011; Turner and Jakupcak, 2010). The general purpose of BA therapy is to allow patients with depressive symptoms to learn to cope with their negativity (Lewinsohn, 1974), and increase positive awareness through the re-development of personal goals in the form of short, medium and long term life goals (Ferster, 1973). To discourage procrastination, patients have to learn methods to find happiness from their personal, interpersonal, and cultural environments. BA therapies are available in various forms of intervention ranging from one to

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twenty six sessions on a daily to weekly basis (Appendix A) (Mazzucchelli et al., 2009b). The length and duration of these BA therapies are based on the level of severity, complexity of patient health status, clinical instructor's availability, and daily life scheduling, which are screened with validated screening tools prior to intervention. Many clinical studies have reviewed and compared the positive effects of BA intervention and demonstrated the comparative effect with other psychotherapies, medications or even combinational therapies (Carlbring et al., 2013; Dimidjian et al., 2006; Ekers et al., 2011a, 2011b; Gawrysiak et al., 2009; Hopko et al., 2003, 2011; Kanter et al., 2010; Moore et al., 2013; Moradveisi et al., 2013; O'Mahen et al., 2013; O'Mahen et al., 2013; Pagoto et al., 2013; Papa et al., 2013; Reynolds et al., 2011; Snarski et al., 2011; Turner and Jakupcak, 2010). Although there is a BA meta-analysis by Ekers et al. Ekers et al., (2014), the article's main focus is on individual-based BA therapies while the group-based articles are rather outdated and not in-depth. Of the eight group-based articles available from the study, seven studies were ranged from 1977 to 2000, while only one recent article was from 2012, which used placebo medicine as intervention; thus creating the concern for placebo effect. Moreover, there are currently no reviews specifically on group-based BA treatment, as well as economic analyses on whether this group treatment is feasible in community health, cost-effective, and can enhance the quality of life of patients.

As a result, this systematic review and meta-analysis focusing on group-based BA has been conducted as an evaluation for all available literatures to determine whether the benefits of different BA therapies are comparable amongst one another. Hence, the purposes for this systematic review are to: (1) examine the effectiveness of group BA interventions that have been used as a treatment for depression; (2) assess any effects or outcome changes such as symptom control, quality of life (QOL) from post-interventions; (3) find out whether any economic analyses studies such as QALY (quality life adjusted years), cost-effectiveness analysis or cost-utility analysis have been conducted. This review will also provide an update from the existing evidences by focusing on whether it is practical and feasible using group-based BA in large community based health services where proper health promotion, prevention, and early intervention at the primary care level can be implemented.

2. Methods

2.1. Search strategy

The following databases were used for the literature search until May 2016: Medline (Ovid); Embase; and PsycINFO. Relevant synonyms were first searched using the thesaurus and consulting keywords in research studies. Then, MeSH terms included in the search (identified using the U.S. National Library of Medicine), were screened again as confirmation for database consistency. In addition, other published and unpublished researches were browsed through the citations of the eligible papers. The search strategy consisted of using the keywords, including behavioral activation, depression, and randomized control trials (Appendix B).

2.2. Inclusion criteria

All the randomized control trials included met the following criteria: (i) all studies involved the recruitment of adult subjects (aged ≥18 years); (ii) BA interventions from these studies must focus on teaching the behavioral models on depression in a group-based learning environment; (iii) the control groups of these studies should only be in the form of Care as Usual (CAU), Treatment as Usual (TAU), or Waitlist; (iv) examine at least one of the required outcome measures such as: Beck Depression Inventory (BDI-II) (Beck and Steer, 1996); Hamilton Rating Scale for Depression (HRSD) (Kroenke and Spitzer, 2002); Beck Anxiety Inventory (BAI) (Sheldon and Lyubomirsky, 2006); Quality of Life Inventory (QOLI) (Moher et al., 2009) from baseline to post intervention; and (v) only randomized controlled trials (RCTs) related to group-based BA were included.

Studies excluded were those where RCTs were not used. The main reason for not including lower tier evidence based studies such as simple control trials was that the study's focus is on the implementation of gBA in communities and primary healthcare settings. Hence, the effectiveness was emphasized and used in order to prove that this therapy can be fully utilized in large scale population-based health services. Lower tier studies like efficacy trials, which consisted of non-concurrent interventions and specified settings, were excluded from this study as a result.

2.3. Data extraction and management

Two investigators (ATC, GYS) individually assessed the titles and abstracts of all papers generated from the literature search. The data were then screened, reviewed, and extracted using a standardized Cochrane Collaboration's RCT data extraction form (Appendix C) created for systematic reviews. The data extraction included information on the study involving five key aspects: methods, participants, interventions, outcomes, and results. The data extraction composed of: author names, publishing years, type and number of participants, type of statistical feature and result. For the intervention part, extractions included: type of teaching format, delivery style, length and time spent on the course, type of instructor as well as integrity indicators or fidelity checks. These extractions on the program changes were further proven and clarified with the use of Risk of Bias tool and mutual agreement of outcomes from the investigators. Articles with mutual acceptance or rejection were processed while ones with different decisions were agreed upon with the advice of another co-investigator (WST) of this study. All the stages were written on a PRISMA flow diagram (Moher et al., 2009).

2.4. Study outcomes

The primary outcomes of this study were to assess for depressive symptom change after intervention. Beck Depression Inventory (BDI-II) (Beck and Steer, 1996), is a self-reported instrument to detect 21 depressive symptoms. It is regarded as the best tool for tracking short term changes in depressive symptoms. Hamilton Rating Scale for Depression (HRSD) (Kroenke and Spitzer, 2002), is another questionnaire used to provide an indication of depression, as well as a guide to evaluate depression recovery.

The secondary outcomes were changes in anxiety levels, quality of life standards as well as various economic analyses. The Beck Anxiety Inventory (BAI) (Sheldon and Lyubomirsky, 2006) is a self-reported inventory asking common symptoms of anxiety. The Quality of Life Inventory (QOLI) (Moher et al., 2009) assesses an individual's quality of life through self-reporting questions, revolving on the importance and satisfaction in 16 life domains through personal, interpersonal and social spheres. Questions involve asking micro to macro details relating to standard of living, income, spiritual life, health, to national public systems. For economic analyses, cost utility analysis was used to examine whether relevant articles provided any sort of economic analyses for this intervention.

2.5. Risk of Bias

Risk of bias for all the relevant RCT studies were done by two investigators and evaluated with Cochrane Collaboration's Risk of Bias tool (Higgins et al., 2011). Any differences were clarified and confirmed by a third assessor when possible. The risk of bias criteria evaluated the adequate generation of randomization sequence, allocation concealment, blinding of participants, blinding of assessment, and dealing with missing data. Due to the lack of registered and published research

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