Systematic review on the efficacy of behavioral activation therapy in the management of adult patients with depression

Revisión sistemática sobre la eficacia de la terapia de activación conductual en el manejo de pacientes adultos con depresión

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SUMMARY

Introduction: *This work aimed to assess the approach of behavioral activation for the treatment of adult patients diagnosed with depressive disorder; the importance of this study in the clinical setting is significant since it allowed us to know the viability and acceptability of the treatment. Behavioral activation is the basis of this study.* **Materials and method:** *Systematic review, under the PRISMA methodology, the PICO tool was implemented to formulate the research question.* **Results:** *42 articles were located, of which, upon complete reading, 23 met the inclusion criteria established for the review.* **Analysis and discussion:** *The rationale of the studies found provided significant scientific evidence in favor of behavioral activation for adults diagnosed with depressive disorder.* **Conclusions:** *It was possible to deduce that behavioral activation is a key factor for the minimization of clinically significant symptoms in patients with depressive disorder.*

Keywords: *Behavioral activation, major depression, psychotherapy, psychological therapy.*

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RESUMEN

Introducción: *El presente trabajo se realizó con la finalidad de conocer el abordaje de activación conductual para el tratamiento de pacientes adultos con diagnóstico de trastorno depresivo; la importancia de este estudio en el ámbito clínico es significativo ya que permitió conocer la viabilidad y aceptabilidad del tratamiento. Siendo la activación conductual la base de este estudio.* **Materiales y método:** *Revisión sistemática, bajo la metodología PRISMA, se implementó la herramienta PICO para formulación de la pregunta de investigación.* **Resultados:** *Fueron localizados 42 artículos, de los cuales, al realizar una lectura completa, 23 cumplieron con los criterios de inclusión establecidos para la revisión.* **Análisis y discusión:** *La fundamentación de los estudios encontrados proporcionó una evidencia científica significativa en pro a la activación conductual para adultos con diagnóstico de trastorno depresivo.* **Conclusiones:** *Se logró deducir que la activación conductual es un factor clave para la minimización de síntomas clínicamente significativos en pacientes con trastorno depresivo.*

Palabras clave: *Activación conductual, depresión mayor, psicoterapia, terapia psicológica.*

INTRODUCTION

In the last decade, the evidence indicate that depression is one of the main clinical, social, and cultural problems of today, this being one of the main causes of the deterioration of mental health. However, scientific evidence shows that depressive symptoms, minor depression, dysthymia, and major depressive disorder are the most prevalent diagnoses, and that, in turn, are associated with major depression with unipolar episodes (1-5).

According to Botto, Acuña, and Jimenez (6) depressive disorder is considered a frequent and recurrent diagnosis in the adult population. In general terms, it can be said that its prevalence ranges between 8 % and 12 % of reported cases and that they are associated with mental health problems. It is because of this, it can be inferred that the presence of these mood alterations can cause a significant clinical deterioration in the areas of functioning, which, in turn, makes it a chronic disease that requires a comprehensive therapeutic approach in the short, medium, and long term.

It is important to note that the spectrum of depression has a broader depth than the nomenclature used today. According to all the characteristics and symptoms that are presented and associated with this type of alteration, it is difficult to differentiate all those similar symptoms, given the variety of these. Due to the above, difficulties and errors in the diagnoses are evident (7).

However, addressing depression is complex because its etiology is multicausal, and is usually related to personality characteristics, habits, behaviors, patterns, and other elements that allow the person to structure their psyche. However, these are not the only factors involved, but also the culture and environment make the subject develop greater or lesser psychological resources to deal with daily demands. However, in many cases, people are unable to develop such psychological resources, which means a mismatch in their functioning. Therefore, they resort to different treatments to be able to generate balance in their lives (1,6).

One of the treatments that are most frequently used for the intervention of these disorders is pharmacological, which presents different mechanisms of action in the patient's body, these mechanisms can be classified into: a) Selective serotonin reuptake inhibitors (SSRIs), b) Serotonin-norepinephrine reuptake inhibitors (SSRIs), c) Atypical antidepressants, and d) Serotonin modulators. The second treatment that has proven to be effective for this type of difficulty is (8) psychotherapy, and it is usually used as an initial treatment for those with mild depression because most medications generate various side effects and when analyzing the risk-benefit ratio the use of them for mild symptoms is not justified (9).

Different psychotherapeutic treatments are evidence for the approach to mood disorders. However, the data report a high efficacy of cognitive-behavioral therapy in the control and reduction of depressive symptomatology in its mild and moderate forms. It should be noted that this form of psychotherapy is based on the relationship between the patient's thoughts and feelings based on their maladaptive behaviors,

to generate significant learning that emits better responses to the context. Finally, in the therapies of the third generation, it is evident that the therapy of behavioral activation (CA) (10,11), has shown high efficacy since it increases the activities of domain and pleasure within the behavioral repertoire of the patient, promoting a positive reinforcement of the same as part of the improvement of their mood (12). Martell et al. (13) in their clinical guide to behavioral activation for depression, define this therapy as a brief and structured treatment whose objective is the activation of clients in specific ways, thus increasing rewarding experiences. As a basis, they understand that symptoms and behaviors that are classified as depression, are triggered due to contextual variables involved in the lives of vulnerable individuals, which reduce their ability to experience positive rewards in their environments.

Therefore, the following problem question arises: Is behavioral activation therapy an effective treatment for the management of adult patients with depression?

MATERIALS AND METHOD

This systematic review was developed under the parameters proposed by the PRISMA methodology. For the realization of the writing, first, the databases were identified, followed by this, the thesauri were defined for the realization of the search, and finally, the search equations were constructed. The articles found were chosen from the delimitation of the inclusion and exclusion criteria, which allowed to filtering of relevant way information according to the evaluation of the quality and reliability of the selected studies (14).

To formulate the research question, the PICO tool was used, and it was defined as follows (15):

Table 1. PICO question.

P	Problem-population.	Adult(s) with a diagnosis of depressive disorder.
I	Intervention.	Behavioral activation.
C	Comparison.	N/A.
Or	Results.	Protocol features.

Eligibility criteria

Within the information eligibility criteria, experimental studies, case controls, case type, evidence-based clinical practice guidelines, systematic reviews, and meta-analytic were excluded.

Sources of information

The information used was obtained from the review of research published in databases such as BVS, DOAJ, ERIC, LATINDEX, PLoS One, PROQUEST, REDALYC, Science Direct, SpringerLink, DIALNET, EBSCO, SCOPUS, Scielo, PubMed.

Search strategies

The search equations were constructed from the selected keywords. The logical operators AND/OR, and symbols such as "" and (), were also applied to the construction of the search equations.

Key terms were selected from Health Sciences Descriptors (DECS) and Medical Subject Headings (MESH) (see Table 2).

After the construction of the equations and the establishment of the inclusion and exclusion criteria, the following databases were located: BVS, DOAJ, ERIC, LATINDEX, PloS One, PROQUEST, REDALYC, Science Direct, SpringerLink, DIALNET, EBSCO, SCOPUS, Scielo, PubMed. To search and select the articles.

Table 2. DECS and MESH descriptors.

Search term	DECS	MESH
Behavioral activation	No terms found	No terms found
Behavioral activation	No items found	No items found
Depression	Depressive symptoms	
	Major depressive disorder	No items found
	Depression	Depression emotional
	Depressions	
	Depressions emotional	
	Depressive symptom	
	Depressive symptoms	
	Emotional depression	
	Emotional depressions	
	Symptom depressive	
	Symptoms depressive	Depressive disorder Depressive disorder major

Source: DECS and MESH.

Table 3. Information search equations.

Spanish	English
("Activación conductual") AND ("Depresión" OR "Síntomas Depresivos" OR "Trastorno Depresivo Mayor")	("Behavioral activation") AND ("Depression" OR "Depression, Emotional" OR "Depressions" OR "Depressions, Emotional" OR "Depressive Symptom" OR "Depressive Symptoms" OR " Emotional Depression" OR "Emotional Depressions" OR "Symptom, Depressive" OR "Symptoms, Depressive" OR "Depressive Disorder" OR "Depressive Disorder, Major")

42 articles were located, of which, when conducting the full reading review, 23 met the following criteria: 1. Contain in its title or keywords any of the review concepts or variables of the study; 2. Studies with behavioral activation intervention in adults with depressive disorder; 3. Clinical trials; 4. Be indexed in the databases in the categories of behavioral action and depression.

Based on the data obtained from the systematic review, the results aim to describe the effects of behavioral activation treatment in depressive patients: A descriptive analysis of the selected articles was carried out, extracting information on the therapeutic processes, duration, and type of sessions, among others.

Initially, 92 034 articles were found, of which in the first filter 86 496 were excluded by type of document, later 92 without access were excluded, consequently 2 195 were excluded by revisions of incomplete and duplicate texts and 3 204 did not meet the variable criteria to finally have a total of 23 selected articles.

The PRISMA flowchart (Figure 1) summarizes the process of selecting the articles for the present research:

RESULTS

The following table consolidates the information on the selection of articles, the theme, and the effects found as a result of the application of the treatments. This information was considered important, to report the findings of the literature regarding the effectiveness of the application of CA in patients diagnosed with depression.

Table 4. Filters applied.

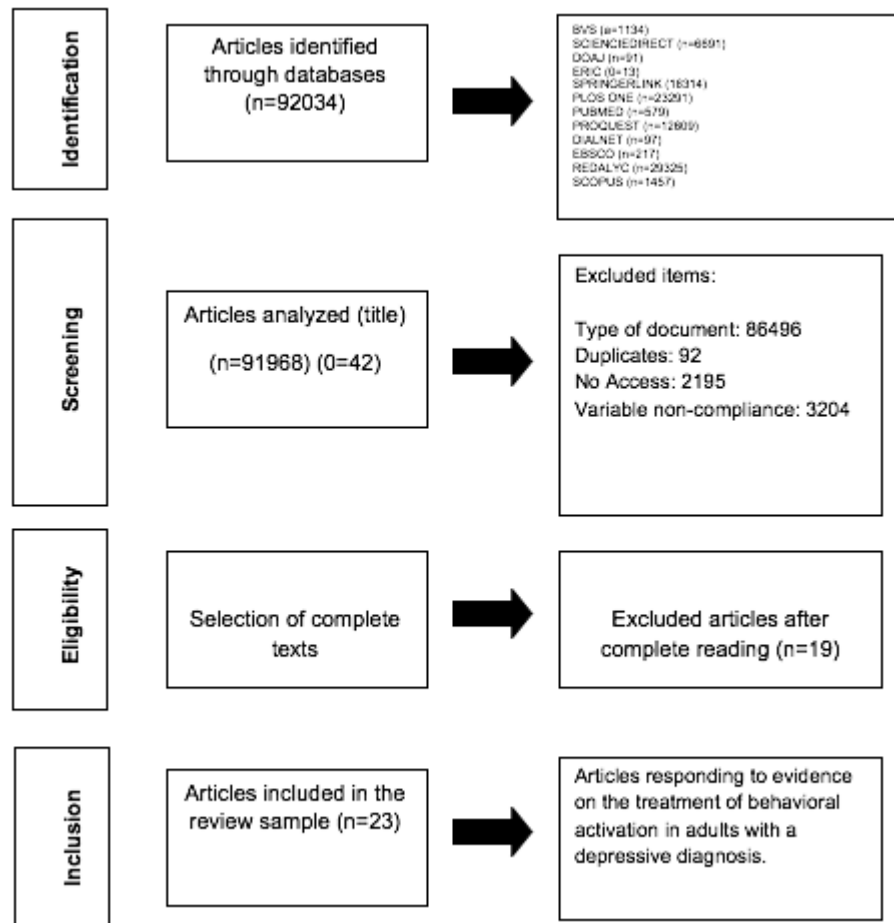| Database	Total found	Document Type	Time period	No access	Revisions/incomplete texts/duplicates with variable	Non-compliance criteria	Total Sample
BVS	1 134	954	0	1	9	164	6
DOAJ	91	82	0	0	0	6	3
ERIC	13	7	0	0	0	6	0
LATINDEX	0	0	0	0	0	0	0
PloS One	23 291	23 289	0	0	0	2	0
PROQUEST	12 609	12 081	0	60	98	367	3
REDALYC	29 325	28 468	0	0	0	857	0
SCIENCEDIRECT	6 691	4 811	0	0	1 713	143	0
SPRINGERLINK	16 314	15 940	0	0	355	19	0
DIALNET	97	10	0	12	4	68	3
EBSCO	217	14	0	2	4	197	0
SCOPUS	1 457	715	0	17	0	725	0
SCIELO	0	0	0	0	0	0	0
PUBMED	795	125	0	0	12	650	8
Total	92 034	86 496	0	92	2 195	3 204	23

Figure 1. PRISMA flowchart of item selection.

Table 5. Selection of studies.

I am a student	Title	Author	Focus	Effect
1	Guided Self-Help Behavioral Activation Intervention for Geriatric Depression: Protocol for Pilot Randomized Controlled Trial.	Wang-Xiaoxia, Zhou-Xiaoyan y Yang-Hui (2020).	Application of CA treatment in geriatric patients diagnosed with major depression (16).	An improvement was observed in the patients who managed to complete the intervention program.
2	Feasibility of behavioral activation group therapy in reducing depressive symptoms and improving quality of life in patients with depression: the BRAVE pilot trial.	D'Elia, Bawor, Dennis, Bhatt, Litke, McCabe, What tam, Garrick, O'Neill, Simons, Chalmers, Key, Gayer, Laplante, Vanstone, Xie, Guyatt, Thabane y Samaan (2020).	Viability of CA in the treatment of depression (17).	Improvements and decreases in depressive symptoms were observed mostly and in less time in the control group. No harm was reported for either group
3	Activation therapy for the treatment of inpatients with depression - protocol for a randomised control trial compared to treatment as usual.	Ian, Averill, Beaglehole, Katie, Douglas, Jordan, Crowe, Maree Inder, Cameron, Lacey, Christopher, Frampton, Christopher, Bowie y Porter (2019).	Acceptability of combining cognitive activation and behavioral activation to create activation therapy (AT) for the treatment of depression (18).	The pilot study showed that patients who received CA improved on depression rating scales and functioning.
4	Immunological effects of behavioral activation with exercise in major depression: an exploratory randomized controlled trial.	Euteneuer, Dannehl, Del Rey, Engler, Schedlowski y Rief (2017).	Behavioral activation with exercise affects inflammatory processes in major depression (19).	It was observed that CA has effects of improvement at the immune level and also at the level of reduction of depressive symptoms.
5	Guided Act and Feel Indonesia (GAF-ID) - Internet-based behavioral activation intervention for depression in Indonesia: study protocol for a randomized controlled trial.	Arjadi, Nauta, Scholte, Hollon, Chowdhary, Suryani y Bockting (2016).	Improvement of CA in depressive patients (20).	Improvement was observed in patients and decreased symptoms after week 10.
6	The efficacy of behavioral activation treatment among depressed Spanish-speaking Latinos.	Collado, Calderón, MacPherson y Lejuez (2016).	Efficacy of CA depressive disorder or major depressive disorder (21).	The rate of adherence to treatment in these patients was positive, therefore the effects caused in patients were positive.

...continuation Table 5. Selection of studies.

I am a student	Title	Author	Focus	Effect
7	Explaining the Efficacy of an Internet-Based Behavioral Activation Intervention for Major Depression: A Mechanistic Study of a Randomized-Controlled Trial.	Zhongfang, Burger, Arjadi, Nauta y Bockting (2021).	Internet-based guided intervention for depression (22).	Our treatment was shown to improve activation levels from Week 4 and reduce depressive symptoms from Week 6, and the activation level acted as a mediator for the change in depressive symptoms.
8	Virtual Reality Behavioral Activation as an Intervention for Major Depressive Disorder: Case Report.	Paul, Bullock y Bailenson (2020).	Efficacy of implementing Behavioral Activation therapy through virtual reality as an intervention for major depressive disorder (23).	The patient stated that the appeal of using virtual reality was the ability to expose himself to new things, which gave him the impetus to engage in novel real-life activities, such as visiting new parks.
9	Components of Behavioral Activation Therapy for Depression Engage Specific Reinforcement Learning Mechanisms in a Pilot Study.	Huys, Russek, Abitante, Kahnt y Gollan (2022).	To examine whether reinforcement learning processes measured through tasks or self-report are related to response to treatment for behavioral activation (24).	Behavioral activation may involve reinforcement learning mechanisms and that response to treatment may be moderated by individual differences in these mechanisms.
10	Conductual en Un paciente con Sintomatología Depresiva Aplicación de la Activación.	Barraca-Mairal (2010).	To observe the efficacy of behavioral activation in a patient with depressive symptoms (25).	Significant improvement was observed in patients who received CA treatment.
11	Behavioral Activation through Virtual Reality for Depression: A Single Case Experimental Design with Multiple Baselines.	Colombo, Suso-Ribera, Ortigosa-Beltrán, Fernández-Álvarez y García-Palacios (2022).	Effectiveness of a brief CA treatment supported by virtual reality (26).	All participants showed moderate to large improvement in at least one of the two behavioral measures.
12	Adapted Behavioural Activation for Bipolar Depression: A Randomised Multiple Baseline Case Series.	Wright, Mostazir, Bailey, Dunn, O'Mahen, Sibsey y Thomas (2022).	Viability of CA from a bipolar depression approach (27).	Positive effects of acceptability in terms of behavioral patterns with minimization of clinically significant symptoms and no exacerbation of symptoms.
13	Terapia de activación conductual para la depresión: aplicación a un paciente con esquizofrenia paranoide.	Romero-Gamero, Poves-Oñate y Vucinovich (2011).	Decreased depressive symptoms (28).	The effects indicate a significant improvement in depressive symptomatology with inference criteria of depressive

...continuation Table 5. Selection of studies.

I am a student	Title	Author	Focus	Effect
				episodes and an increase of positive reinforcement with post-process euthymia status.
14	Activación conductual para el abandono del tabaco en una persona con depresión: un estudio de caso.	Martínez-Vispo, López-Durán y Becoña-Iglesias (2019).	Decreased mood-related cigarette smoking in major depressive episodes (29).	The effect of behavioral activation for the management of depression is useful and suitable and highly significant, generating an impact of deepening at the level of scientific study
15	Terapia de Activación Conductual Breve para la Depresión en mujeres con cáncer de mama.	Becerra-Gálvez, Reynoso-Erazo y Lugo-González (2020).	Mitigation of depressive symptoms (30).	Favorable and noticeable effect in contrast to CA, generating in users a decrease in moderately significant depressive symptoms after treatment.
16	Brief Web-Based Intervention for Depression: Randomized Controlled Trial on Behavioral Activation.	Jelinek, Arlt, Moritz, Schröder, Westermann y Cludius (2020).	Feasibility of internet-based AC treatment for patients with depressive symptoms (31).	Evidence of a striking effect and probably relevant if a module with greater prolongation is intended.
17	Eficacia de la activación conductual en el tratamiento de adultos mayores tailandeses con depresión subumbral que residen en la comunidad.	Ayudhaya, Pityaratstian y Jiamjarasrangsi (2020).	Efficacy of CA in reducing depressive symptoms (32).	A positive effect with significant improvements in the short term with a decrease in relevant symptoms.
18	A pragmatic randomized clinical trial of behavioral activation for depressed pregnant women.	Dimidjian, Goodman, Sherwood, Simon, Ludman, Gallop, Welch, Boggs, Metcalf, Hubley, Powers y Beck (2017).	Effectiveness of CA compared to treatment as usual (33).	The highly positive effect overall of favorable benefits related to the mitigation of depressive symptoms in the follow-up of CA.
19	Evaluación de la eficacia del ejercicio como estrategia de aumento para el tratamiento	Szuhany y Otto (2020).	Effectiveness of CA for reducing depressive symptoms and increasing exercise (34).	The effect of including exercise for the reduction of depressive symptoms is highly positive with evidence of greater and faster mitigation considering that regulation is automated from the response channels

...continuation Table 5. Selection of studies.

I am a student	Title	Author	Focus	Effect
	para la depresión: un ensayo piloto aleatorizado.			(physiological, emotional, and cognitive).
20	A Feasibility Study of Behavioral Activation for Major Depressive Disorder in a Community Mental Health Setting.	Crits-Christoph, Goldstein, King, Jordan, Thompson, Fisher, Beth y Gibbons (2022).	Efficacy of CA as a treatment for major depressive disorder (35).	Evidence of relevant improvement in depressive symptoms however is extended to studies with greater depth to grant a final efficiency.
21	Behavioral Activation Therapy for Subthreshold Depression in Stroke Patients: An Exploratory	Sun, Xu, Zhang, Zhou y Lv (2022).	Feasibility of AC treatment for stroke patients with depressive symptoms (36).	Effective in reducing the development of depressive symptoms and cultivating behavioral activation.
22	Randomized Controlled Trial. The efficacy of a behavioral activation intervention among depressed US Latinos with limited English language proficiency: study protocol for a randomized controlled trial.	Collado, Long, McPherson y Lejuez (2014).	Efficacy of behavioral activation treatment for depression (37).	Effects conducive to further deepening with controlled and relevant results against the reduction of clinically significant symptoms.
23	Web-Based Intervention Using Behavioral Activation and Physical Activity for Adults with Depression (The eMotion Study): Pilot Randomized Controlled Tria.	Lambert, Grebas, Farrand, Precio, Haase y Taylor (2018).	Viability of the emotion program based on CA to reduce depressive symptoms (38).	The acceptability of the program was optimal with relatively short-term positive effects, proof of further testing, and prolonged study.

Subsequently, a content analysis was performed (Table 5), where we sought to delimit the evidence and collect the data of greatest interest regarding CA practices and treatments. Among the findings found it is highlighted that the treatments were applied by professionals in psychology. Likewise, these studies were mostly carried out from the research approach, to identify behavioral changes in the short and medium term.

Table 6 reports the general characteristics of the treatments. Within the information described, the language, duration, group size, technique, and diagnosis are related.

It should be noted that of the articles found, 82 % are in English and 17 % are written in Spanish.

Regarding the group size variable, it can be observed that the sample size is less than 50 participants in 43 % of the studies, followed by 50 to 100 participants in 35 %, followed by studies carried out with a population greater than 100 participants with 17 % and finally a study with an unknown number with 4 % of the studies. A sample of 23 articles was reviewed.

Regarding the duration variable, it was evident that the intervention that used sessions of less than 10 corresponds to 74 %, followed by studies in which 11 to 20 sessions were used with 17 % and finally studies that used more than 20 sessions with 9 %. Behavioral activation was used as the type of intervention in 100 % of the studies. 100 % used the programming of activities as an intervention technique and two studies (9 %) added other strategies such as daily self-registration and strengthening of decision-making. In the diagnostic variable, we observed that 100 % of the studies emphasized the diagnosis of depressive disorder, 52 % focused on working with patients with a diagnosis of major depressive disorder, 22 % focused on patients with depressive symptoms, 4 % on patients with moderate depressive episodes and finally 4 % with persistent depressive disorder.

When analyzing the treatments applied, it was found that the program is divided into numbered sessions and each session has specific activities and tasks associated with it. Accordingly, the general description of the treatments found is presented:

-Session 1 introduced psychoeducation, which related to educating participants about the nature of depression and its treatment.

-Session 2 involved induction and taking anthropometric measurements (body measurements), as well as making a daily activity log.

-Session 3 involved goal setting and tracking of pleasurable activities and events in different life domains.

-Session 4 reported an initial phase in which behavioral activation was performed through pleasurable or low-energy activities.

-Session 5 focused on understanding the basic concepts of the Behavioral Activation (BA) approach and providing psychoeducation about depression, as well as monitoring mood and behavioral activities.

-Session 6 involved obtaining verbally informed consent for daily monitoring of mood and activity.

-Session 7 continued psychoeducation and implementation of a self-report protocol.

-Session 8 introduced the performance of activities through a virtual reality device and weekly activity schedule.

-Session 9 involved tasks such as training on a Go/No-go task, META questionnaire, and computational data analysis.

Session 10 referred to interviewing and working with a self-report form, as well as explaining the functional analysis and intervention plan.

The session involved intervention through virtual reality and activity programming.

-Session 12 included initial assessment interviews, intervention protocols, and varied activity schedules, including activities to promote manic and depressive states.

-Sessions 13 through 23 presented assessments, treatment protocols, follow-up, and specific activities related to behavioral activation, symptom identification, and relapse prevention.

By way of conclusion from the analysis of the treatments, it can be inferred that behavioral activation approaches, psycho-education, and

Table 6. General characteristics of the treatments

N	Language	Duration	Group size	Technique	Diagnostic
1	English	6 weeks/6 sessions	60 patients	Programming of activities	Major depressive disorder
2	English	18 weeks/28 sessions x 120 minutes	20 participants	Programming of activities	Major depressive disorder
3	English	2 weeks/18 sessions x 30 or 40 minutes	170 patients	Programming of activities	Major depressive episode
4	English	16 weeks / 16 sessions x 50 minutes	98 patients	Programming of activities	Major depressive disorder
5	English	10 weeks	312 patients	Programming of activities	Major depressive disorder
6	English	10 weeks / 10 sessions x 90 minutes	46 patients	Programming of activities	Major depressive disorder
7	English	10 weeks / 10 sessions	313 patients	Programming of activities	Major depressive disorder or persistent depressive disorder
8	English	4 weeks / 4 sessions x 50 minutes	1 patient	Programming of activities	Major depressive disorder
9	English	9 weeks	13 patients	Programming of activities	Major depressive disorder
10	Spanish	30 weeks / 22 sessions	1 participant	The recovery of abandoned tasks, the rethinking of new vital objectives, the extinction of avoidance behaviors, the scheduling of hours, and the recovery of domestic, work, and social obligations.	Depressive disorder
11	English	4 weeks	Unique case	Programming of activities	Depressive disorder or major depressive disorder
12	English	20 weeks / 20 sessions x 60 min / follow-up 3 months later	12 people	Programming of activities	Major depression episode (bipolar)
13	Spanish	10 weeks/10 sessions x 30-40 minutes /10 sessions x 20-30 min	45-year-old patient	Programming of activities	Major depressive episode
14	Spanish	9 weeks/ 9 sessions /follow-up at 3,6,12 months	49-year-old patient	Self-daily registration and scheduling of activities	Major depressive episode

...continuation Table 6. General characteristics of the treatments

N	Language	Duration	Group size	Technique	Diagnostic
15	Spanish	6 weeks/6 sessions x 60 minutes	6 women with a range of 31-75 years of age	Programming of activities	Moderate depressive episode
16	English	3 sessions	104 people	Programming of activities	Depressive symptoms
17	English	12 weeks /12 sessions x 120 minutes	76 people	Programming of activities	Depressive symptoms (mild or moderate)
18	English	5 sessions/follow-up weeks 5 and 10 postpartum of 3 months	85 women	Programming of activities	Depressive symptoms
19	English	12 weeks / 9 sessions x 60 minutes	31 people with an age range of 18-65	Exercise scheduling	Persistent depressive disorder
20	English	9 weeks/ 9 sessions x 50 minutes	80 people with an age range of 18-65	Programming of activities	Major depressive tr astorno
21	English	6 weeks/6 sessions x 50 minutes	70 people	Programming of activities	Depressive symptoms (CVA)
22	English	10 weeks / 10 sessions x60 minutes	60 people	Programming of activities	Major depressive disorder
23	English	8-week follow-up	52 people	Exercise scheduling	Depressive symptoms

detailed monitoring of activities and emotional states were used to treat depression. Each session had specific goals and tasks to help participants address their depression and improve their emotional well-being.

Table 7 shows the characteristics of the sample considering age, gender and selection criteria.

It was possible to identify that the age ranges were classified as follows: 8.6 % 16 years; 26 % 18 years; 34.7 % 18-65 years and 13 % older 60 years. Concerning the gender variable, 13 % are female; 13 % are male; 17.3 % are both genders and 43.4 % correspond to unknown gender. Finally, and following the selection criteria, it was evidenced that all studies included current depressive episodes or depressive disorders, together with 78.2 % corresponding to the inclusion of 2 or more similar symptoms.

DISCUSSION

In this paper, 23 scientific articles were analyzed following the parameters proposed by the PRISMA methodology, which allowed to conceptualize in detail the principles and intervention strategies, as well as to show that the treatment of behavioral activation (CA) has been used in experimental and clinical environments as an intervention strategy in the patients with depressive disorder or mood disorders. The aspects to be discussed allow us to understand the positive impact of therapy in the aforementioned environments, since a conceptualization of the interventions is made, and the characteristics and procedures of each session are reviewed, to facilitate in the users the acquisition of a behavioral repertoire, to reduce depressive symptoms.

CA has its origins in cognitive-behavioral therapies, specifically in Aaron Beck's cognitive therapy (CT). It is important to mention that CA is used there as a technique immersed in intervention protocols composed of a group of techniques that aim to promote mainly individual cognitive restructuring or a modification in the perceptions and subjective interpretations of the world. Therefore, what is given to these mental processes is a mediating role in behavior. However, after

a series of comparative experiments conducted by Jacobson and described by (13), interventions that are based only on the behavioral component, show positive results in terms of improvement of clients than CT (integrates cognitive restructuring component and behavioral component). Because of this, researchers have refocused on behavioral therapies given their effectiveness. Subsequent research has revealed that purely behavioral interventions are sufficient for an efficient and effective approach to depressive symptoms, even in the long term (39).

Behavioral activation can be defined as a structured and concise psychosocial treatment, based on the change or improvement of behavior that helps alleviate current depression and prevent future relapses. As a basic premise, certain situations and reactions of the subjects to the environment are assumed. Therefore, this type of therapy aims to systematically increase the suppression and avoidance of stimuli, so that subjects achieve greater exposure to sources of reward, these patterns of avoidance can take multiple forms that involve abandonment or an attempt to control activities, sensations, and thoughts that generate discomfort to the person. Being supported by an ideographic model, CA promotes in the person the expansion of their behavioral reporting as a strategy to reduce the maintenance factors (40) that are previously identified by the functional analysis.

On the other hand, behavioral evaluation is considered a scientific approach that uses several evaluation methods, among which are: obtaining measures with solid and adequate psychometric guarantees, measurement carried out in different situations, contexts, and moments, and direct observation of behavior (41). Because of this, CA begins with functional analysis from the identification of functional, causal, and non-causal, important, and controllable relationships, applicable to certain behaviors of an individual (42). It is important to note that the characteristics of a behavioral problem may vary according to the user (43).

However, it can be affirmed that this treatment has been proposed considering the research and reviews carried out, about the effectiveness, the maintenance over time of the reported improvements, and the aspects intervened

Table 7. Characteristics of the sample

I am a student	Age	Gender	Selection criteria
1	60 - 70 years	Unknown	Patients meeting ICD-10 diagnostic criteria (F32: Major depressive disorder, single episode); reside in Chongqing for more than 6 months; can communicate without barriers and can complete questionnaires independently or with assistance; who are between 60 and 70 years of age, with a secondary or higher level of education; and who use smartphones frequently.
2	48 years	Mixed	Patients over 18 years of age are diagnosed with major depression.
3	18 - 65 years	Unknown	Patients diagnosed with major depressive episodes (unipolar or bipolar), who are computer literate, can complete questionnaires and therapy in English, and are willing to give informed consent.
4	18 - 65 years	Unknown	Patients aged 18 to 65 years who met the criteria for MDD in the DSM-IV.
5	16 the +	Unknown	Meet the cut-off score of at least 10 on the PHQ-9 meet the criteria for a diagnosis of major depressive disorder or persistent depressive disorder are 16 years of age or older are fluent in the Indonesian language and are fluent in using the Internet.
6	35 years	Mixed	Be at least 18 years of age Latino / a report Spanish language preference meets the criteria for MDD does not meet the criteria for substance abuse or dependence, bipolar or psychotic disorder Not being receiving psychotherapy if taking antidepressants, demonstrate three or more consecutive months of use.
7	16 the +	Mixed	Be older than 16 years, score ≥10 on the Patient Health Questionnaire-9 (PHQ-9), and had a primary diagnosis of major depressive disorder or persistent depressive disorder defined according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.
8	40 years	Male	A PHQ-8 score of 10 or higher, meets the diagnostic criteria for MDD.
9	21 - 45 years	Unknown	Scores >24 in the Inventory of depressive symptomatology and diagnoses of depression.
10	4 years	Male	Meet the diagnostic criteria for depressive disorder.
11	20 - 23 years	Unknown	Obtain a score of more than 10 on the Patient Health Questionnaire-9 (PHQ-9) and a score lower than 24 in the PA subscale of the Positive and Negative Affect Program (PANAS).
12	18 the +	Unknown	Scored > 9 on a self-report measure of depression severity; meet the diagnostic criteria for depression according to the DSM-V; meet the diagnostic criteria for Bipolar Disorder I or II (DSM-V). Participants had to have a working knowledge of spoken and written English.

...continuation Table 7. Characteristics of the sample.

I am a student	Age	Gender	Selection criteria
13	45 years	Male	Current major depressive episode.
14	49 years	Female	Current major depressive episode.
15	31- 75 years	Female	Presence of moderate depressive symptoms and no history of psychological or psychiatric treatments.
16	18-65 years	Unknown	Presence of depressive symptoms, Internet access, Internet literacy, sufficient German language proficiency, and informed consent, including willingness to participate.
17	60 o +	Unknown	Depressive symptoms below the threshold (mild to moderate).
18	18 the +	Female	Pregnant; receive care at one of the four MHRN sites; be 18 years of age or older; an initial score of $\geq$ 10 on the PHQ-9; English speaker; and no known diagnosis of bipolar or psychotic disorder, active substance dependence, or immediate risk of self-harm or need for hospitalization.
19	18-65 years	Mixed	Men or women aged 18 to 65; current main diagnosis of persistent depressive disorder with a current major depressive episode according to DSM-5 and sedentary lifestyle.
20	18-65 years	Unknown	Major depressive disorder.
21	18 the +	Unknown	18 years or older; the duration of the disease was less than 3 months; subthreshold symptoms of depression, CES-D$\geq$16 scores, HAMD score between 7 and 17; were able to travel to hospital for weekly interventions and follow-up assessments; Informed consent.
22	18 the +	Unknown	Be at least 18 years of age; be of Latino descent; meet current TDM criteria; have completed 4th grade of education or higher in their home country or the U.S.; not have current substance abuse or dependence; not have bipolar or psychotic disorders; not currently receiving psychotherapy; and if currently taking antidepressants, demonstrate pharmacological stability as directed for 3 or more consecutive months of use.
23	18 the +	Unknown	18, lived in the UK, had at least moderate depressive symptoms, and had internet access.

in cognitive behavioral therapies. Scientific evidence has revealed that purely behavioral interventions are sufficient for an efficient and effective approach to depressive symptoms, even in the long term (39). However, although there is evidence of the application of CA in this type of therapy, it is necessary to mention that it is used as a technique immersed in intervention protocols, which aim to promote mainly in the individual a modification in the perceptions and subjective interpretations of the world, which gives their mental processes, a role of average Aimed at getting depressed patients to learn to organize their lives and change their environment so that their contact with sources of positive reinforcement is restored (44).

The treatment of behavioral activation is based on an ideographic model that analyzes and intervenes in the behaviors of the subject from individual patterns that are formed in the relationship between the subject and his context so that the central axes of intervention promote the acquisition and daily practice of self-monitoring of mood, Hierarchy of tasks, establishment of concrete goals (45).

Fernández and Theoduloz developed an evaluation of the efficacy of exercise as an augmentation strategy for brief behavioral activation treatment for depression (46) and found that behavioral activation (CA) involves completing activities to improve mood, an ideal format for increasing exercise. In addition, participants who exercised more also showed a greater and faster decline in depression.

On the other hand, the therapist who applies the treatment of CA must develop a treatment plan that suits the needs of the patient, without departing from the competence of the therapist. That is, the patient and therapist must work together to obtain positive results at the end of treatment.

Concerning Major depressive disorder (MDD), it is a highly disabling and prevalent condition worldwide. According to Pérez et al. (47), the origin of major depressive disorder can be genetic and/or physiological or hormonal also precipitating the context such as stressful and psychosocial situations. The neurobiological basis of depression focused on biogenic amines (serotonin, norepinephrine, and dopamine),

initially to the action response of antidepressants. Subsequently, it was reported that humans are at increased risk of depression, due to genetic predisposition and environment. In addition, there is evidence that chronic stress is associated with depression, which causes neuronal wasting, and limits the making of adequate adjustments for the normal functioning of the central nervous system.

Because of this, it can be said that identifying psychosocial factors that influence the development of MDD such as life situations and environmental stress, traumatic events in childhood or adolescence, drug abuse, and absence of a support network, among others, would allow a global understanding of the phenomenon. Thanks to this, the treatment of behavioral activation allows and promotes in the subject a modification and adaptation of maladaptive behavior patterns involved in the disorder, while progressively they are integrated into the behavioral repertoire of the person, according to the objectives that have been previously structured. That is why, through behavioral activation, measures such as avoidance are established, which are situations and behavioral patterns that feed discomfort, to acquire "defense mechanisms" through habituation of activities that improve or reinforce mood, generating positive effects on the user.

Findings

The origin of Behavioral Activation (CA) is in cognitive-behavioral therapies, specifically Aaron Beck's cognitive therapy (CBT). Unlike CBT which fuses cognitive restructuring and behavioral elements, purely behavioral interventions such as CA have demonstrated positive results in improving client conditions as opposed to CT. This has led researchers to turn their attention to behavioral therapies because of their effectiveness. Behavioral interventions are sufficient to effectively treat depressive symptoms, even in the long term.

Behavioral Activation is described as a structured and concise psychosocial treatment that focuses on changing or improving behavior to alleviate current depression and prevent future relapse. The approach is based on certain

situations and individuals' reactions to the environment, to increase exposure to sources of reward while reducing patterns of avoidance and suppression. Using an ideographic model, however, CA helps individuals expand their behavioral repertoire, ultimately reducing the factors that contribute to maintaining depression.

Behavioral Assessment, from a scientific approach, involves various assessment methods, in which direct observation of behavior is included, and underlies CA. Understood in another way, a functional analysis is performed to identify causal and non-causal relationships related to specific individual behaviors. This is because behavioral problems may vary from person to person, requiring a personalized approach.

The evidence supports the effectiveness of purely behavioral interventions such as CA in effectively addressing depressive symptoms, even in the long term. It is highlighted that CA has positive effects in improving mood and reducing depression. The benefits of this type of therapy lie in the modification of maladaptive behavioral patterns associated with the disorder and the gradual incorporation of healthier patterns into the individual's behavioral repertoire.

Behavioral Activation treatment is based on an ideographic model that focuses on analyzing and intervening in individual behavioral patterns in relation to the person's context. This involves promoting self-assessment of mood, establishing a hierarchy of tasks, and defining concrete goals. Thus, this type of exercise can be integrated into CA, enhancing its effectiveness and leading to a more rapid decrease in depression.

CONCLUSIONS

Behavioral activation therapy originates from and finds utility within the realm of second-generation cognitive behavioral therapy techniques. This review aims to ascertain the extent of behavioral activation therapy's efficacy in addressing depression through the lens of third-generation therapies. These approaches seek to gauge the viability and acceptance among users in alleviating or managing depressive symptoms. It's important to highlight that third-generation

therapies prioritize patient needs, making it clear that behavioral activation doesn't directly address clinical symptoms as defined by DSM-V and ICD-10.

The examined studies have provided evidence of enhancements in response patterns, centered around shifts in clinically significant symptoms. These symptoms encompass a range of emotional states such as hopelessness, abulia, hypoprosexia, dysphoria, apathy, bradilalia, alterations in vital rhythms, social isolation, and rumination, among others. These symptoms exhibit fluctuations in accordance with individualized factors and patient maintenance.

Ultimately, based on the scrutinized research, it's evident that behavioral activation holds significant promise as a treatment avenue for reducing depressive symptoms. This progress is achieved by cultivating novel habits and establishing them as effective coping mechanisms. This strategy hinges on the thoughtful scheduling of activities, tailored to individual needs and the user's current mood.

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