

## Effectiveness of Psychological and Educational Interventions to Prevent Depression in Primary Care: A Systematic Review of Randomized Controlled Trials

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### Abstract

**Objectives:** Depression is ranked as the second cause of morbidity and mortality worldwide. Early diagnosis and management are considered the cornerstone of its prevention. Primary care centers are considered the first stop for any patients, targeting depression at these stations will greatly help early detection and management.

**Methods:** Six databases were searched using specific search terms. We included randomized controlled trials that assess the efficacy of any intervention applied in primary care centers for the prevention of depression. The studies were assessed for the quality of evidence using the Cochrane quality assessment tool before being included for the review.

**Results:** Eighteen studies fulfilled our inclusion criteria and had passed the quality assessment to be included for the qualitative evidence synthesis. Based on these studies, only cognitive behavioral therapy had the best results and successfully prevented the progression of depression into major depressive disorders.

**Conclusion:** Cognitive-behavioral therapy had the best results for the prevention of depressive symptoms in primary care, however, more studies are needed to understand factors affecting its efficacy.

**Keywords:** Depression; Primary Care; Psychological Interventions; Educational Interventions; Cognitive Behavioral Therapy; Mindfulness; Problem-Solving Therapy

### Introduction

Depression is considered one of the most growing diseases in the last decade. World health organization ranked depression as the 4<sup>th</sup> cause of disability worldwide and it is expected to rank 2<sup>nd</sup> by the end of 2020 [1,2]. Depression is associated with a marked decrease in

quality of life, diminished functionality, decreased morbidity, and mortality [1,2]. Depression is associated with different epidemiologic, psychosocial and genetic studies. Depression was more prevalent in developing countries more than developed countries [3].

It was found that women have increased risk of major depression two folds and a half more than men [4]. Besides, depression risk decreases with old age especially in developed countries, however, in developing countries, it increases with age [1,2]. Marital status was also significantly associated with the risk of depression. Divorced, single, and widows had a significantly high risk of depression [5]. However, a study found that the risk for depression differs based on the country of residence [3].

The consequences of depression are prevalent across many aspects of life. Depression was associated with bad school scores in adults and was associated with the termination of education [6]. Also, it was associated with marital problems. It was also associated with unemployment and difficulty to cooperate in the work environment [5,6]. This was associated with more financial problems in depression patients and low quality of life [7,8]. Depression was also associated with physical symptoms [9,10]. It was associated with physical disorders like arthritis, asthma, hypertension, diabetes, respiratory disorders, and chronic pain conditions [9]. It was also associated with bad behavioral events as high alcohol drinking, smoking and low compliance to treatment [4,5].

That is why early diagnosis and treatment of depression will enhance the outcome of treatment and increase the functionality of the patients [1,11]. Primary care is considered the first place for medical help for most patients. It was estimated that 5 - 10% of primary care patients suffer from depression, that is why many studies investigated the prevention of depression in primary health care [12].

Clinical trials were conducted to recognize whether the prevention of depression in primary care is useful or not [2,13,14]. A study found that diagnosing and treating early cases of depression prevented the development of major depressive symptoms in the future [11]. Another study found that it also decreased physical symptoms and disorders associated with depression [15]. Moreover, it also decreased other associated psychiatric conditions like anxiety. Many studies used different intervention with different results; for instance, studies used cognitive behavioral therapy had shown a significant increase, meanwhile, other studies used cognitive behavioral therapy combined with mindfulness enhanced symptoms of depression [11,13,16-19]. Some studies found a treatment that only lasted for short durations [20-22].

### **Aim of the Study**

That is why we aim in this study to identify the best available intervention for depression in primary care.

### **Methods**

#### **Database search**

A comprehensive search approach was used to identify randomized controlled trials from six databases PubMed, Google Scholar, SCOPUS, ISI web of science, clinical trial.gov, and Cochrane Collaboration. The search terms used were (“randomized controlled trial”) AND (“depressive disorder”, “depression”) AND (“prevention” OR “primary health care” OR “intervention”).

#### **Inclusion and exclusion criteria for screening**

Specific inclusion criteria were used to identify high quality and studies that fulfill the goals of this study. We only included randomized controlled studies that assess the efficacy of any intervention for protection against depression in primary healthcare. Books, review articles, letters to the editor, editorial reports, case reports, and conference abstracts and duplicates were excluded.

#### **Screening for studies**

The retrieved studies from each database were screened based on inclusion and exclusion criteria. First, Title/abstract screening was conducted by three independent reviewers. The included studies were then screened thoroughly to make sure it fulfills the target of this review. Each study was reviewed thoroughly to extract and build a qualitative review.

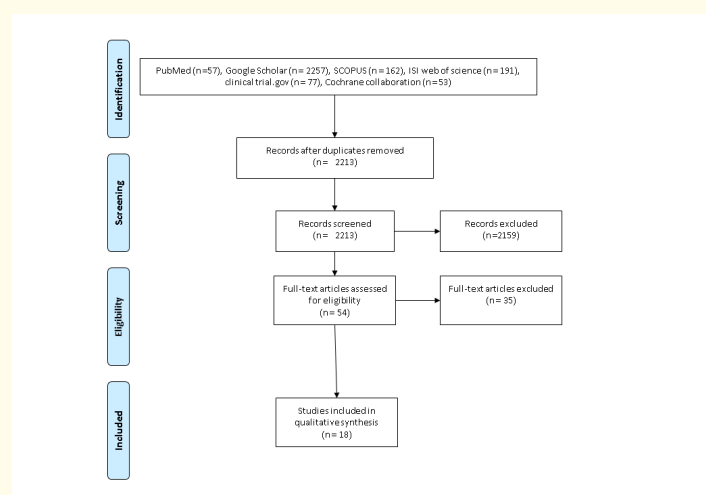
**Quality assessment of the included papers**

The quality of included studies was evaluated by three reviewers using “The Cochrane Collaboration’s tool for assessing the risk of bias” [23]. It has seven specific domains including sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting, and other sources of bias. The answers were categorized as ‘low risk’, ‘high risk’ or ‘unclear risk’ of bias.

**Results and Discussion**

**Search results**

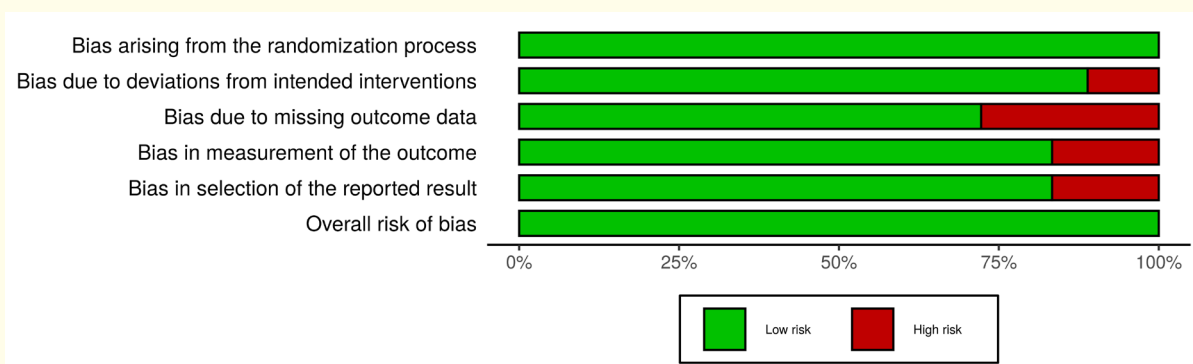
The search performed on six databases yielded 2797 studies, of which, only eighteen randomized clinical trials fulfilled the inclusion criteria and were used for qualitative evidence synthesis figure 1.



**Figure 1:** PRISMA flowchart summarizing the search process in this study.

**Risk of bias**

All trials have a low risk of bias, however, five studies had missing outcome bias as in figure 2. Other studies had a high risk in specific domains in figure 3.



**Figure 2:** Risk of bias graph indicating the quality in each domain.

Study	Risk of bias domains					Overall
	D1	D2	D3	D4	D5	
Barrett/2001	+	+	+	+	+	+
Bai/2018	+	+	+	+	X	+
Bellón/2016	+	+	X	+	+	+
Brugha/2011	+	+	+	X	+	+
Brugha/2016	+	+	X	+	+	+
Frank/2002	+	+	+	+	+	+
García-Campayo /2010	+	+	+	+	+	+
Gillham/2006	+	+	+	+	X	+
González /2006	+	+	X	+	+	+
Lynch/1997	+	X	+	+	+	+
Muñoz /1995	+	+	+	X	+	+
Pols/2017	+	+	X	+	+	+
Pols/2018	+	+	+	+	+	+
Veer-Tazelaar /2011	+	+	+	+	+	+
Wong/2018	+	+	+	+	X	+
Willemse/2004	+	+	X	+	+	+
Williams/2000	+	X	+	+	+	+
Zhang /2014	+	+	+	X	+	+

Domains:  
D1: Bias arising from the randomization process  
D2: Bias due to deviations from intended intervention.  
D3: Bias due to missing outcome data.  
D4: Bias in measurement of the outcome.  
D5: Bias in selection of the reported result.

Judgement  
X High  
+ Low

Figure 3: Risk of bias summary summarizing the overall risk of bias in each domain.

Patients' characteristics

Eighteen studies were included in the final review. Six studies assessed the efficacy of a cognitive-behavioral approach, one study assessed each of the following mindfulness, psychoeducational therapy, and behavioural-based intervention in table 1. Four studies assessed the stepped-care program and problem-solving techniques. The intervention was used for all ages in table 1. Other patients' characteristics are present in table 1.

Study	Country	Age	Treatment	Control	Treatment (N)	Control (N)	Follow-up duration
Barrett/2001 [27]	United States	18 - 59	Problem solving therapy-pc	Placebo plus clinical management	36	38	11 weeks
Bai/2018 [16]	United states	13 - 18	Behavioral health intervention	Usual care	62	56	12 months
Bellón/2016 [17]	Spain	18 - 75	Predicted-CCRT	Care as usual	1663	1663	18 months
Brugha/2011 [18]	United Kingdom	Women postnatally	Cognitive behavioral approach	Care as usual	1474	767	18 months
Brugha/2016 [19]	United Kingdom	Pregnant women	Cognitive behavioral approach	Care as usual	103	83	22 weeks
Frank/2002 [28]	United States	Adults > 18	Problem solving therapy-pc	Placebo plus clinical management	79	89	11 weeks
García-Campayo/2010 [15]	Spain	18 - 65	Psychoeducational	No intervention	52	52	60 months
Gillham/2006 [25]	United States	11 - 12	Cognitive behavioral therapy	Care as usual	147	124	24 months
González/2006 [24]	Spain	25 - 55	Cognitive behavioral therapy	1- Encouraging personal resources 2- Social support 3- Waiting list	30	30	12 months
Lynch/1997 [29]	United States	Adults > 18	Problem solving therapy	Care as usual	15	14	7 weeks
Muñoz/1995 [26]	United States	Adults >18	Cognitive behavioral therapy	No intervention	72	78	12 months
Pols/2017 [21]	Netherlands	67.5	Stepped care depression prevention	Care as usual	96	140	12 months
Pols/2018 [31]	Netherlands	67.5	Stepped care depression prevention	Care as usual	96	140	24 months
Veer-Tazeelaar/2009-2011 [33]	Netherlands	>75	Stepped care program	Care as usual	86	84	24 months
Wong/2018 [35]	China	18 or older	Group-based behavioral activation with mindfulness	Care as usual	115	116	12 months
Willemse/2004 [20]	Netherlands	18 - 65	Cognitive behavioral therapy	Care as usual	107	109	12 months
Williams/2000 [30]	United States	>60	Problem solving therapy	Placebo plus clinical management	63	67	11 weeks
Zhang /2014 [34]	China	>18	Stepped-care program	Care as usual	121	119	15 months

Table 1: Characteristics of the participants in randomized controlled trials.

### **The efficacy of cognitive-behavioural approach in primary care**

Six studies assessed the cognitive-behavioral approach for the prevention of depression in primary care settings [17-20,24-26]. Belton., *et al.* applied a new intervention called predict D-CCRT. This technique was developed by the team to prevent depression in primary care settings [17]. The approach consists of training for family physicians; understanding the level and causes of risk of depression; providing a tailored bio-psycho-family-social intervention; offering a booklet to prevent any further depression development, and empowering patients. The approach was applied in 10 primary care centers in seven cities in Spain and patients were followed up to 18 months [17]. The authors found that at the end of follow-up only 7.3% of the intervention group developed major depression compared to 9.3% of the control group. However, the difference was not significant even though the depression symptoms decreased over time [17]. Surprisingly, patients in the intervention group developed anxiety compared to the control group but it was not significant [17]. Brugha., *et al.* had assessed the efficacy of a cognitive-behavioral approach in pregnant and post-natal females [18,19]. For post-natal women, they trained midwives and health visitors to assess the depression and anxiety in these females. The approach depended on individual sessions of a cognitive-behavioral approach (CBA) and a person-centered approach (PCA). The session consisted of a one-hour visit, once a week, for a maximum of 8 weeks, starting eight weeks postnatally [18]. The efficacy of the sessions was evident in the intervention group more than the control group. However, subgroup analysis based on the severity of the depression revealed non-significant results [18]. For the antenatal study, the midwives were trained to employ the psychosocial cognitive approach to prevent depression in pregnant women [19]. The sessions were based on five main cornerstones: the environment as present in life situation, relationships and practical problems, cognitions like altered thinking, emotions especially altered mood, physiological symptoms as altered physical symptoms), and any altered behavior [19]. The intervention successfully prevented depression compared to the control group. Besides, the midwives were happy to apply this intervention not only in the research but extended it for all their visits [19].

Gillham assessed the efficacy of the Penn Resiliency Program for the prevention of depression in early adolescents aged 11 - 12 years old in primary health care. They found that the Penn Resiliency Program did not significantly decrease the depression symptoms in the intervention group. However, they found that its effect would significantly decrease the depressive symptoms if it is administered in high dosage and it was more evident in adults who committed and attended all the sessions [25].

Gonzalez., *et al.* compared three intervention therapy for the prevention of depression in primary care: cognitive-behavioral therapy, promotion of one's coping resources therapy (just paying attention to abilities, without training), and social support [24]. They followed the patients for 12 months and found that the first two treatments had equally better results than a social support group [24]. Munoz., *et al.* administered group cognitive-behavioral courses to the participants on what is depression, social learning theory, and self-control approaches, activities, and interpersonal interactions affect mood [26]. They also learned how to identify and change those thoughts, and contacts with someone most affect each participant's mood level. Moreover, they teach participants to determine their mood and when it changes [26]. The study found a significant decrease in depressive symptoms compared to the control group. In addition, they found enhanced cognitive functions associated with depression [26]. Willems., *et al.* used psychotherapy for prevention of the depression in primary care settings and followed the patients for 12 months. They found that psychotherapy significantly enhanced the depressive symptoms in these patients. In addition, it was associated with a better quality of life [20]. They also assessed the satisfaction and accessibility of the intervention to the participants. 22% of the participants discontinued the treatment due to a lack of time, motivation and denial of their depression. Moreover, men were less committed to treatment than women [20].

### **The efficacy of problem-solving treatment in primary care**

Four studies assessed the efficacy of the problem-solving treatment for the treatment of depression in primary care settings [27-30]. Frank., *et al.* assessed the efficacy of the problem-solving technique against paroxetine for 11 weeks. They did not find any significant difference between the intervention and placebo or paroxetine [28].

Another study found that the problem-solving technique significantly enhanced the depressive symptoms, but it was small change compared to paroxetine. However, it did not enhance mental health function and dysthymia. The efficacy of problem-solving was significant only in minor depression and did not affect the depressive symptoms in a more severe form of depression [30]. Another study that shared the same study designs as the previous study, found that paroxetine had the best results followed by problem-solving techniques that significantly enhanced the depressive symptoms more than the placebo. They did not find any effect of the severity of depression on the efficacy of the intervention. However, it did not enhance mental health functions [27].

Lynch, *et al.* used telephone-based problem-solving techniques to prevent the development of major depression from minor depression. The intervention significantly decreased depression, anxiety, mental health function, social health, and self-confidence. A graduate student under the supervision of a psychiatrist was responsible for psychotherapy which implies that trained nurses can administer this intervention [29].

### **The efficacy of stepped-care program in primary care**

Four studies assessed the efficacy of the Stepped-care program in primary care [21,31-33]. The intervention was suggested by Veer-Tazelaar, *et al.* It is composed of multiple steps intensifying as the patients progress from one step to another. Veer-Tazelaar used it for the prevention of late-life depression in old patients. They found that it significantly decreased the major depression incidence in old age. The intervention sustained its efficacy for two years including its efficacy against anxiety [32,33]. Pols, *et al.* had the same study design as the previous one, however, they assessed the efficacy of a stepped care program in patients with co-morbid conditions like diabetes and hypertension [21,31]. Unlike the study by Veer-Tazelaar, *et al.* they did not find any significant difference between other interventions and stepped-care program. They also followed the patients for two years and still no enhancement of symptoms. They also noticed that these comorbid conditions increased the incidence of depression [21,31]. Their results were consistent with the results of Zhang, *et al.* who found that patients diagnosed with depression without any co-morbid conditions did not benefit from problem-solving therapy [34].

### **The efficacy of psychoeducational therapy combined with cognitive-behavioral therapy in primary care**

Only one study assessed the efficacy of psychoeducational therapy combined with cognitive-behavioral therapy against depression in primary care [15]. In this study, they followed the patients for up to five years. Psychoeducational therapy is the therapy based on understanding the physical symptoms and how to manage the disease. It was administered in five sessions each one was 120 minutes by the primary care provider and was supervised by a psychiatrist [15].

The study used a whitely index for assessment of the outcome of the treatment. It significantly decreased bodily preoccupation, disease phobia, and conviction of disease. However, the effect size was bigger during the 5<sup>th</sup> month more than at the end of the experiment [15].

However, the treatment was not associated with a decrease in the somatic symptoms. The authors recommended using the technique in a larger sample size to verify its efficacy [15].

### **The efficacy of group-based behavioral activation with mindfulness in primary care**

Only one study used mindfulness combined with group-based behavioral activation [35]. In this trial, they used group-based behavioral activation with mindfulness for one year and assessed the major depressive symptoms in patients. It was used for the treatment of subthreshold anxiety. The therapy significantly decreased the depressive symptoms although it was a small change at the end of the 12 months. It also decreased the incidence of major depression in the participants. For anxiety, the treatment did not decrease the anxiety symptoms [35].

There was a positive patient attitude toward mindfulness therapy. Most patients continued the treatment after the follow-up period. Other contacted their peer to share their experience and continue the treatment. Most participants continued to use the skills learned in group therapy [35].

Notably, doctors who conducted this type of therapy after only one week of training. The study recommended assessing the cost-effectiveness of the therapy so it can be validated for the treatment of depression [35].

### **The efficacy of behavioral health intervention treatment in primary care**

Bai, *et al.* used behavioral health intervention to reduce the behaviors leading to depression and controlling the recent behaviors. The approach was administered in multiple sessions that also reinforce behavioral changes. The bad behaviors include smoking, alcohol and drug use, unsafe sexual practices, obesity, diet and exercise.

The intervention decreased the depressive symptoms but did not change it significantly. It did not even decrease risky health behaviors [16].

### **Factors affecting the efficacy of the intervention for the depression in primary care**

Not all studies assessed the factors affecting each intervention. Brugha, *et al.* found that the intervention was influenced by living alone, previous postnatal depression (PND), the presence of one or more serious life events [18]. Gillham, *et al.* found that the Penn Resiliency Program was affected by the sex of the participants as the Penn Resiliency Program had significantly decreased the depressive symptoms in girls [25]. The severity of depression also influenced the efficacy of the Penn Resiliency Program as it had better efficacy in less severe depression [25]. Adjusting the marital status of the parents and household incomes enhanced the efficacy of the intervention. Also, the frequency of the session and commitment of participants enhanced the efficacy of the Penn Resiliency Program and its ability to prevent depressive symptoms [25]. Gonzalez, *et al.* had also found that the more the attendance, the more effective the treatment [24].

Bellon, *et al.* reported that three patients had an uncomfortable relationship with their treating physicians, and they were changed, however, they did not assess how it will affect the outcome of the intervention [17].

Frank, *et al.* found that problem-solving intervention is affected by many factors. They found that lower educational levels and men had a higher dropout rate [28]. In addition, the problem-solving technique had better outcomes in women, younger age groups. Race and occupation also affected the outcome as patients of European descent, homemakers or retired persons had better outcome [28].

### **Conclusion**

Based on this review, not all interventions successfully prevented or decreased the progression of minor depression into major depressive disorder not it decreased accompanying psychiatric conditions e.g. anxiety and decreased mental function. The intervention that had the best results was cognitive behavioral therapy and it was suitable for all severities of depression.

### **Recommendation for Future Work**

More studies are needed to compare different interventions and combine these interventions with pharmacologic treatment not only used as a stand-alone therapy. Moreover, more studies are needed to assess factors affecting the efficacy of this intervention.

### **Conflict of Interest**

None.



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