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Prevention of Depression: A Review of Literature

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Abstract

This article provides a review of recent literature, current and ongoing research in the field of prevention of depression. It highlights the efforts employed in targeting vulnerable and susceptible individuals at higher risk of developing depression. Prevention efforts should target both specific and non-specific risk factors, enhance protective factors, use a developmental approach, and target selective and/or indicated samples. In general, our review suggested that employing specific strategies and interventions that are targeted at high-risk individuals or groups may reduce rates of depression, its associated mortality and morbidity. Overall, it appears that there is a reason for hope regarding the role of interventions in preventing depressive disorders in high-risk groups. Several new directions for future research on the prevention of depression in high-risk groups were outlined.

Keywords: Depression; Prevention; Intervention

Introduction

Depression is a state of low mood and aversion to activity or apathy that can affect a person's thoughts, feelings, behavior and sense of well-being. It is a very serious and disabling psychiatric condition that occasionally leads to suicide or premature death due to unattended physical problems. The annual prevalence of major depressive disorder is 6.6 % and the lifetime prevalence of depression is 16.2% [1]. An estimated 676 million (one in ten people) are affected by depression. Worldwide, 804,000 people committed suicide in 2012, making depression one of the leading causes of death in young adults (15-29 years) second to road traffic accidents [2,3]. Persons with major depression have a 40% greater chance of dying prematurely than the general population [2].

The association between depression and increased risk of death and morbidity is an obvious indicator of the severity of the condition, which is usually clear when reflecting upon the WHO data on life expectancy and the causes of death. However, another extremely important indicator of its severity is the healthy life expectancy (HLE). Healthy life expectancy (HLE), if measured reliably, will reflect both mortality and unhealthy life (in case of disability, years lost due to disability -YLD). Global life expectancy in 2015 was 71.4 years. Globally, HLE in 2015 was estimated to be 63.1 years for both sexes. In general, Healthy life expectancy is 11.7% shorter than life expectancy. Life expectancy is comparatively longer in females (73.8) than males (69.1) in every country worldwide. Mental disorders, especially depression, are the second cause of lost healthy life years in all regions of the world. Years lost due to disability (YLD) is mainly due depression, second to musculoskeletal conditions [2].

The economic burden of bipolar disorders on the individuals as well as society is both direct (e.g. inpatient and outpatient treatment cost) and indirect costs (e.g. lost productivity of the patients and their caregiver). In the United States, in 2009, the total cost was estimated to be $151 billion, $30.7 billion in direct and $120.3 billion in indirect costs [4]. Globally, $2.5-8.5 trillion in lost output was attributed to mental, neurological and substance abuse disorders [5]. These costs include direct cost of treatment as well as the indirect costs related to unemployment and lost productivity at workplace.

The burden of depression is not limited to the human misery of the depressed person. It extends to the caregiver, the partner, the children, and the whole society in general. The quality of life, which is a measure of subjective well-being in different domains of life, is lower in persons suffering from depression [6]. Caregivers of depressed patients are more likely themselves to suffer from more depressive symptoms, poorer general health and more chronic medical conditions [1].

In a recent study published in the Lancet, the authors propose a global investment case for scaled-up response to the public health and economic burden of depression [5]. The estimated cost for substantially improving the care for depressed patient, over the period 2016-2030, is US$147 billion. This figure is huge but the expected return for this great investment is huge. Treating depression will lead to an extra 43 million healthy life years. In addition, there will be a large economic gain, a net present value of US$ 230 billion and US$ 169 billion for depression and anxiety, respectively [5]. If policy makers invest in preventing depression in the first place, the return for this investment will be greater than treating depression.

Objectives

The aim of this article is to review the most recent literature related to interventions for depression prevention.

Literature Review

For this review, literature was reviewed using Summon search. This is a powerful search method with a google like interface. It is a unified search of all the databases, e-books and e-journals accessible from the Imam Abdulrahman Alfaisal University. These include BMJ journals, Cochrane, Ovid, ProQuest, Cambridge journals, SAGE journals, ScienceDirect journals, Wiley-Blackwell journals and many related databases [6-9].

The initial search conducted, on 15th November 2016, using the key words Depression AND Prevention yielded 542,435 results. The search was then limited to journal articles and this yielded 269,271 articles.

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Language was limited to English and these yielded 255,830 articles. Because this review is mainly covering the most recent literature, the search was limited to the last 12 months (November 2015- November 2016). This limitation yielded 16,214 articles. The final limitation is using only articles related to the subject of psychiatry. This yielded 2089 articles. Careful search through the titles revealed 58 articles related to prevention of depression [10-65].

Risk factors

Before any discussion on risk factors for depression, it is important to make it clear that there is a considerable confusion over what constitute a risk factor and how they operate. Most of the studies are cross-sectional studies using different correlation regression statistical models to find *possible* risk factors. For a proposed risk factor to be established as *probable* cause, prospective studies must be done where the risk factors are measured before the outcome. This proofs to be difficult, and even when this is established; more evidence is needed to prove it as a *causal* risk factor. The matter is even more complicated due to the multidimensional view of depression where these risk factors are not isolated and not static.

There are some risk factors, which are setting factors like race, culture, age, gender and socioeconomic status. In general, there are biological, cognitive and social factors that increase the risk of depression. Biological factors include genetic and familial predisposition, alteration in the neural structures and sleep dysregulation and other regulatory methods. Cognitive factors include cognitive schemas, beliefs, assumptions, pessimism, low self-esteem, ruminative response style and negative cognitive style. Excessive reassurance seeking and negative feedback seeking are also direct risk factors for depression [66]. Other important risk factors include marriage and relationship issues, low social support and low income [67]. Chronic diseases like cardiovascular problems, diabetes mellitus, cancer, disability, and many other health problems can increase the likelihood of depression [68]. Anxiety and prior depression also increase the risk of depression [69]. There is robust evidence that major life events have strong relationship to depression [70]. Also, childhood adversity and negative core beliefs are a strong predictor of later major depression [71]. It heightens the sensitivity to future stress and makes depression more likely. Figure 1 shows schematic representation of risk factors.

World Health Organization (WHO) produced a comprehensive mental action plan. One of the ambitious objectives is the provision of comprehensive, integrated mental health and social care services in community setting and implementation of strategies for promotion and prevention. One of the major objectives of mental health action plan is to promote mental health and prevent mental disorders. To achieve this, it is necessary to provide technical support to help countries in selecting, formulating and implementing evidence-based and cost-effective best practices [72]. The global target is that by 2020, 80% of countries will have at least two functioning national multi-sectoral mental health promotion and prevention programs. If treatment of depression was effective and available to patients, the prevalence of depression should decrease. However, it has been shown that the prevalence is not changing and is not becoming an "epidemic" [73,74].

Prevention interventions

Most researchers and practitioners define prevention as the process of employing different interventions before the people meet the formal criteria, according to DSM-V, of a depressive disorder. There are many

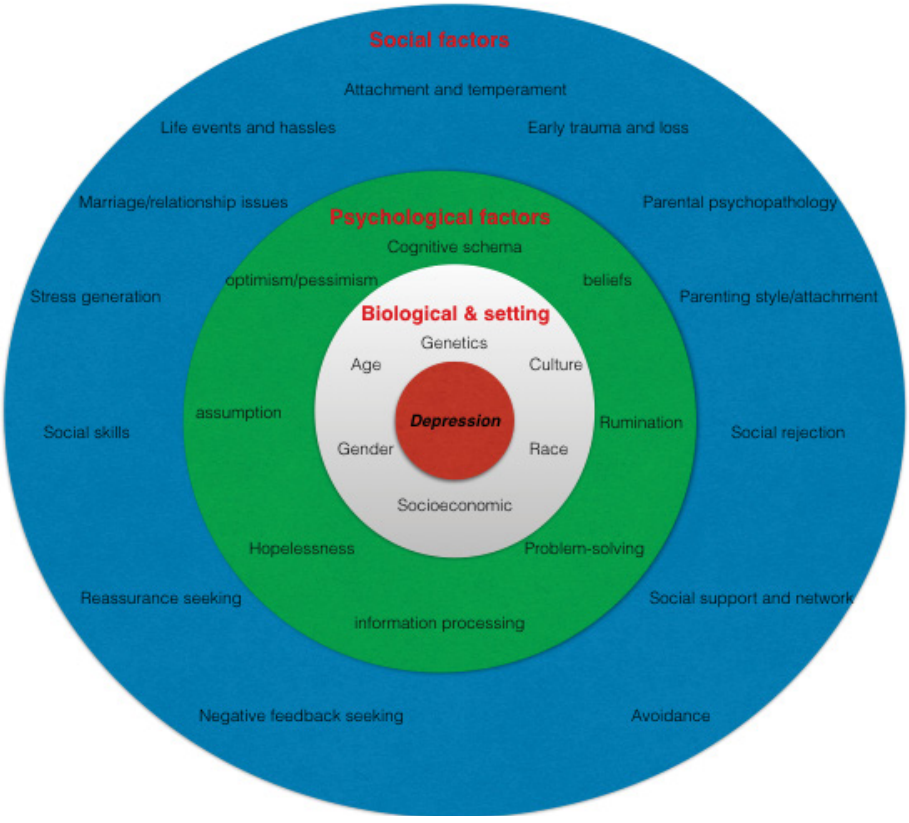

Figure 1: Schematic representation of risk factors.

interventions for depression prevention in high-risk groups. Many studies have been directed to adolescents at higher risk of depression [8-14,16,29,22,26,30,32]. There are also studies on pregnant women in effort to prevent postpartum depression [17,21,29,31]. In the following paragraphs, these preventive interventions will be discussed.

There are basically three type of intervention program delivery:

1. Universal: Preventive intervention programs that are usually targeting large groups e.g. all school students, all pregnant women attending antenatal clinic or all diabetic patients.

2. Selective: Preventive intervention programs targeting subgroups e.g. children of depressed parents, pregnant women in abusive or difficult relationship or diabetic patients with multiple complications.

3. Indicated: Preventive intervention programs targeting high-risk groups for developing depression e.g. adolescents, pregnant women or diabetic patients with sub-threshold depressive symptoms.

The content and venue of these programs are varied and depending on the characteristics of the targeted group(s). The following are the most studied programs:

School-based intervention programs

These programs are mainly for adolescents because they spend most of their time at schools. The following are the main programs that have been used in many countries and are both feasible and effective. These interventions are summarized in several recent meta-analysis and review articles of prevention programs in schools [16,38,75-77].

i. Universal programs

Resourceful adolescent program: consists of 11 weekly sessions of cognitive behavior therapy (CBT) and interpersonal therapy (IPT). They are delivered by psychologist. There was no improvement in the outcome when three family sessions were added [75].

Beyond-blue program: It is a ten-weekly session program delivered by teachers. The goal is to improve the youth protective factors (social and coping skills) and improve school climate [75].

Problem-solving for life program: It is an eight-weekly session program delivered also by teachers. The goal is to improve the adolescents' ability to modify harmful thoughts and use problem-solving skills. This is achieved by cognitive restructuring and problem-solving training [75].

ii. Selective programs

Penn resiliency program: It is a 12-weekly session program delivered by psychology master students to low-income and racial/ethnic minority students. It uses cognitive behavioral skills to address the link between thoughts and emotions to improve cognition and coping [16].

Aussie optimism program: It is a 20-weekly session program delivered by teachers to low-income students. It relies on improving optimistic thinking skills and social life skills. This in turn enhances cognition and social protective factors [16].

iii. Indicated programs

The feelings club: It is a 12-weekly session program delivered by psychologists to students who screened positive for internalization symptoms [16].

Personal growth class: It is a 20-weekly session program delivered by teachers, counselors or nurses to students who screened positive for suicide risk. The main component in this program is social support and life-skills training [16].

Family-based intervention programs

In this approach, children of depressed patients, with sub-threshold depressive symptoms receive several sessions of cognitive behavioral intervention with focus on cognition reconstruction, effective communication skills and interpersonal problem-solving skills. Some programs address both adolescents and their parents [19].

Internet and computerized intervention programs

The Internet and computerized cognitive behavioral interventions have been shown to lead to reduction in depressive symptoms among men and adolescents aged between 12-25 years [8,13,27,33,36,42,52,78,79]. These methods were not effective for younger children aged 5-11 years [8].

Text messaging intervention program

A recent study, involving adolescents attending emergency department at risk of depression, has shown that brief in-person discussion in the emergency, followed by 8-week automated messaging intervention is feasible and acceptable [65]. Telephone calls has also been used to deliver these interventions for older patients unable to attend the clinic due to pain [58].

Clinic-based prevention program

Depression prevention programs have been offered to high-risk patients suffering from arthritis in the setting of outpatient clinic. The cognitive behavioral therapy program was feasible and acceptable [58]. This approach is also offered to a large variety of people attending the hospital for various reasons including pregnant women for antenatal care, post-traumatic or geriatric patients [18,37,78,80,81].

Community-based prevention program

Depression prevention intervention programs at a community level aims usually to raise awareness about depression. Education and universal screening leads to selective and indicated intervention in at high-risk groups and their caregivers. There are many studies which has proven that this approach is effective, feasible and acceptable to people [17,50,82]. Other studies are still in progress [83].

Content of the intervention programs

The proposed interventions to prevent depression are as diverse as the groups being targeted and the level at which the intervention is made. For example, the study, conducted in Japan to prevent depression among elderly people, starts with universal interventions in the form of raising awareness through education [50]. Then they offered universal screening and those considered at high risk were offered selective intervention in the form of psychosocial follow-up with community support.

The most common intervention in many studies is cognitive-behavioral therapy (CBT) intervention. CBT comprised the basis of 84% of the programs in different interventions. The programs vary from as simple as having more fun activities to combined cognitive behavioral therapy and interpersonal therapy, social skills programs, creative-expressive experiential therapy, mindfulness-based cognition therapy program, wellbeing therapy program and psychoeducational program [75]. The intervention sessions can be built and delivered to meet the needs of the group. Interestingly, even CB bibliotherapy, in the form of self-help book or brochure, can be effective in those with negative attributional style [48,84]. Any intervention program is

S. No	Psychotherapeutic interventions
1.	Cognitive behavioral therapy (CBT)
2.	CBT bibliotherapy
3.	Interpersonal problem-solving skills
4.	Mindfulness-based CBT
5.	Life problem solving skills
6.	Effective communication skills
7.	Supportive-expressive intervention
8.	Active coping skills
9.	Optimistic thinking skills
10.	Combating demoralization
11.	Relaxation skills
12.	Breathing control training
13.	Social skills program
II	**Non-psychotherapeutic interventions**
1.	Fun and pleasant activity
2.	Improving home dynamics
3.	Improving school climate
4.	Exercise therapy
5.	Nutrition and nutritional supplements
III	**Pharmacotherapy**
1.	Hydrocortisone
2.	Aspirin
3.	Propranolol
4.	Morphine
5.	Benzodiazepines
6.	Oxytocin

Table 1: Forms of interventions for depression prevention.

usually delivered in weekly sessions each lasting for 45-120 minutes. The content is tailored to the group's needs. In addition to these interventions, participants are usually advised to monitor themselves at home, practice what they learned and practice self-reinforcement. Table 1 shows the most common forms of interventions for depression prevention that have been evaluated in the literature.

There are other less studied interventions related to food or nutritional supplement [11,21,25,41,44,45]. Omega-3 a highly unsaturated fatty acid (HUFAs), number of studies was concerned with the addition of Omega-3 to the treatment regimen of already depressed patients. Which have been shown it to have beneficial effect to alleviate depressive symptoms in patients already receiving antidepressant treatment [35,83,85]. However, the evidence is not conclusive as the results of different studies are not univocal. There is a current underway randomized, double-blind, placebo-controlled study to look at the effect of fish oil in alleviation of depression in young people [7]. The results are expected very soon.

Very rarely, pharmacotherapy is used for prevention of depression. Many drugs have been used in the acute stage of certain circumstances e.g. military combat injury, post-traumatic events and in disaster regions. The drugs that have been used include hydrocortisone, propranolol, benzodiazepines, aspirin, morphine and oxytocin [39,80,82].

Exercise, Yoga and increasing physical activities in general were evaluated regarding their effectiveness in treating or preventing depression [86]. A systematic review of the literature and meta-analysis of the available trials showed a small number of low-moderate quality trials. Only weak evidence that exercise can prevent depression due to the significant heterogeneity and wide confidence intervals [87]. Larger high quality trials are needed to answer this question.

Conclusion

As a matter of fact, depression is a huge burden on the affected individual, the caregiver, the family, the society and the whole world. The associated morbidity, mortality and the enormous cost of dealing with depression, makes the task of depression prevention an urgent matter. This review article suggests that employing specific strategies and interventions that are targeted at high-risk individuals or groups may reduce rates of depression, its associated mortality and morbidity. The scientists have had their share of work in providing the evidence through very extensive trials, that depression prevention is effective, feasible and acceptable. Finally, more longitudinal studies and clinical trials are required to specify the impact of preventive strategies on incidence, prevalence, mortality and morbidity of depression and its treatment.

Pending such research, clinicians should consider both current active pharmacological and psychological treatments and benefits of preventive strategies and approaches to overcome barriers to accessing treatment for depressive disorders. Now it is the duty of everyone to translate this knowledge into an action. Policy makers, media, clinicians, teachers, nurses and midwives all share the responsibility. It starts with universal intervention as simple as just raising the awareness of the public to the magnitude of the problem and the available prevention programs, all the way to designing the suitable intervention program for each high-risk group.

Limitation of the study

This is not a systematic review of the literature related to depression prevention. Systemic reviews were done in specific high-risk groups as it is not feasible to review all intervention in all groups systematically. It is intended to review the most recent literature and to offer broad-based summary of the prevention interventions to general readers.

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Future Scope

The evidence is compelling that depression can be prevented. The task is to translate this knowledge into an actual action that will change the life of many people and will eventually save life and money. More studies are needed to answer the questions related to other less studied preventive measures like food, nutritional supplements and exercise.

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