Chapter 6
Depression

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6.1 Definition/Diagnostic Criteria

Depression is a common and serious mental health disorder that affects mood, thoughts, and behaviors. Depressive disorders are characterized by sadness, loss of interest or pleasure, disruptions to appetite or sleep, low energy, poor concentration, and low self-worth. Symptoms of depression can impact an individual's functioning in daily life, relationships, and work. The two most common forms of depressive disorders are major depressive disorder (MDD) and persistent depressive disorder (dysthymia). MDD is comprised of major depressive episodes that are defined by persistent depressive symptoms and functional impairment over at least 2 weeks. These episodes can be categorized as mild, moderate, or severe based on the symptom profile and level of functional impairment. Persistent depressive disorder is a chronic form of mild depression, involving ongoing depressive symptoms over at least 2 years, which may include episodes of major depression along with periods of less-severe symptoms (American Psychiatric Association, 2013). The criteria for diagnosis of MDD, as defined by the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)*, include the presence of five or more of nine specific symptoms (listed below), one of which is either depressed mood or loss of interest or pleasure, most of the time during a 2-week period:

1. Depressed mood most of the day, nearly every day
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day

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3. Significant weight loss when not dieting, weight gain, or decrease or increase in appetite nearly every day
4. Insomnia or hypersomnia nearly every day
5. A slowing down of thought and a reduction of physical movement or increased restlessness, observable by others
6. Fatigue or loss of energy nearly every day
7. Feelings of worthlessness or excessive or inappropriate guilt nearly every day
8. Diminished ability to think or concentrate or indecisiveness nearly every day
9. Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

These symptoms must cause the individual clinically significant distress or impairment in social, occupational, or other important areas of functioning. The symptoms must not be a result of substance use or another medical condition (American Psychiatric Association, 2013).

The presentation of depression in children and adolescents is similar to that of adults, with differences that stem from children's developmental stages (Birmaher et al., 1996). For example, irritability, low frustration tolerance, somatic complaints, withdrawal, and vegetative symptoms (changes in appetite, weight, energy, and insomnia) are more common in adolescents with MDD than adults with MDD. Loss of interest (anhedonia), concentration problems, delusions, and suicide attempts are more common in adults with MDD (Birmaher et al., 2007; Mullen, 2018; Rice et al., 2019). Similarly, characteristic symptoms of depression can look different for women and men. Women with depression are more likely to report atypical symptoms, somatic complaints, and comorbid anxiety symptoms (Parker & Brotchie, 2010), while men with depression more often experience acts of aggression, anger, substance use, and risky behavior (Martin et al., 2013).

The etiology of depression is complex, and it is likely caused by a combination of psychological, social, behavioral, and biological factors. Depression can be triggered by adverse events, physical illness, loss, or other stressors, or it can occur without a specific antecedent. If triggered by a specific event, the symptoms of depression and their impairment are greater than would be expected from a typical stress response. MDD often occurs alongside other serious physical and mental illnesses. In fact, risk of depression is elevated for people with one or more chronic disease (Katon, 2011; Moussavi et al., 2007). Likewise, MDD increases the risk of several physical illnesses, including diabetes mellitus, heart disease, stroke, hypertension, obesity, cancer, cognitive impairment, and Alzheimer's disease morbidity (Penninx et al., 2013). Comorbid depression can cause negative health consequences, including increased mortality, disability, and poor quality of life, adding to disease burden and healthcare costs (Gold et al., 2020; Kang et al., 2015). A leading cause of disability worldwide, depression is a significant contributor to global economic and disease burden, accounting for 10% of the world's total nonfatal disease burden (Gold et al., 2020; Kessler, 2012; Mnookin, 2016; World Health Organization, 2016).

6.2 Prevalence and Age of Onset

Although its prevalence varies by region, depression is common all over the world and affects over 300 million people globally, equivalent to 4.4% of the world's population (World Health Organization, 2017). The average age of onset for MDD is 15 years old, although symptoms of mental health disorders can emerge a few years before meeting diagnostic criteria (National Research Council and Institute of Medicine, 2009). Rates of depression increase sharply as children transition to adolescence (Fergusson & Horwood, 2001; Mojtabai et al., 2016). Notably, the prevalence of MDD is twice as high in older adolescents as compared to younger adolescents, particularly for severe MDD (Avenevoli et al., 2015). Approximately 18.1% of US adolescents ages 12–17 have experienced major depression in their lifetime (Lu, 2019). The 12-month prevalence of major depressive episodes in adolescents increased from 8.7% in 2005 to 11.3% in 2014 (Mojtabai et al., 2016).

Among adults in the United States, the lifetime prevalence of MDD is 10.6%, and the 12-month prevalence is 10.4% (Hasin et al., 2018). In 2017 alone, 17.3 million adults in the United States were estimated to have had at least one major depressive episode, which represents 7.1% of the country's adult population. The prevalence of adults who had a major depressive episode was highest among those ages 18–25 (13.1%) (World Health Organization, 2017). Individuals tend to experience multiple episodes of depression during their lifetime. Among adults in the United States, the average number of lifetime episodes is 3.86 (Hasin et al., 2018). Over half of people who recover from a first major depressive episode will have another episode in their lifetime, and over three quarters of those who have had two episodes will experience a recurrence (Burcusa & Iacono, 2007).

Rates of depression in older patients are thought to be similar to the general adult population, though higher among those living in long-term care institutions. Depression was identified in as many as 50% of nursing home residents in their first year of stay, indicating a possible causal role for institutional stays in the onset of depression (Hoover et al., 2010).

There are no gender differences in the prevalence of depression among children (Girgus & Yang, 2015), although boys report a greater number of depressive symptoms than girls (Twenge & Nolen-Hoeksema, 2002). Beginning in adolescence, the burden of depression falls disproportionately on girls and women; girls have been found to experience a two- to threefold risk of MDD compared to adolescent boys (Avenevoli et al., 2015). Gender differences in prevalence appear after the pubertal stage and may be attributed to a number of social, biological, and psychological factors (Van de Velde et al., 2010; Yoon & Kim, 2018). These differences continue into adulthood when MDD is nearly twice as prevalent in women as it is in men (Seedat et al., 2009; Van de Velde et al., 2010).

Low-income adults have higher rates of 12-month MDD (Hasin et al., 2018). By race, 12-month MDD prevalence is lower in African American, Asian/Pacific Islander, and Hispanic adults than in White adults. Despite greater exposure to social stressors, Black adults in the United States have lower rates of MDD than

non-Hispanic Whites (Barnes et al., 2013), although when Black adults do develop depression, it is generally more chronic and more severe (Williams et al., 2007). This pattern, whereby Black adults report equal or lower rates of many mental health disorders, including depression, relative to White adults, has been termed a "black-white mental health paradox." Erving et al. (2019) found that the black-white mental health paradox is consistent across gender and is still present after adjusting for socioeconomic factors (Erving et al., 2019).

6.3 Risk Factors

A risk factor, as defined by Kazdin et al. (1997), is an antecedent condition associated with an increase in the likelihood of an outcome, in this case, diagnosis of depression. Risk factors for depression can be considered specific or nonspecific. Specific risk factors are those that are related to the onset of depression. Nonspecific risk factors increase rates of depression as well as other psychiatric disorders, especially when they co-occur (Muñoz et al., 2012). Prevention efforts must address both specific and nonspecific risk factors. It is important to note that there is an overlap between these categories, which are meant only as conceptual tools. Key risk factors for depression are briefly outlined in this section.

6.3.1 Parental Depression

Having a parent with depression is one of the strongest and best studied risk factors for the development of depression (DiFonte & Gladstone, 2017; England & Sim, 2009; Evans et al., 2005; Goodman et al., 2011). Relative to offspring of nondepressed parents, offspring of parents who are depressed are at three times the risk for developing depressive disorders (Weissman et al., 2006). Children whose parents have depressive symptoms or a depressive disorder have more internalizing disorders (Pettit et al., 2008), show poorer academic performance (Shen et al., 2016), report more negative life events, use fewer positive emotion regulation strategies (Loechner et al., 2020), and report more friendship instability (Evans et al., 2005). Goodman and Gotlib's (2002) integrative model of the transmission of risk from depressed mother to offspring incorporates biological and environmental mechanisms and markers associated with risk. This model proposes that mechanisms of risk transmission overlap and interact with one another.

Familial transmission of depression can be explained in part by genetic effects and heritability. In a longitudinal study of a high-risk sample (i.e., a sample of biological relatives of individuals with MDD), the heritability of MDD was found to be 67%, adjusting for age and gender (Guffanti et al., 2016). These heritability rates contrast with the heritability of depression in community samples, which range from 31% to 42% in studies of twins and adopted children (Sullivan et al., 2000).

Predisposition to depression may be influenced by the interaction of environment and genome, a process known as phenotypic plasticity (Bagot & Meaney, 2010; Hochberg et al., 2011). In other words, an individual inherits genetic makeup from a depressed parent, but depression emerges only with the combination of genetics and certain environmental effects (Beardslee et al., 2011). For example, in a meta-analysis of the relation between the 5-HTT gene variation and stress, Bleys et al. (2018) found that people with one or two copies of the short allele in the 5-HTTLPR are more susceptible to depression when faced with stress. In addition, there is a research base for the effects of hippocampal volume (Rao et al., 2010) and cortical thickness (Bansal et al., 2016) on vulnerability to depression in children of depressed parents. Future research on genetic and biological factors involved in the intergenerational transmission of depression hold much potential (Beardslee et al., 2011).

Parental behaviors also play a significant role in the transmission of parental depression. Deficits in parenting skills may increase risk for children of depressed parents (Foster et al., 2008; Lovejoy et al., 2000; Middleton et al., 2009), particularly when combined with other external stressors, such as low socioeconomic status (Vreeland et al., 2019). Forehand et al. (2012) found that parents with depressive symptoms were more likely to engage in negative parenting practices, and Taraban et al. (2019) reported a positive correlation between overreactive parenting (i.e., anger and irritability when confronted with challenges from their children) and depressive symptoms in both mothers and fathers. Efforts to address the parenting practices of parents with depression through preventive interventions have yielded encouraging results (e.g., Beardslee et al., 2007; Forehand et al., 2012).

6.3.2 Cognitive Risk Factors

Cognitive models of depression are based on the notion that depression is caused not just by events but by the interpretation of those events. Beck's (1967, 1979) original theory on depressive self-schemas, maladaptive assumptions, and negative thoughts has driven research, suggesting that distorted thinking is associated with depressive symptoms and depressive disorders (Dozois & Beck, 2008), from early childhood (Leppert et al., 2019) through adolescence (Pössel & Pittard, 2019), young adulthood (Pearson et al., 2015), and into old age (Meyer et al., 2010). Cognitive risk factors (see Alloy et al., 2017 for a review) include learned helplessness (Abramson et al., 1978), pessimism (Schueller & Seligman, 2008), and ruminative response style (Kuyken et al., 2006; Spasojević & Alloy, 2001; Wisco & Nolen-Hoeksema, 2008).

6.3.3 Gender

Female gender is a known risk factor for depression. As noted earlier in this chapter, adolescent and adult women are at a twofold increase in risk for depression as compared to men (Avenevoli et al., 2015; Seedat et al., 2009; Van de Velde et al., 2010). In a meta-analysis examining gender differences in depression in national samples, Salk et al. (2017) reported that gender differences exist for both depressive symptoms and depressive diagnoses, the magnitude of the gender difference peaks in adolescence but exists across the lifespan, and gender differences in depression are most pronounced in countries with greater gender equity. Gender differences in depression may be attributable to psychosocial factors (i.e., increased likelihood of sexual abuse, higher rate of victimization, role overload, and financial disadvantage), neurochemical factors (i.e., activation of the hypothalamic-pituitary-adrenal axis and elevated cortisol levels), hormonal factors (i.e., gonadal steroid hormones and estrogen fluctuation during premenstrual and postpartum periods), and cognitive styles (i.e., ruminative coping styles) (Grigoriadis & Erlick Robinson, 2007).

6.3.4 Sociodemographic and Environmental Risk Factors

Social factors that are documented to increase rates of depression include income inequality (Patel et al., 2018); abuse and maltreatment (Widom et al., 2007); experienced discrimination of marginalized racial, ethnic, and gender groups (Patil et al., 2018); and stressful life events, such as interpersonal conflict, separation, loss, marital conflict or divorce, exposure to violence, and interpersonal functioning (National Research Council and Institute of Medicine, 2009). Reducing the burdens of environmental factors like poverty, exposure to violence, and maltreatment may help to reduce depressive disorders, particularly in children (National Research Council and Institute of Medicine, 2009). Many of these social and environmental risk factors are not specific to depression and present risk for a variety of other disorders and conditions as well.

There are also protective factors: environmental conditions, characteristics, or events that decrease the likelihood of depression and increase the likelihood of healthy outcomes (National Research Council and Institute of Medicine, 2009). Examples of modifiable protective factors for depression include healthy eating and sleep patterns (Cairns et al., 2014) and social support (Gariepy et al., 2016). Scott, Wallander, and Cameron (2015) review a range of individual (e.g., ethnic identity, self-esteem), family (e.g., parental support, familism), and social community (e.g., extracurricular activities, employment) protective mechanisms that are associated with lower risk for depression in racial/ethnic minority youth. Many depression prevention efforts aim to reduce or mitigate risk factors while building protective factors (National Research Council and Institute of Medicine, 2009).

It is a challenge to researchers who study risk factors to understand whether study findings represent risk factors or symptoms of MDD (Jeon et al., 2017). Though there is ample evidence to show that several risk factors are associated with depression, there is limited evidence proving a causal relationship for some risk factors. More longitudinal research is needed to better address this issue (Hammen, 2018).

The study of risk factors is complex, as many factors interact and contribute a small proportion of risk and patterns of risk vary between individuals. Risk factors must be understood within a developmental framework. Different types of risk factors interact over the course of development, and their occurrence may change over time across the lifespan (Schaakxs et al., 2017). As the onset of depression is most common during adolescence and early adulthood, identifying risk in early life is important to the prevention of depression (National Research Council and Institute of Medicine, 2009). Prevention efforts should be designed to address the multiple risk and protective factors associated with depression (Hoare et al., 2020). Risk profiles give guidance on which groups to target and the type of intervention that needs to be offered or designed for the intended target group. After all, some risk factors can be addressed using psychological interventions, while some require environmental intervention, and yet others cannot be changed, but their adverse effects can be mitigated by improving coping styles. Lastly, there are some risk factors that cannot be manipulated but can help to identify target groups or people in need of intervention (Muñoz et al., 2010).

6.4 Effective Screening

Screening for depression is important in the effort to prevent and treat depression. Evidence supports the benefits of screening for depression in conjunction with providing resources for prevention, treatment, and management of identified cases. The US Preventive Services Task Force (USPSTF) recommends screening for MDD among adolescents (ages 12–18 years), adults (age 18 and older), pregnant and postpartum women, and older adults, in clinical settings with "adequate systems in place to ensure diagnosis, effective treatment, and appropriate follow-up" (Siu, 2016; Siu et al., 2016, p. 381). Additionally, the American Academy of Pediatrics recommends annual universal screening of adolescents and monitoring of adolescents with depression risk factors (Zuckerbrot et al., 2018). The USPSTF suggests screening all adults who have not previously been screened, as well as considering risk factors, life events, and comorbidities to determine if high-risk patients should have additional screenings (Siu et al., 2016). There is little to no evidence of harm or adverse effects of screening for depressive disorders in adolescents, adults, and elderly patients (O'Connor et al., 2009; Siu, 2016).

6.4.1 Adolescents

Adolescent screening can take place in a variety of settings, including primary care and schools (Allison et al., 2014). Researchers have explored the use of paper screens, internet-based screens, and electronic screens that are accessed through a mobile device. There is little research comparing these screening methods to each other, but adolescents rarely refuse screening, although there are obstacles to using each method (Zuckerbrot et al., 2018). Several instruments have been tested in adolescent populations. The Patient Health Questionnaire (PHQ)-2 and PHQ-9 (Richardson, McCauley, et al., 2010; Richardson, Rockhill, et al., 2010) are self-report measures derived from the PRIME-MD interview (Spitzer et al., 1999) that assess for mental disorders. The items address severity of current symptoms over the past 2 weeks. The measures have demonstrated adequate psychometric properties. Evidence suggests the optimal cutoff scores for adolescents fall between 8 and 11 for the PHQ-9 (Allgaier et al., 2012; Richardson, McCauley, et al., 2010) and 2–3 for the PHQ-2 (Allgaier et al., 2012; Richardson, Rockhill, et al., 2010). The PHQ-9 contains one item (item 9) that assesses for suicidal thoughts and behaviors; evidence suggests that an affirmative response to item 9 indicates increased risk of suicide attempt and death (Rossom et al., 2017; Simon et al., 2013). Additionally, the Patient Health Questionnaire for Adolescents (PHQ-A) is an instrument that closely resembles the PHQ-9 and was designed to assess disorders that are likely to be present among adolescents (Johnson et al., 2002). In addition to the PHQ-2 and PHQ-9, the Center for Epidemiologic Studies Depression (CES-D) scale is a short self-report scale designed to measure current depressive symptomatology. It contains 20 items about symptoms that occurred in the past week (Radloff, 1977). The recommended cutoff score for the CES-D is 16, but there is evidence that a cutoff score of 20 yields a more accurate trade-off between sensitivity and specificity (Vilagut et al., 2016). A shortened, 10-item version of the CES-D has also been validated in several populations, including adolescents and older adults (Andresen et al., 1994; Bradley et al., 2010). The Beck Depression Inventory II (BDI-II) is another widely used self-report measure of the severity of depressive symptoms in adolescents and adults. It is designed for individuals 13 years and older, contains 21 items, uses a recall period of 2 weeks, and has strong psychometric properties (Beck et al., 1996; Jackson-Koku, 2016). The BDI-II has been tested and validated for use in adolescent samples (Lee, Lee, et al., 2017; Osman et al., 2008). If using measures with suicide screening questions, clinical teams must be prepared to further assess and provide sustained follow-up care and safety planning.

6.4.2 Adults

The screening measures described for adolescents are also used in adult populations. The Patient Health Questionnaire (PHQ)-2 and PHQ-9 are the most widely used measures for screening adults in primary care (Maurer et al., 2018; Mitchell et al., 2016). For adults, the optimal cutoffs for the PHQ-2 and the PHQ-9 are 2 and 10, respectively (Arroll et al., 2010; Mitchell et al., 2016). The CES-D and BDI-II are also used regularly with adults.

6.4.3 Pregnant and Postpartum Individuals

Screening is important among women who are pregnant and those who have just given birth. Perinatal depression includes major and minor depressive episodes that occur during pregnancy (prenatal depression) and in the first 12 months after pregnancy (postpartum depression). It is one of the most common medical conditions during pregnancy and the postpartum period (American College of Obstetricians and Gynecologists, 2018). The prevalence of postpartum depression has been estimated at 17%, though it often goes undetected and untreated, negatively affecting the well-being of mothers, infants, and family members (Letourneau et al., 2012; Shorey et al., 2018; Soe et al., 2016). The USPSTF and the American College of Obstetricians and Gynecologists recommend screening all postpartum women for depression at least once during the perinatal period, which may be done during postpartum visits (American College of Obstetricians and Gynecologists, 2018; Siu et al., 2016). In addition, the American Academy of Pediatrics recommends that physicians screen mothers for depression during the infant's 1-, 2-, 4-, and 6-month well-child visits (Earls et al., 2019). Women with current depression or anxiety or a history of mood disorders, risk factors, or suicidal thoughts should be screened and closely monitored. Screening pregnant and postpartum women for depression may reduce depressive symptoms for women with depression and may reduce the prevalence of depression within the population (O'Connor, Rossom, Henninger, Groom, & Burda, 2016). The most used screening tools are the Edinburgh Postnatal Depression Scale (Cox et al., 1996), the Postpartum Depression Screening Scale (Beck & Gable, 2000), and the PHQ-9.

6.4.4 Older Adults

Depression screening is important in older adults, as the prevalence of depression is high among elderly and institutionalized adults (Hoover et al., 2010). Identifying depression in older adults can be challenging because depression may manifest in somatic complaints that are common symptoms in older patients and because

depression is more likely to be comorbid with other physical diseases (Rodda et al., 2011). Multiple measures exist for use specifically with elderly populations. The Geriatric Depression Scale (GDS), created originally by Yesavage et al. (1982), is the instrument most widely used for depression screening in older adults (O'Connor, Rossom, Henninger, Groom, Burda, Henderson, et al., 2016). Unlike general screening tools, the measure does not assess for somatic symptoms, as they may be attributed to common comorbid physical conditions and the process of aging. The original GDS consists of 30 items, though several briefer versions have been used, most often the GDS-15, which has been shown to be as or more effective than the GDS-30 in identifying cases of depression (Mitchell et al., 2010). The standard cutoff scores for the GDS-30 and GDS-15 are ≥10 and ≥ 5, respectively (Tsoi et al., 2017). The Even Briefer Assessment Scale for Depression (EBAS-DEP) (Allen et al., 1994) contains eight items and has a standard cutoff score of ≥7. Finally, the Cornell Scale for Depression in Dementia (CSDD) (Alexopoulos et al., 1988) is a 19-item measure designed specifically for assessing depression in patients with dementia (Alexopoulos et al., 1988; Tsoi et al., 2017).

6.4.5 Considerations for Screening

Screening measures in primary care are typically used to identify individuals who are currently experiencing MDD but may also be used to identify individuals who are experiencing depressive symptoms. If screening tools are used purposely to identify subsyndromal individuals or to measure depressive symptoms, different sensitivities, specificities, and cutoff points should be considered. The USPSTF recommendations for screening are not focused on this distinction. Several depression prevention intervention trials (Asarnow et al., 2009; Gladstone et al., 2015; Lewandowski et al., 2016) utilize screening measures to purposely screen for depressive symptoms and disorders in order to test preventive interventions or understand patterns in adolescent screening. For example, Van Voorhees et al. (2020) used the PHQ-9 to screen for depressive symptoms as inclusion criteria for participation in a randomized controlled trial of Competent Adulthood Transition with Cognitive-behavioral Humanistic and Interpersonal Training (CATCH-IT), a preventive intervention designed to prevent the onset of major depressive episodes in adolescents with subthreshold depressive symptoms or prior depressive episodes. Similarly, a randomized controlled trial of a group cognitive-behavioral preventive intervention used a score of 20 or more on the CES-D to determine eligibility based on subthreshold depressive symptoms (Beardslee et al., 2013; Garber et al., 2009).

6.5 Review of Evidence: What Is Evidence-Based Prevention?

The Institute of Medicine (IOM) of the United States has published two reports advocating for the development, evaluation, and implementation of preventive interventions for mental, emotional, and behavioral disorders, highlighting major depression as an area with great potential for prevention efforts (Mrazek & Haggerty, 1994; National Research Council and Institute of Medicine, 2009). The earlier, 1994 Institute of Medicine report made an effort to clearly define the word "prevention," noting that progress in the field of prevention had been hampered by an unclear definition and moving away from the practice of using the term "prevention" to describe research and practice in the realm of treatment, because treatment of depression can prevent subsequent episodes and symptoms of the disorder. The 1994 report, in contrast, proposed a clear distinction between treatment and prevention: interventions that take place before the onset of a clinical episode are preventive, and interventions that take place after onset are treatment (Mrazek & Haggerty, 1994, p. 23). This definition was maintained in the 2009 IOM report (National Research Council and Institute of Medicine, 2009).

Ideally, preventive interventions, once administered, would be effective over the life course; current prevention methods, however, have not shown lifetime effects. Just like vaccines, preventive interventions for depression may need to be administered or boosted during multiple developmental stages of life. Muñoz et al. (2012) conceptualize the prevention of depression as delaying onset during key developmental periods when individuals may be more vulnerable to depressive episodes. From a developmental perspective, different preventive approaches may be required for different stages and common life events or transitions.

The best way to test prevention efficacy is through a randomized controlled trial (RCT). Most RCTs test whether incidence of MDD (onset of new clinical episodes) and/or depressive symptoms is reduced in the experimental condition compared to the control. Reduction in symptoms or maintenance of subthreshold symptom level would indicate prevention of major depressive episodes and therefore the prevention of depression. In order to conduct prevention RCTs, it is important to identify the target population, the incidence of depression in that population, and the sample size required to yield significant results. Typically, depression prevention trials require participants to be evaluated with a validated diagnostic measure to ensure they do not meet the criteria for clinical depression at baseline and at later timepoints to determine if participants have onset of MDD during the trial. Significantly lower incidence in the experimental group indicates a preventive effect (Muñoz et al., 2012). Many analyses of the effectiveness of preventive interventions look at the number needed to treat (NNT), which is the number of individuals who must receive the intervention in order to prevent one case of depression, and the incidence rate ratio (IRR), which is the incidence rate of developing depression in experimental participants compared to the incidence rate in control participants (Muñoz et al., 2010).

In the past two decades, hundreds of RCTs aimed at preventing the onset of depressive episodes have been published, along with several systematic reviews of the topic. Bellón et al. (2015) conducted a systematic review of systematic reviews and meta-analyses, accounting for 12 reviews of 156 trials and over 56,000 participants, in which they found a small to medium preventive effect of depression prevention interventions. They conclude that depression is preventable. There are, however, a series of challenges to implementing preventive interventions for depression. Prevention has not been implemented widely, and adherence to prevention programs has been a problem. Populations at highest risk may be the least motivated to participate in prevention programs (Cuijpers et al., 2010). In addition, much of the extant prevention research only presents short-term outcomes for preventive interventions.

6.5.1 Children and Adolescents

Research on the onset of depression suggests that the ideal window for prevention efforts occurs during childhood and adolescence, 2–4 years before the age of highest risk for depression onset (National Research Council and Institute of Medicine, 2009). The presence of depressive symptoms in adolescence is a strong predictor of the development of MDD later in life (Kovacs & Lopez-Duran, 2010). Numerous RCTs have been conducted to test preventive interventions for depression in adolescents. Meta-analytic evidence suggests small positive effects from child and adolescent depression prevention interventions for depressive symptoms post-intervention and depression diagnosis up to 12 months (Hetrick et al., 2016), though there is a need for continuing research in this area. There have been several systematic reviews and meta-analyses that have studied the efficacy (both short and long term) of these programs, moderators of intervention effects, and other important considerations, such as cost-effectiveness, ability to be used widely, and ability to be easily taught. Such reviews have contributed to the growing wealth of knowledge in the field of prevention and have identified factors that influence outcomes of preventive interventions in order to optimize intervention effectiveness.

6.5.1.1 Prevention Type/Target Population

Adolescent depression prevention interventions that target subgroups at higher risk for depression have been found to be more effective than interventions provided to an entire population or community (Hetrick et al., 2016; Horowitz & Garber, 2006).

6.5.1.2 Therapeutic Approach

Preventive interventions for depression in children and adolescents are most often based on cognitive-behavioral and interpersonal approaches (Hetrick et al., 2015), in part due to the success of these types of interventions in the treatment of depression (Kaslow & Thompson, 1998). There is evidence that the content of the intervention, or therapeutic approach, modifies the effect size. Cognitive-behavioral therapy (CBT) can reduce the risk of developing depression, especially when used in targeted populations (Hetrick et al., 2015), and may be more effective than other therapeutic approaches for reducing depressive symptoms in children and adolescents (Dray et al., 2017). Interpersonal psychotherapy (IPT) has also shown promise in preventing depression (Hetrick et al., 2015).

6.5.1.3 Depressive Symptoms

Conejo-Cerón et al. (2020) reported mixed results for the effect of baseline depressive symptoms on intervention outcome for adolescents. Several intervention trials have found that elevated baseline symptoms of depression led to better outcomes (Brière et al., 2014; Gladstone et al., 2018; Horowitz et al., 2007; Müller et al., 2015). A handful of studies documented no moderating effects of baseline depressive symptomatology (Brent et al., 2015; Duong et al., 2016; Garber et al., 2009; Gau et al., 2012).

6.5.1.4 Personnel Delivering the Intervention

There is some data showing that intervention trials using professional interventionists or mental health professionals have favorable effects, relative to interventions delivered by other kinds of providers or teachers (Stice et al., 2009; Wahl et al., 2014).

6.5.1.5 Intervention Setting

The setting in which the intervention is delivered is important to consider, though there has been little comparison between settings for delivery of preventive interventions for children and adolescents. There is, however, meta-analytic evidence supporting prevention effects in school-based interventions (Calear & Christensen, 2010b; Feiss et al., 2019; Werner-Seidler et al., 2017) as well as trials reporting preventive effects in primary care settings (Gillham et al., 2006; Saulsberry et al., 2013).

6.5.1.6 Age

Several meta-analyses of child and adolescent depression prevention interventions report that age moderates the effect size of adolescent prevention programs. Specifically, samples with older adolescents saw greater effect sizes (Feiss et al., 2019; Horowitz & Garber, 2006; Stice et al., 2009). Notably, a systematic review by Conejo-Cerón et al. (2020) found inconsistent evidence for age as a moderator of intervention effects.

6.5.1.7 Gender

Evidence indicates that gender can moderate outcomes of depression prevention trials. Stice et al. (2009) found that samples with more females produced larger effect sizes in depressive symptoms and risk reduction. Horowitz and Garber (2006) also found in a meta-analysis including college students that studies with more female participants had greater effect sizes.

6.5.1.8 Race

Race has also been found to moderate depression prevention programs (Conejo-Cerón et al., 2020; Feiss et al., 2019; Stice et al., 2009). Understanding how factors related to social demographics moderate program effectiveness is important to ensuring equity and inclusion in the future of prevention research. For example, culturally sensitive practices like groups made up of same-race participants or same-race therapists are beneficial to the experience and outcomes of participants who belong to minority groups (Chang & Yoon, 2011; Griner & Smith, 2006; Planey et al., 2019).

Other noteworthy moderators that may increase efficacy of youth preventive interventions include lower dose or shorter duration, use of homework assignments (Stice et al., 2009), lower use of substances, and lack of parental depressive symptoms (Conejo-Cerón et al., 2020).

6.5.2 Adults

Although several meta-analyses focus specifically on preventive interventions for children and adolescents, there has been less research on the prevention of adult depression. The focus on child and adolescent depression may be due to the fact that onset of depression and depressive symptoms typically occurs during adolescence (National Research Council and Institute of Medicine, 2009). There is evidence, however, that psychological and psychoeducational depression prevention

interventions can have small to moderate effect sizes in preventing adult depression as well (Conejo-Cerón et al., 2017; Cuijpers et al., 2008; van Zoonen et al., 2014).

6.5.2.1 Prevention Type/Target Population

In a meta-analytic review of depression prevention interventions for adults, Cuijpers et al. (2008) found no differences between target populations or intervention type, and van Zoonen et al. (2014) reported no difference between prevention types (selective, indicated, or universal), although their analysis included only two universal prevention trials.

6.5.2.2 Therapeutic Approach

In a meta-analytic review of depression prevention trials, van Zoonen et al. (2014) found that data on the number needed to treat (NNT) did show differences between CBT (NNT = 71), IPT (NNT = 7), and other intervention approaches (NNT = 12). Cuijpers et al. (2008) also found subgroup differences indicating that interventions using IPT were more effective than those using CBT but reported these findings cautiously, given the small number of IPT interventions examined.

6.5.2.3 Depressive Symptoms

A systematic review conducted by Conejo-Cerón et al. (2020) found some evidence for moderating the effects of baseline depressive symptomatology on intervention effects in adults. Specifically, Allart and colleagues (2007) reported that lower levels of depressive symptoms at baseline were associated with fewer symptoms post-intervention, and other trials (Barrera et al., 2015; Lara et al., 2010; Seligman et al., 1999) revealed that elevated baseline depressive symptoms were associated with a greater reduction of symptoms post-intervention. Several studies reported no moderating effects of baseline depressive symptoms.

6.5.2.4 Intervention Setting

There is evidence to support effective prevention interventions for adults in primary care settings (Conejo-Cerón et al., 2017; Willemse et al., 2004). There has been some research suggesting small positive effects of universal depression prevention interventions in workplace settings, but additional research in this area is necessary (Bellón et al., 2019; Tan et al., 2014).

6.5.2.5 Age

The evidence for age effects of adult prevention trials is inconsistent. While age was not found to moderate intervention effects in a meta-analysis by van Zoonen et al. (2014), Conejo-Cerón et al. (2020) reported that lower age was found to be associated with greater intervention effect.

6.5.2.6 Gender and Race

There is little to no evidence to support gender and race differences in the effectiveness of depression prevention interventions for adults (Conejo-Cerón et al., 2020).

6.6 Universal, Indicated, and Selective Prevention

The 1994 IOM report (Mrazek & Haggerty) outlines the three types of prevention for mental health disorders. Universal prevention targets the general public, community, or population regardless of risk level (e.g., a health education curriculum offered to all high school freshmen in a community). Indicated prevention is aimed at individuals who display symptoms of a mental health disorder but do not meet clinical diagnostic criteria. An example of an indicated preventive intervention is one that teaches depression prevention strategies to individuals who have screened positive for subthreshold clinical symptoms. Selective prevention is aimed at members of a subgroup who are at higher risk for a mental health disorder, such as children of depressed parents.

Meta-analytic data indicate that selective and indicated prevention programs for children, adolescents, and adults are more effective than universal programs, though they typically show only small to moderate effects. This trend has been observed several months post-intervention in multiple analyses (Hetrick et al., 2016; Horowitz & Garber, 2006; Mendelson & Eaton, 2018). This may be attributable to the finding that, in universal samples, participants in the control group often do not show a high enough level of symptoms at follow-up to demonstrate a preventive effect. In selective and indicated studies, the sample, which is targeted for higher-risk status, is likely to have a higher level of symptoms at baseline and to show an increase in depressive symptoms over time (Horowitz & Garber, 2006). Adding to the challenge of conducting universal prevention studies, in order to achieve statistically significant power, studies would need extremely large numbers of participants, in the tens of thousands, which is more than typically feasible (Cuijpers, 2003). Although universal interventions do not have to take the step of screening for risk and depressive symptoms, they require service delivery to large numbers of individuals with low risk or little need. There is, however, potential for universal prevention programs to be cost-effective despite low effect sizes if they are able to prevent even a somewhat small number of cases of depression at a low cost

(Horowitz & Garber, 2006). In fact, Lee, Barendregt, et al. (2017) found that school-based universal and indicated prevention involving group-based psychological interventions can be cost-effective. There may be other benefits to universal interventions, including reduction in stigma of singling out individuals and lower drop-out rates.

Universal, indicated, and selective interventions may be conducted in a variety of settings with children, adolescents, and adults. Schools are a common setting for preventing depression in children and adolescents. School settings easily facilitate the delivery of universal interventions, but subgroups can be targeted within school settings as well. In fact, a systematic review of school-based prevention showed that indicated preventive interventions were most effective in schools (Calear & Christensen, 2010b). School-based interventions offer an accessible way to reach children and adolescents and the ability to implement population-level interventions (Werner-Seidler et al., 2017). The equivalent of a school setting for adults may be the workplace, where universal interventions may be feasible (Tan et al., 2014). The primary care setting is amenable to all kinds of prevention efforts (Conejo-Cerón et al., 2017).

6.7 Stepped Care Prevention Model

6.7.1 Role of the Primary Care Provider and the Behavioral Care Provider

The aim of a stepped care model for depression prevention is to identify patients with depressive symptoms and connect them with an intervention that will lead to symptom improvement and prevent future symptoms or development of MDD. While some stepped care models have patients move from lower-intensity steps to higher-intensity steps, other models use assessments to determine the level of intervention intensity at which a patient should start. When embedded in primary care clinics, stepped care models can reach patients who may be apprehensive about pursuing specialty mental healthcare.

In stepped care for depression, the primary care provider (PCP) collaborates closely with the behavioral care provider (BCP), who is embedded in the medical clinic. The initial role of the PCP is to identify patients who might benefit from depression prevention or treatment interventions. Many self-report, screening measures such as the Patient Health Questionnaire-9 item (PHQ-9), the Patient Health Questionnaire-2 item (PHQ-2), or the Beck Depression Inventory-II (BDI-II) provide a brief assessment of depressive symptoms to help PCPs determine which patients may need further follow-up. In addition, it is important for PCPs to conduct safety assessments to identify patients who are experiencing suicidal ideation or planning to engage in taking steps to hurt or kill themselves. Nearly half of patients who die of suicide have seen a PCP in the last month. This finding suggests that PCPs can play an important role in depression and suicide prevention.

Following these brief assessments, the PCP may coordinate with the BCP who may conduct further assessment or manage safety concerns. The BCP may conduct a more comprehensive assessment to understand the severity of symptoms and potential functional impairment related to symptoms. Furthermore, the BCP may assess for comorbid mental health concerns and work collaboratively with the patient to determine the best prevention plan or treatment intervention. In a stepped care model, the PCP and BCP collaborate across the steps in care. Some common steps included in stepped care models for depression prevention are detailed below.

6.7.2 Watchful Waiting

The first step of many stepped care models for depression is watchful waiting, sometimes called active monitoring. For a patient who reports mild symptoms on a depression screening measure, a PCP or BCP may decide the best course of action is to see if the patient's depressive symptoms remit on their own. No formal intervention is provided to the patient, but the PCP or BCP monitors the change in symptoms over time (typically ranges from every 2 weeks to 3 months; Iglesias-González et al., 2017; van Straten et al., 2010). Research on watchful waiting varies in regard to outcomes. One study found that of adolescents who screened positive for depression on the PHQ-9, 47% continued to screen positive at 6 weeks and 35% screened positive at 6 months. Higher baseline depression scores and a positive screen at 6 weeks were found to be associated with the persistence of a positive screen at 6 months (Richardson et al., 2012). Another study of adults in primary care found that only 9–13% of patients remitted from minor depression over a 1-month watchful waiting period (Hegel et al., 2006). Given this study only reported outcomes for the first month, it may be that a longer period of watchful waiting may have resulted in more patients remitting. Finally, a study of subthreshold depression and anxiety in visually impaired older adults demonstrated that just over a third of patients no longer qualified as having subthreshold depression after a 3-month watchful waiting period, while 18% met the criteria for depression or an anxiety disorder. Follow-up analyses suggested that female sex, adjustment problems due to vision loss, greater baseline symptoms, and a history of depressive disorder were associated with lower odds of recovery from subthreshold symptoms (van der Aa et al., 2015). Together, these studies suggest that watchful waiting can be an effective first step for some people who report elevated symptoms of depression on screening measures.

In conjunction with watchful waiting or as a step-up from watchful waiting, PCPs or BCPs may provide some brief psychoeducation or provide information regarding another self-guided, low-intensity intervention (Bauer & Areán, 2016; Iglesias-González et al., 2017; Van Straten et al., 2015).

6.7.3 Psychoeducation

Psychoeducation is a low-intensity brief intervention for depression. It may include passive methods of providing information through brochures and websites as well as active administration of psychoeducation, in which a professional or peer provides and discusses relevant information (Donker et al., 2009). The aim of psychoeducation is to provide patients with information on the symptoms of depression; how depression can affect peoples' thoughts, behaviors, and emotions; interventions; and how professionals will work with them to support prevention or recovery (Ratzliff et al., 2016). Many interventions start with psychoeducation prior to introducing skills work. For adolescents, psychoeducation often involves parents or caregivers, and some psychoeducation interventions are designed specifically for parents (for review, see Jones et al., 2018).

Psychoeducation has been found to be helpful in increasing knowledge of depression, symptom identification, engagement, and improving depressive symptoms (Donker et al., 2009; Jones et al., 2018). A meta-analysis that reviewed studies on passive psychoeducation (including leaflets, brochures, and websites) found patients with depression or elevated depressive symptoms reported decreased symptoms after receiving the informational materials, although the pooled effect size was small ($d = 0.20$; Donker et al., 2009). This study also reported larger between-group effect sizes for psychoeducation that included evidence-based information on depression and anxiety versus test feedback and advice. Tursi et al. (2013) reviewed a combination of active and passive psychoeducation programs for adults and families. They concluded that while more research is needed to fully understand the efficacy of psychoeducational interventions, there is evidence to suggest these interventions improved symptoms, engagement in treatment, and functioning among people experiencing depressive symptoms.

In an integrative, stepped care model, the PCP and BCP may deliver psychoeducation to patients. While the PCP may provide an initial overview of information, the BCP may have the opportunity to review psychoeducational material in depth either individually or in a group format. BCPs may engage the patient in discussion and ensure that the patient has a good understanding of the psychoeducational material.

6.7.4 Biblio-Prevention

Biblio-prevention programs are books developed to teach cognitive-behavioral techniques to the reader and provide strategies to manage stress and mood (McNaughton, 2009). Examples of these books include *Feeling Good: The New Mood Therapy* (Burns, 1980, revised in 2008) and *Control Your Depression* (Lewinsohn, 2010). While biblio-prevention is typically self-led, patient engagement can be increased through support from a BCP. The BCP may provide

motivational interviews to help the patient remain engaged in the self-directed intervention, or they may discuss new skills with the patient to help build mastery and find ways for the patient to use skills in their daily life (Bilich et al., 2008; Van Straten et al., 2010).

Research suggests that biblio-prevention for depression is associated with an immediate (at posttreatment) decrease in depressive symptoms, while longer-term effects are not always found (for review see, Gualano et al., 2017; Anderson et al., 2005). Other research suggests that biblio-prevention is efficacious only in indicated samples (people who are experiencing a certain number of depressive symptoms). For example, in one study, adolescents provided with a copy of *Feeling Good* (Burns, 1980), who received two reminder calls to use and engage with the book, demonstrated a significant decrease in depressive symptoms as compared to adolescents who received an informational brochure only if the adolescents had higher baseline depressive symptoms (Müller et al., 2015).

6.7.5 E-Health Prevention Tools

E-health prevention tools are online interventions that can be accessed through mobile devices, tablets, and computers. They may take the form of an application or website. Similar to biblio-prevention, these interventions are self-led, and support from the BCP through motivational interviews or discussions on skill mastery may improve patient engagement in the intervention (Cuijpers, Quero, et al., 2019). Ease of access and privacy are benefits of e-health prevention tools. Many people have devices that they carry with them and can access programs without anyone seeing what they are doing.

"Project CATCH-IT" (Competent Adulthood Transition with Cognitive-behavioral, Humanistic and Interpersonal Training) is an example of an e-health prevention tool. Developed by Van Voorhees et al. (2009), Project CATCH-IT is an Internet-based depression prevention intervention for adolescents with elevated depressive symptomatology or a prior history of depression in primary care. CATCH-IT demonstrated preventive effects for depressive episodes compared to a health education intervention at 6 months post-intervention for those with higher symptomatology at baseline, supporting the benefits of indicated prevention efforts, but these effects were no longer significant at 12 or 24 months follow-up (Gladstone et al., 2018; Van Voorhees et al., 2020). Van Voorhees et al. (2009) also found that motivational interviewing by the PCP in conjunction with CATCH-IT increased engagement and satisfaction in the program, demonstrating that periodic provider support may encourage adolescent participation in Internet-based programs.

Another example of an e-health prevention tool is MoodGYM (Calear & Christensen, 2010a; Christensen et al., 2002), a free, online, interactive program designed to prevent and decrease symptoms of depression. MoodGYM has been used in many settings, including adult primary care. The intervention is based on CBT and contains five interactive modules aimed to change dysfunctional thoughts,

improve interpersonal relationships, improve self-esteem, and teach skills like problem-solving and relaxation. A large-scale, three-arm RCT of MoodGYM, Beating the Blues (a commercial, web-based e-health program), and usual PCP care found no difference in positive screens on the PHQ-9 across arms at 4 months (Gilbody et al., 2015; Littlewood et al., 2015), although MoodGYM demonstrated fewer positive PHQ-9 screens and lower depression scores at 12 months. These group differences, however, were not maintained at 24 months (Gilbody et al., 2015). Other primary care studies of MoodGYM supported by a clinician demonstrate stronger results. For example, MoodGYM in conjunction with brief face-to-face therapist support demonstrated a significantly greater reduction in depressive symptoms compared to delayed treatment (Høifødt et al., 2013), and MoodGYM plus telephone support resulted in lower depression scores at 4 months compared to MoodGYM with minimal support (Gilbody et al., 2017).

6.7.6 Group Prevention Interventions

Within a stepped care model, a BCP may provide group interventions for patients that would benefit from a greater treatment intensity. A group format provides consistent intervention over time with built-in patient/provider interaction. While groups require more resources (e.g., space, provider time, patient travel) than watchful waiting, psychoeducation, biblio-prevention, or e-health prevention, groups require fewer resources than individual intervention. Typically, randomized clinical trials find stronger evidence for group interventions than passive psychoeducation or other self-led interventions (Müller et al., 2015; Rohde et al., 2018).

There are evidence-based depression prevention groups targeted at all age groups. One of the most well-known and researched group interventions for depression prevention is the Coping with Depression (CWD) course (Cuijpers et al., 2009). CWD is a CBT-based program that was developed by Lewinsohn and colleagues in the late 1970s and has been used by numerous other researchers and practitioners in trials with subjects of all age groups, including adolescents and adults. A meta-analysis of CWD studies found that studies aimed at the prevention of MDD onset reduced risk by 38% (Cuijpers et al., 2009). Allart-van Dam et al. (2007) evaluated the long-term preventive effects of CWD on the incidence of depressive episodes and symptoms in adults with subthreshold depressive symptoms and found that the CWD course was effective in preventing depressive symptomatology but not depressive disorder. CWD has been adapted for primary care settings (van den Berg et al., 2011).

More recently, other depression prevention and treatment groups have been implemented in the primary care setting. For example, Behavioral Activation with Mindfulness (BAM) groups conducted in a primary care setting have demonstrated decreased depressive symptoms and significantly lower incidence of MDD compared to treatment as usual at 12 months (Wong et al., 2018). Another study found that Spanish-speaking patients who participated in a modified CBT group in

primary care reported decreased depressive symptoms during treatment (Aguilera et al., 2018). In addition to the groups described here, many of the individual interventions discussed below may be delivered in group format.

6.7.7 Individual Prevention Interventions

Individual intervention for depression requires the most resources (e.g., provider time, space, patient travel) and provides patients with the most provider contact. One-on-one sessions with the provider allow the intervention to be specifically tailored to the patient and can often feel more personal to the patient. Individual intervention within primary care is typically short term compared to specialty mental health, where patients may be seen regularly over a longer period of time. Multiple individual treatments have been found to be effective for the treatment of depression (or subthreshold depression) in the primary care setting. These treatments include cognitive-behavioral therapy and interpersonal therapy for adolescents (Weersing et al., 2017) and cognitive-behavioral therapy, behavioral activation, interpersonal therapy, and problem-solving therapy in adults (Ramanuj et al., 2019; for review see, Cuijpers, Quero, et al., 2019).

An example of a primary care depression intervention specifically for adolescents is a CBT protocol designed by Clarke et al. (1999). This CBT program can be delivered in group or individual formats, and it consists of two-, four-session modules. One module focuses on increasing pleasant activities, while the other module addresses cognitive distortions. In a primary care setting, adolescents who had declined treatment with antidepressants were randomized to either the CBT protocol plus treatment as usual or a treatment as usual control condition. The CBT condition was found to be superior to treatment as usual as measured by recovery from MDD. These findings were maintained over a 2-year period. Additionally, adolescents who were assigned to the CBT condition reported decreased depressive symptoms as compared to adolescents in the treatment as usual group across the first year (Clarke et al., 2016). This same CBT protocol has also been successfully used as one intervention in a collaborative care model (Richardson et al., 2014). In this study, at 1 year follow-up, adolescents who received the collaborative care model reported significant improvement in their depressive symptoms compared to adolescents assigned to the usual care group.

While cognitive-behavioral therapy is the most researched, the other evidence-based therapies appear to have similar outcomes (Cuijpers, Quero, et al., 2019). For example, a pilot study of interpersonal therapy for adolescents in primary care found a significant reduction in depressive symptoms (Mufson et al., 2015), and a small follow-up study examining interpersonal therapy in the context of a stepped care model found this model to be feasible and acceptable (Mufson et al., 2018).

6.8 Lessons Learned/Implementation

There is ample evidence that depression can be prevented (Muñoz et al., 2012; Muñoz & Bunge, 2016), yet most people with depression, or with symptoms of depression, do not receive any treatment at all. In fact, according to Thornicroft et al. (2017), in high-income countries, only approximately 1/5 people with symptoms of depression receive minimally adequate treatment, and this "treatment gap" is much more significant among people in low- or lower-middle-income countries. In addition, within the United States, the lowest percentages of adults receiving treatment are those without health insurance and also men and those from racial or ethnic minority groups (Olfson et al., 2016). There are many reasons why people struggling with depressive symptoms do not receive adequate care, including shortage of mental health clinicians, multiple barriers to access (e.g., high cost and poor insurance coverage, clinic hours that interfere with work schedules, wait times for appointments), the stigma associated with acknowledging symptoms of depression, and the fact that many people with symptoms of depression do not even recognize the need for intervention (Hodgkinson et al., 2017; Szlyk et al., 2020; Thornicroft et al., 2017).

Primary care physicians provide an important resource for attending to the high rates of depression among children, adolescents, adults, and the elderly. In fact, many primary care physicians recognize their role in identifying their patients' depressive symptoms (Heneghan et al., 2008), but they often lack the training and the time to manage depression in the primary care setting (Weissman et al., 2014). Additionally, the attitudes of healthcare staff, and the perception that physical and psychological concerns should be addressed separately, can be a significant barrier to managing depression within primary care (Wood et al., 2017). Nonetheless, depression *can* be well-managed within the primary care setting, both in youth (e.g., Asarnow et al., 2015; Richardson et al., 2014) and in adults (Archer et al., 2012). Ultimately, given the barriers to accessing mental health specialists, as well as the importance of providing routine access to preventive interventions for individuals with subthreshold depressive symptoms (Muñoz et al., 2012), primary care physicians must play a significant role in identifying signs of depression and implementing strategies to address depression in their patients (Cheung et al., 2018; Nimalasuriya et al., 2009; Zuckerbrot et al., 2018).

Below are several specific recommendations to assist with the management of depression within primary care:

1. *Primary care physicians need to add behavioral care providers to their healthcare teams* so that they are able to provide their patients with psychotherapeutic interventions that may be better suited to lower levels of depressive symptomatology rather than just prescribing antidepressant medications (Cuijpers, Quero, et al., 2019). In fact, the majority of patients presenting in primary care with depression report mild to moderate levels of symptoms (Bitsko et al., 2018; Cuijpers, Quero, et al., 2019), for which medication is not recommended as a first level of intervention. And both youth (Jaycox et al., 2006) and adults

(McHugh et al., 2013) report that they prefer psychotherapeutic interventions to medication in addressing symptoms of depression. Mufson and Rynn (2019) note that the current structure of most primary care settings does not allow for adequate care of depressed individuals without adding behavioral care providers (BCPs) to the healthcare team.

2. *Medical school and residency programs need to include behavioral care providers as part of their training teams*, so that students and residents can learn to identify and address patients' depressive symptoms prior to beginning practice. Enhancing in-school training has the potential to reduce the costs of on-the-job training and ultimately may enable primary care physicians to manage mild to moderate cases of depression independently, without relying on consultations with behavioral care providers (Mufson & Rynn, 2019).
3. *It is essential that high quality, evidence-based interventions be available to patients who present with symptoms of depression in primary care* (Asarnow et al., 2015; Thornicroft et al., 2017). For example, behavioral activation has a strong evidence base, even when administered by non-mental health specialists (Cuijpers et al., 2007; Ekers et al., 2014). Similarly, there is ample evidence for the effectiveness of cognitive-behavioral interventions in primary care (e.g., Twomey et al., 2015), both for people with diagnosed depression and for those who present with depressive symptoms, for whom such interventions are more preventive in nature (Santoft et al., 2019). Finally, there is emerging evidence for the use of interpersonal psychotherapy to address depression in primary care, both in adolescents (Mufson et al., 2018) and in adults (Weissman et al., 2014).
4. *Technology-based interventions hold promise for the prevention of depression in primary care, among both youth* (Gladstone et al., 2018) *and adults* (Buntrock et al., 2016). Such technology-based formats have the potential to reduce barriers to treatment for individuals with depression, as they are accessible, private, and affordable. Overall, telehealth or therapeutic interventions delivered remotely have been found to be as effective as face-to-face or group psychotherapy in addressing symptoms of depression (Cuijpers, Noma, et al., 2019; Santoft et al., 2019).
5. *Finally, interventions that more indirectly address symptoms of depression may be more acceptable in the primary care setting*. Muñoz & Bunge (2016) suggest a creative approach to addressing the stigma associated with mental health interventions by highlighting the work of Christensen et al. (2016), who found evidence supporting an online intervention targeting insomnia among adults with depressive symptoms (Christensen et al., 2016). Munoz and Bunge argue that interventions focusing on more indirect methods of addressing depressive symptoms, such as healthy eating or exercise, may be more acceptable to consumers and may ultimately have significant preventive effects on depression. Such interventions that target health behaviors *related to* depression have tremendous potential for dissemination in the primary care setting and ultimately may support broader depression prevention efforts.

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