2Approach to Research and Its Evaluation

Go to:

SUMMARY

Research Challenges in Confronting Depression in Parents

- The challenges for researchers, clinicians, and policy makers in attempting to address the problems associated with the care of depression in parents include the integration of knowledge, the application of a developmental framework, conceptualizing the problems in a two-generation nature, and acknowledging the presence of the constellation of risk factors, context, and correlates associated with depression.

Issues Considered in Searching the Literature

- To fully understand the linkages among depression, parenting, and the child health outcomes, researchers should consider issues surrounding (but not limited to) the definition and measurement of depression and parenting, the etiology of depression, timing and use of appropriate screening interventions, the process of risk and resilience in children of depressed parents, correlates of depression, and developmental processes and time points.

Challenges in Evaluating the Literature

- Researchers face multiple methodological challenges studying depression in parents and its effects on parenting practices and child health outcomes that need to be addressed in order to provide recommendations for the development of future research, interventions, and policy —including conceptual frameworks, sampling designs, data analysis, and integration of research findings across literatures.

In this chapter, the committee describes their approach to the literature on the effects of parental depression on parenting practices and child outcomes and its evaluation. The chapter is organized in three sections, relating to the challenges that researchers face in confronting the problem of parental depression, the wide range of issues that we considered relevant, and standards of evidence and methodological issues that are important to keep in mind in reading this report. Some topics are addressed in more than one section, but they are focused on different aspects of the topic. For example, in the section on research challenges, we show that a conceptual framework relating to the effects of parental depression on families should be guided by a developmental psychopathology perspective. Later, in the section on research standards, we mention what the literature has shown in this regard and that research relating to any psychopathology should address questions "across generations and across time" (Hinshaw, 2008).

The type of evidence and criteria used to judge the importance of that evidence vary from area to area. This chapter does not attempt to explicitly summarize the specific criteria used for the evaluation of the evidence in each area, but instead offers a guideline of the general areas of interest and inquiry that the committee used when the committee searched and evaluated the literature. For example, studies of screening for parental depression are different from studies of treatment and intervention, and these are different from studies of prevention programs. These are also different from inquiries relating to changes in policy at the macro level or the available studies on the effects of parental depression. Thus, in this overview on standards of evidence and methodology, we present general guidelines that the reader should apply when appropriate in the subsequent chapters. Recommendations based on the evaluation of the evidence in each area are presented.

Go to:

RESEARCH CHALLENGES IN CONFRONTING DEPRESSION IN PARENTS

Four themes emerged from the committee's review of the research literature and discussions with service providers, policy makers, and stakeholder organizations: (1) the integration of knowledge regarding the dynamics of parental depression, parenting practices, and child outcomes; (2) the need to recognize the multigenerational dimensions of the effects of depression in a parent; (3) the application of a developmental framework in the study and evaluation of the effects of parental depression; and (4) the need to acknowledge the presence of the constellation of risk factors, context, and correlates of parental depression. Each of these is discussed in turn.

Integration of Knowledge

Depression is a complex disorder that is affected by biological, psychological, behavioral, interpersonal, and social contextual processes. Examining the effects of depression on parenting and

the development of children requires the integration of knowledge from research, practice, and service delivery from multiple scientific, health care, and social service disciplines. Major scientific and integrative advances have emerged that point the way for future research and practice, but the challenges presented by the integration of these widely varied disciplines are enormous. Similarly, addressing parental depression as a public health problem requires multiple points of access for delivery of services and multiple types of intervention and care.

The approach we have taken to the problem of depression, parenting, and the healthy development of children has been interdisciplinary and transdisciplinary from the outset. The composition of the committee reflects multiple disciplines, including pediatrics, psychiatry, psychology, nursing, pharmacology, biostatistics, obstetrics, public health, behavioral health, and community and family medicine. We sought input and information from experts in a wide range of practice and community settings to consider the broad context in which services are delivered to parents with depression and their children.

The range of professionals and settings potentially concerned with depression in parents and their children is vast. Among health care services, it includes mental health professions (psychiatry, psychology, psychiatric nursing, social work), primary care, family practice, obstetrics, and pediatrics. Among family and community support systems, it includes extended families, religious institutions, and formal and informal community supports. Among policy makers, it includes program administrators running home visiting programs, Medicaid officials, mental health administrators, and others with responsibility for fiscal resources that could be reallocated. Much like the divisions that characterize scientific disciplines, we have iden tified barriers between the delivery (formal or informal) of interventions to parents with depression and delivery of interventions for children and families. Our agenda included the identification of ways to develop new strategies to bridge the different cultures of health care delivery, community and family support services, and policy makers.

Transdisciplinary Approaches to Research, Training, and Service Delivery

Although the need for integration and synthesis across these disciplines is great, the breadth of knowledge and practice that is relevant to understanding and addressing depression and parenting is a double-edged sword. On one hand, depression is a complex disorder that is affected by biological, psychological, behavioral, interpersonal, and social contextual processes. Major scientific advances have been made in all of these areas, and integrative perspectives are emerging to guide the synthesis of current findings and point the way for future research and practice. Similarly, addressing the public health problem of parental depression requires multiple points of access for delivery of services and multiple types of intervention and care. On the other hand, the challenges presented by the integration of these widely varied disciplines are enormous. Much of the work to date has been carried out in separate scientific entities, divided by different methodologies, levels of analysis, terminology, and agendas. The committee has purposefully attempted to break down these

barriers in our approach by looking for examples of research that have integrated multiple disciplines and opportunities to move forward with new transdisciplinary work. Over the course of our work, we began to understand that depression in parents is a topic with no home—it is everywhere and nowhere. This is partly a consequence of the many disciplines and fields that are concerned with depression in parents. With this perspective in mind, we undertook the task to begin to build a "home" with this report.

As outlined by the National Institutes of Health, a transdisciplinary approach involves integrative science that spans basic and clinical research from multiple disciplines (e.g., genetics, medicine, behavioral science) and can generate rapid new developments in conceptual models to initiate breakthroughs and speed the translation of findings in basic research into practice and policy. This involves the translation of research from basic science into the development and testing of novel intervention approaches and, conversely, the translation of intervention findings back into basic science studies that can identify and model mechanisms of risk and etiology. Translational and transdisciplinary research is bidirectional in nature, with basic science informing interventions and intervention findings stimulating further basic research inquiry.

A number of recent examples of translational research are relevant to the understanding of depression, parenting, and children. For example, there is growing recognition of the role of multiple biological processes that are relevant to the etiology and course of depression and to the comorbidity of depression and medical conditions, most notably coronary heart disease (Miller and Blackwell, 2006). This work has come from the synthesis of relatively independent lines of research on the role of stress in proinflammatory processes, coronary heart disease, and depression. Similarly, the integration of methodologies and findings from research on genetics and brain structure and function has led to significant advances in knowledge of the underlying neurobiology of depression (Hariri and Brown, 2006). The translation of basic behavioral research on parenting processes and their effects on children's development has provided a foundation for understanding the ways in which parenting may be disrupted by depression and the subsequent impact on children (Bornstein, 2006).

Linking Research and Practice

Throughout this volume we emphasize the importance of the pipeline from the discovery of underlying mechanisms of risk in children of depressed parents to the delivery of services and to the development of policy (Abrams, 2006). This includes, as Abrams notes, "the science of dissemination along with improving the dissemination of evidence-based science" (p. 515). The dissemination of research findings to practitioners and, conversely, the application of the experience and observations of practitioners to research are significant challenges in mental health research and practice (Barlow, 1996; Weisz, Jensen, and McLeod, 2005). This complex process is even more complicated in the case of depression in parents as it spans research and practice with adults (parents), children (from infancy through adolescence), and families. Establishing links between

research and practice involves the interactions among the full range of health care services and family and community support systems that may intervene with depressed parents or their children.

A Two-Generation Approach

The evidence of the effects of depression on the parents' parenting skills and on their children's health and development makes a compelling case for fostering this integration through such a two-generation approach (parent and child) at every level, including systems that provide care and services, efforts to more fully understand the epidemiology and effects of parental depression, and future research on intervention approaches. We make reference to this two-generation approach throughout the report.

We also recognized the frequent need for a three-generation perspec tive, taking into account grandparents who may be thrust into the child rearing role. However, we determined that, despite their importance in understanding and working with parental depression, the three-generation approach as well as concerns about sibling relationships was outside the scope of this report. We were able to glean useful information on the role of marital relationships in the occurrence and treatment of depression (some of which is mentioned later in this chapter) and in the effects of parental depression on children (included in the summaries in Chapter 4).

Developing an explicit focus on the nature and quality of behaviors and relationships between parents and children challenges the traditional division of responsibilities in medicine and mental health practices and in many service settings. Both facilities and professionals traditionally specialize in either adults or children (exceptions to this practice include family medicine and, in some settings, combined medicine and pediatrics). Primary care, mental health, and community service systems that see adults with depression do not routinely consider whether those adults have children, nor do they provide links to services that focus on parenting skills and on the needs of their children. Although increased attention to postpartum depression has led to some changes for women and infant children, most systems that provide care for children are not well equipped to identify parents with depression or at risk for it or to refer them to appropriate services for adequate treatment.

A vast research literature on depression examines its epidemiology, etiology, correlates, and treatments among adults, but, for the most part, this body of work does not identify whether or not these adults are parents. Thus, the literature and national surveys on etiology, prevalence, screening, prevention, and treatment of depression in adults are often not specific to depression in parents and do not include measures of its effects on their children. This limitation makes it difficult to gauge the true extent of the problem.

An extensive body of research on parenting practices and parent and child relationships highlights effective interventions that support positive outcomes for children. Yet with regard to depression in parents, only a few intervention studies have adopted such a two-generation approach, which

focuses on the relationships and interactions between parents with depression and their children. In addition, interventions with good evidence for improving child outcomes rarely consider the influence of parental depression on their effectiveness and even more rarely examine the potential effects of including program components that identify and refer or treat parents with depression. When this has been done, improvements in effectiveness have been noted, such as in the work of Kazdin and Sanders and colleagues (Kazdin, 2005; Sanders et al., 2000).

In our work, we noted increasing interest in understanding how and when improvements in parents' depression lead to improvements in parenting and, even further, in child functioning. We include an overview of studies of treatment for depression in parents as a preventive intervention for their children (Chapter 7).

Equally interesting, although less often studied, is how and when interventions designed to improve qualities of parenting or to improve couples' relationship issues also lead to improvements in the parent's depression and potential benefits for their children. We recognized these approaches as reflecting the two-generation perspective, which we judged to be a very promising approach to the problem of depression in parents.

In terms of parenting interventions, a recent review of parenting training interventions noted consistent evidence that depression in parents improves as a secondary benefit of such training, even when the depression per se is not a target of the intervention (Kaminski et al., 2008). Although the authors note that some of the studies' designs did not always allow for ruling out that the depression may have improved even without the intervention, the findings are promising. Other studies targeted mothers with depression and intervened directly in their qualities of parenting (Cicchetti, Rogosch, and Toth, 2000; Gelfand et al., 1996; Lyons-Ruth et al., 1990).

In terms of couples' relationship problems and discord, behavioral approaches to marital therapy have been found to be more effective for the treatment of depression than standard cognitive behavioral therapy targeting the depression per se (Baucom et al., 1998). We also found promising the new generation of marital therapies being designed to treat depression based on knowledge of the associations between depression and marital problems (Beach, Fincham, and Katz, 1998). We also noted a recent meta-analysis that found inconclusive evidence for the efficacy of couple therapy as a treatment for depression yet concluded that couple therapy may still be the treatment of choice when relational distress is predominant (Barbato and D'Avanzo, 2008)

A Developmental Framework

The implementation of a two-generation approach involves many challenges. Childhood is a period of rapid change and development, and the presence or absence of supportive parental behaviors can have lasting effects if they interfere with the children getting their stage-salient needs met. The impact and consequences of depression in parents can vary by both the age of the children in the family as well as the length, severity, and history of exposure to parental depression.

In the course of our work, we recognized the value of a developmental approach. That is, we understood that multiple aspects of concern about depression in parents would vary by the age of the children in the family at any particular point in time of studying these families. We also recognized the importance, and the challenge, of understanding any child's history of exposure to depression in a parent. We expected that the age of the children at the times the parent was depressed would influence the particular risks to their development, the resiliencies that they would be able to bring to bear, the mechanisms by which those risks might be transmitted, the challenges to parenting with depression, the approach to screening for depression, and the nature of the preventive or other intervention that might be found to be effective. Although we reviewed literature that suggests reasons to be concerned and to intervene regardless of the children's ages, we also noted a compelling case for the youngest children. Most important was the understanding that development needs to be taken into account.

A Developmental Psychopathology Perspective

We were also guided by a developmental psychopathology perspective, which conceptualizes risk for the development of psychopathology in terms of processes that extend through time and are considered in the context of normal developmental processes (Cicchetti and Schneider-Rosen, 1984; Sroufe and Rutter, 1984). Understanding the mechanisms of risk in children of depressed parents requires understanding the processes underlying individual patterns of adaptation and the consequences of the individual patterns for the development of depression or other problems. Early in their developmental pathways, children of depressed mothers may develop vulnerabilities for depression, which, in turn, increase the likelihood of developing depression. Given the stage-salient needs of infants, of particular concern have been limits on depressed mothers' abilities to provide the sensitive, responsive care needed for the development of healthy attachment relationships (Egeland and Farber, 1984) and emotional self-regulation (Tronick and Gianino, 1986). We recognized the value of knowledge of children's potential vulnerabilities and developmental needs to inform screening, prevention, treatment, and policy.

Depression and Parenting Children Across Development

Even when one takes a developmental perspective, it is often ignored that, among women with depression, it occurs during pregnancy with at least as high a rate as in the postpartum period (Evans et al., 2001). Antenatal depression may be an early life stress that alters fetal development of stress-related biological systems (especially hypothalamic-pituitary-adrenal functioning), retards fetal growth, constricts the length of gestation, and increases risk of obstetrical complications (Van den Bergh et al., 2005). Concerns about the fetus suggest potential long-term implications for the development of problems in cognitive and social-emotional functioning. We therefore sought to expand on the typical perspective of parenting with depression to include the prenatal period.

Infants and young children are dependent on sensitive, responsive caregiving in order to develop skills in emotion regulation, interpersonal skills, and stress response mechanisms, problems in any of which may disrupt the earliest stages of development, predisposing children to the later development of depression. Consistent with these understandings, a meta-analytic review identified a larger body of research suggesting that depression is even more strongly associated with parenting problems in parents of infants compared with parents of older children (Lovejoy et al., 2000). Another literature shows that brain development continues at a rapid pace at least for several years after birth (Chugani and Phelps, 1986), and its course of development can be strongly influenced by early life stressors, such as might be associated with having a mother with depression. Thus we were particularly concerned about depression in parents of young children.

Despite compelling reasons for concern about pregnancy and infancy and early childhood, we recognized that they are not the only developmental periods of concern in relation to depression in parents. For example, depressive symptoms and depressive disorder interfere with the tasks of parenting in parents of school-age children and adolescents (e.g., Du Rocher, Schudlich, and Cummings, 2007; Gerdes et al., 2007). Disruptions in parenting associated with depression in parents (e.g., parental withdrawal, intrusiveness, and irritability) are related to higher levels of internalizing and externalizing problems in adolescents (e.g., Jaser et al., 2005). Furthermore, certain aspects of brain development, particularly in the prefrontal regions responsible for executive functions and emotion regulation, continue on into young adulthood and are vulnerable to the effects of chronic stress throughout childhood and adolescence (e.g., Nelson et al., 2005; Romeo and McEwen, 2006). These lines of research suggest that the risks associated with depression in a parent extend well beyond early infancy and early childhood.

Depression Does Not Exist in a Vacuum: Bringing Comorbidities, Correlates, and Context to Light

Depression rarely occurs in isolation. Depressed adults often face other health problems and psychopathologies (such as substance use disorders, anxiety disorders) and stressful social environments (such as poverty, bereavement, social isolation). Those risk factors may be essential to understanding the problems in children of depressed parents. The associated features also may be essential in identifying approaches to treating parents' depression and also improving the quality of parenting and children's outcomes. Such recognition might involve, at a minimum, assessing the constellation of risk factors and also evaluating the relative contribution of the multiple disorders to the problems with parenting and with child functioning. These risk factors may also affect how and where services can best be provided.

A long history of research supports the theory that depression is both exacerbated by problems in interpersonal relationships and also contributes to them (Joiner, Coyne, and Blalock, 1999). This includes the finding that living with a parent with depression is stressful, not only in relation to

problems with parenting but also in relation to the parent's problems with other relationships (Hammen, 2002), and children struggle to cope with these stressors (Compas et al., 2002). Attention to the context of the lives of women with depression suggests concern for the children in terms of their exposure to a wide range of stressors (Hammen, 2002).

More broadly, the methodological issue this raises is that depression in parents may be an essential marker of risk for problems in children but not necessarily a "main effect." Whereas depression is known to be comorbid with anxiety disorders and substance abuse, in particular, and these are addressed in this report, we also addressed the potential importance of other correlates and contexts, including intrafamily violence, child abuse, and neglect. This report shows that the comorbidities, correlates, and contexts may function as independent risk factors for adverse child outcomes or as modifying factors, which exacerbate the effects of parental depression. Yet research on the effects of parental depression on parenting or child functioning rarely provides adequate tests of the role of co-occurring conditions.

Integrating the Comorbidities, Correlates, and Context into Approaches to Treating or Preventing Depression in Parents

Understanding the dynamics of how parental depression and its comorbidities, correlates, and context impact child outcomes are important to the design and implementation of successful future service delivery models for families affected by parental depression. We recognized the tendency of interventions to focus on depression in the parent as a risk factor for the development of psychopathology in the children without considering that the families might best be characterized by the broader set of risk and protective factors we bring to light here. Moreover, if depression is secondary to other overriding issues in the family, such as poverty, violence, marital or couple distress, issues related to immigration, acculturation, etc., then the implications for screening, prevention, and treatment are quite different than if one were addressing depression as the primary problem. At a minimum, one would need to assess co-occurring conditions and also evaluate the relative contribution of the multiple conditions to the problems with parenting and with child functioning. Once carefully assessed, the associated features are likely to suggest different approaches to treating the parent's depression, improving the quality of parenting, and in preventing negative outcomes in the children, relative to the situation in which depression is the primary problem. We also recognized that comorbidities may affect how and where services can best be provided.

Integrating Services in Different Settings for Diverse Populations

The methodological issues raised by comorbidities, correlates, and context also have implications for where depressed parents might receive services. In our approach to the problem of depression in parents, we recognized that the services for comorbidities, such as substance abuse, or correlates and contextual variables, such as family violence or issues related to immigration, are typically

offered in settings other than where mainstream mental health services are offered. We are also aware that many of these problems related to depression in parents first come to light in primary care settings, such as family practice, obstetrics, and pediatrics. Thus, another issue concerns strategies that can bridge service cultures and institutional networks.

Needs of Vulnerable Populations

As this understanding of the context in which depression reveals, certain populations are particularly at risk. The committee thus worked to determine that we were including literature that addresses the needs of a wide range of populations, including vulnerable populations, for example, first- and second-generation immigrants and refugees and others, especially those who are known to be at risk, including those who live in poverty. Learning about correlates of psychiatric disorders among vulnerable populations is of critical importance to inform clinical practice and guide program development. Although current research has not yet covered the specific topic of parental depression among vulnerable populations—with the exception of a few qualitative studies (e.g., Lazear et al., 2008)—for the purpose of this report it is important to point to major studies of mental illness in specific racial and ethnic populations that may provide significant insights into prevalence rate differences, help-seeking behaviors, and patterns of use of mental health services. We identify below some of the largest and most recent psychiatric epidemiological studies that have been used in studies described throughout the report in order to help provide insight into how specific racial and ethnic populations use and need mental health services in Box 2-1.

BOX 2-1

Summary of Large Psychiatric Epidemiological Studies in Racial and Ethnic Minority Populations. Mexican American Prevalence and Service Survey U.S.-born Mexican Americans and Mexican immigrants

Doorways into the Domain of Depression in Parents

Research has highlighted two key facts relevant to our task of evaluating how best to approach the problem of depression in parents. First, most adults with depression do not get treated for it (Kessler et al., 1999; Kessler, Merikangas, and Wang, 2007; Narrow et al., 1993; Regier et al., 1993). The large-scale, psychiatric, epidemiological study by Kessler et al. revealed that less than one-third of adults with major depression or dysthymia used either general medical or specialty outpatient mental health services in the previous year. Second, the one-third of adults of parenting age with depression who do get treated uses a wide range of alternative points of contact. Yet given the number and multiplicity of depressive disorders' comorbid mental and physical health problems (e.g., substance abuse, chronic pain), impairment (e.g., problems getting to work), and co-occurring

conditions (e.g., poverty), one promising avenue to the identification of parents with depression is to focus on those who are seeking treatment or assistance for those associated conditions.

These alternative avenues to identifying parents with depression include a wide range of formal and informal service settings, which offer important points for screening and identification. Also, the children themselves may be an important avenue for identifying parents with depression. For example, in Finland, a national program involves educating children and adolescents about mental health problems in adults and how children can cope with depression in their parents (Solantaus and Toikka, 2006). More broadly, the committee recognized that children being screened for developmental delays or evaluated or treated for emotional or behavior problems, school behavior problems, or even chronic illnesses or injuries present a typically neglected opportunity to screen for depression in parents.

Finally, in the realm of policy relating to parental depression and its effects, we conducted interviews with states leading initiatives on maternal depression (Illinois, Iowa, New Jersey), seeking evaluation data when they were available, drawing on primary data from two other studies conducted by the National Center for Children in Poverty (Cooper et al., 2008; Knitzer, Theberge, and Johnson, 2008). We also reviewed other literature on program initiatives, as well as the policy literature, to extract, whenever possible, the policy implications. To assess the feasibility of the recommendations, we asked four basic policy-relevant questions (Kingdon, 1995): Will it promote efficiency? Will it promote equity? It is politically feasible? Does it seem doable from a cost perspective? Finally, we relied on our own understanding of how policy processes work and what kinds of recommendations are likely to be persuasive.

Go to:

ISSUES CONSIDERED IN SEARCHING THE LITERATURE

To fully understand the linkages among depression, parenting, and children's development, we considered a wide range of research. This includes research on but not limited to the definition and measurement of depression and parenting practices, the etiology of depression, timing and use of appropriate screening interventions, the processes of risk and resilience in children of depressed parents, correlates of depression, and developmental processes and time points.

Definition and Measurement of Depression and Parenting

Depression presents a number of challenges in its definition and measurement. Foremost of these is the distinction between depression as a categorical psychiatric diagnosis and dimensional approaches that consider symptoms of depression as a matter of degree along a continuum. Diagnoses of depression are derived from psychiatric interviews, whereas dimensional approaches

are assessed through symptom inventories and questionnaires. We have considered both in our review and have offered suggestions for the integration of what are often seen as contrasting, rather than complementary, approaches. Furthermore, depression is a heterogeneous disorder with varying patterns of symptom presentation, chronicity, duration, and severity. Similar issues were encountered in our review of parenting. The central dimensions of parenting (e.g., warmth, structure) are addressed, and we provide consideration of the characteristics of effective versus impaired parenting. However, there is far less consensus regarding the measurement of parenting than the measurement of depression.

At the same time, it is important to recognize that "parental depression," "maternal depression," and even "postpartum depression" are not distinct diagnostic entities from depression as it occurs in any adult. Perinatal depression is not a separate diagnosis according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) (American Psychiatric Association, 1994). Typically, clinically significant perinatal depression is operationalized as major depression, a diagnosis that requires meeting a set of symptom, duration, and impairment criteria as defined by the DSM-IV. Under Depressive Disorders in the DSM-IV, pregnancy is not given any special consideration; however, "postpartum" is an added qualifier to refer to the timing of a major depressive episode. It is thus important to recognize that when we refer to parental, maternal, or paternal depression, we refer to depression defined in the same ways as depression that occurs at other times in people's lives.

Etiology of Depression

We have examined the broad literature on the etiology of depression in parents and in their children. This includes genetic, biological, and interpersonal processes that contribute to depression in parents as well as in their children. Recent research has begun to illuminate the complex interactions and combinations of biological and social processes that are associated with increased risk for depression. Examples of integrative research on the etiology of depression include studies of the interaction of stress and genetic liabilities, such as mutations of the genes responsible for serotonin transport in the brain (e.g., Caspi et al., 2003) and research showing that traumatic stress early in development can lead to a cascade of biological processes that increase the risk for depression (Gilespie and Nemerooff, 2007).

Screening for Depression in Parents

The challenge in evaluating the literature is that screening measures are often used without validation by other methods. While very brief and longer symptom checklist measures have been shown to perform similarly as screening tools to detect those at risk of major depression (Whooley et al., 1997), their positive predictive value for a major depressive disorder varies according to the prevalence of depression in that population. Screen ing measures typically detect 75 percent with

any depressive disorder and 25–40 percent with a major depressive disorder (Kroenke, 2006; U.S. Preventive Services Task Force, 2002). Thus, the widespread practice of only using a screening tool to define depression, typically maternal depression, underestimates the prevalence. Similarly, the use of symptom levels without an assessment of functional impact is likely to overestimate the occurrence of maternal depression. The development of a specific screening tool for the postpartum period, the Edinburgh Postpartum Depression Scale, has promoted screening of women in the perinatal period. However, the poor sensitivity of this measure to detect major or minor depression, varying cut scores in different studies, and the infrequent validation with a clinical diagnostic interview (Gaynes et al., 2005) make it difficult to determine the magnitude and severity of postpartum depression and mental health service needs of mothers postpartum. Box 2-2 lists the common tools and approaches available for the screening and diagnosis of depression.

BOX 2-2

Common Tools and Approaches for Screening and Diagnosis of Depression. *Tools* Symptom checklist

Effective interventions depend on identification of who, when, and what pattern. The type of intervention to use may be affected by the duration of depression and the intensity of its symptoms. Postpartum depression may be limited to the first few months or may persist throughout the first year or beyond. A parent may have chronic unremitting depression, relapsing bouts of depression, or milder depression in which functioning as a parent is maintained; all of these may be considered together in many studies. These complexities of depression are important in determining who is most impacted.

For screening programs, when an adult is identified as suffering from depression, it is important to identify if that adult is a parent, if the spouse/partner is also depressed, or if one or both are at risk for depression, has been diagnosed with depression, if both parents have been diagnosed with depression, or if one or both parents have been diagnosed with other comorbid conditions (i.e., substance use, trauma). Identification of these issues in both parents is necessary. It is also important to note when depression or symptoms of depression were identified in the parents: prenatal, postpartum, the first year of the child's life, the first 3 years of the child's life, the first 5 years of the child's life, or throughout childhood into adolescence. However, the overriding concern with screening is the lack of available and effective resources and knowledge needed after an adult is identified with depression as a result of a screening procedure.

Processes of Risk and Resilience in Children of Depressed Parents

Closely related to etiology is consideration of factors that are associated with increased risk, as contrasted with resilience, among children of depressed parents. Kraemer and colleagues (1997)

refer to risk as a predisposition of an individual or a population to a negative outcome. In the field of mental health, these negative outcomes can be measured in terms of the onset, severity, and duration of a disorder or the frequency and intensity of individual symptoms or clusters of symptoms. Individuals and populations at risk have an increased likelihood of developing symptoms or more severe pathology than the population as a whole (Rutter, 1987). The magnitude, or degree, of risk is measured by the probability of a specific negative outcome in the presence of a risk factor versus the probability when the risk factor is absent. The odds of adolescents developing depression are greater for those who are exposed to a parent with a history of depression compared with those whose parents have no such psychopathology.

A risk factor is a feature of an individual or the environment that increases the probability of the occurrence of a negative outcome. Risk factors, however, do not explain the processes through which these factors influence the likelihood of an undesirable outcome. In contrast, risk mechanisms or processes describe the intervening paths that connect risk conditions with specific dysfunctional outcomes (Garber, 2006). In the case of parental depression, it is not merely the presence of psychopathology in the parent that leads to psychopathology in the children, but the processes that result from the disorder (such as a biological predisposition, including genetic mechanisms, negative parenting, or stressful parent-child interactions) linking the risk factor with unfavorable outcomes.

Even in the face of significant risk, not all individuals do poorly—not all children and adolescents of depressed parents develop psychopathology. Although children and adolescents of affectively ill parents are at an increased risk for depression and other forms of psychopathology, a number of studies have demonstrated that many of them actually do quite well. These individuals identified as "resilient" exhibit the ability to respond positively to significant adversity. Masten and colleagues (1999) conceptualize resilience as "phenomena involving successful adaptation in the context of significant threats to development" (p. 143). Although ambiguity exists in the definition of resilience in the literature, researchers have converged on two critical conditions inherent in this concept: (1) exposure to significant threat or adversity and (2) the achievement of positive adaptation despite challenging life circumstances (Luthar, Cicchetti, and Becker, 2000; Luthar and Zigler, 1991; Masten, Best, and Garmezy, 1990).

Research on risk and resilience related to depression is vast and growing, encompassing biological, environmental, and psychological processes and their interface. Examples include psychobiological processes that are related to resilience to stress (Charney, 2004; Southwick, Vythilingam, and Charney, 2005); the developmental neurobiology of stress hormones, including cortisol, that are related to depression (Gunnar and Quevedo, 2007); the primate model of stress inoculation based on experiences in early development (Parker et al., 2005); and oxytocin and protection from depression (Scantamburlo et al., 2007).

Correlates of Depression

As noted above, depression is characterized by high rates of comorbidity with other psychiatric disorders and with medical illnesses. Adults with depression, including those who are parents, have an increased risk of a number of other medical and psychiatric conditions. This presents a challenge to researchers, as it is difficult to disentangle the effects of parental depression on children from the effects of these other comorbid conditions. However, these comorbidities also offer a number of opportunities for the identification of parents with depression and contexts for the delivery of interventions to prevent adverse outcomes in their children.

Depression in parents is also likely to be accompanied by other problems in families and communities. For example, parents with depression are likely to have spouses with psychiatric disorders that further increase the risk of mental health problems in their children. Some depressed parents and their families live in poverty, with limited access to health and mental health care, further compounding the risk to children in these families.

The criteria for major depressive disorder as outlined in the DSM-IV include significant impairment in social functioning, interpersonal relationships, and work. Significant impairment in multiple domains is also associated with high but subthreshold levels of depressive symptoms. Overall, both depressive disorder and depressive symptoms in parents are accompanied by comorbid disorders, problems in families and communities, and disruptions in work, marital relationships, and parenting.

Developmental Approach

We take an explicitly developmental approach in our perspective on parental depression. The effects of depression may be dramatically different when a parent experiences an episode of depression when pregnant or while a child is in infancy, middle childhood, or adolescence. The different effects of parental depression may be due in part to the different developmental tasks that are central as children move through childhood and adolescence. Moreover, the characteristics of effective parenting change as children develop, and depression may affect different aspects of parenting. For example, the formation of fundamental attachment relationships may be impaired when a parent of an infant experiences an episode of depression. In contrast, depression may interfere with the provision of structure and monitoring when a parent of an adolescent is affected. The effects of depression may be greater when a parent experiences multiple episodes that occur throughout a child's lifetime and disrupts parenting at multiple points in development.

Summary of Our Approach Searching the Literature

The committee reviewed multiple types of research or lines of investigation on depression in parents. First, we examined the literature on the effects of depression in parents on children. In this literature, we looked both at effects on physical health and health-related outcomes, such as use of

health services, and also on children's psychological outcomes. The latter included not only evidence of emotional or behavioral problems in association with depression in parents, but also problems in psychological functioning that might be early signs of psychopathology or vulnerabilities to the later development of psychopathology. Such vulnerabilities include behavior, psychophysiology, and neuroendocrine functioning. We took into account the full developmental spectrum of infancy through adolescence and also considered fetal development.

Given the understanding that not all children of depressed parents would be expected to develop problems, we made special note of studies that examined moderators—that is, factors that may affect the strength of the relationship between depression in parents and outcomes in children. Tests of moderators of the associations between depression in parents and outcomes in children reveal the characteristics of parents and children who are more or less likely to have adverse outcomes. Moderators that have been examined include child characteristics (e.g., age, sex), characteristics of the parent with depression (e.g., severity, chronicity), and characteristics of the coparent (e.g., mental health and involvement of fathers when mother is depressed), and broader social context qualities (e.g., poverty).

Second, we reviewed the literature on effects of depression in parents on their parenting practices. This literature was of particular interest for two reasons: the well-known reliance of children on good-quality parenting for healthy child development (Collins et al., 2003) and a long-standing understanding that depression is likely to interfere with good-quality parenting (Weissman and Paykel, 1974). Thus, we were particularly interested in research on the mediational role of parenting in the association between depression in parents and adverse outcomes in children. By mediating role, we mean the extent to which depression has negative influences on parenting and, subsequently, the extent to which those changes in parenting account for associations between parents' depression and the outcomes in the children. In general, a mediating variable is one that at least partly explains the association between one variable and another. Thus, we examined evidence that the associations researchers have found between depression in parents and adverse outcomes in children are at least partially explained by parenting practices.

Third, to take into consideration other possible mediators of associations between parents' depression and child outcomes, in addition to parenting practices, we noted studies of the effects of depression in parents on the children that also considered the potential role of marital relationships. However, it was beyond the scope of this report to review the literature on effects of depression in parents on their relationships with their spouse/partner, extended family relationships, or work, although we acknowledge that these are likely important aspects of a broad model of how depression in parents is related to the outcomes in their children.

Fourth, we reviewed evidence for the effectiveness of screening, prevention, and treatment of depression in the parent. In these literatures, we searched broadly for evidence of effectiveness of a range of interventions designed to address the effects of parental depression on children.

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CHALLENGES IN THE EVALUATION OF THE LITERATURE

We now present an overview of the many methodological challenges faced by researchers studying parental depression and its effects on parenting practices and child outcomes. We focus particularly on issues that make recommendations possible for the development of new research, interventions, and policy. Such issues involve all aspects of research, from conceptual frameworks, to study sampling designs, to data analysis and the integration of research findings across literatures. As noted previously, these do not specifically address each area of inquiry but instead provide the reader with a set of issues to consider when reading this report. In each subsequent chapter, the committee considered these issues when evaluating the available literature to help guide their conclusions and recommendations.

Balance Hypothesis-Driven and Real-World Challenges

The integration of the large and growing literature on parental depression has presented a number of problems and challenges. First and foremost is the need to balance hypothesis-driven research with real-world challenges in addressing complex health and behavioral disorders. As noted above, the goal of translational research is to move from basic to applied research, from bench to bedside. However, disparities between research conducted under carefully controlled conditions and research in real-world contexts have been widely noted. For example, Weisz and colleagues have shown that psychological treatments for children can be effective when delivered and evaluated under optimal conditions but often have negligible or no effect in community settings (e.g., Weersing and Weisz, 2002). Theories on which interventions on parental depression are based must be tested in the field and modified, if necessary, to increase the likelihood of success when implemented on a large scale. How parental depression affects parenting and children's outcomes is a question that will be best answered using translational research methods that meet the standards that we now outline.

Integrative Models in Research

Scientific research in general is often incremental in its development, and interrelated factors are not always examined properly in the same study. Research in the area of parental depression and its effects on parenting and child development has rarely been conducted to address hypotheses from an integrative model. The use of theory-based models in the design of studies helps to provide a framework for success in ultimate treatment effectiveness that is replicable across locations and time and that can be sustained over time. For example, not accounting for the effects of parental substance abuse, violence, and depression or other psychiatric distress in families may result in an overestimation of the individual effects of these factors on the development of the child. The

relative lack of generalizable, integrative research and interventions on the scope and nature of the prob lems caused by parental depression has provided the impetus for the work of our committee.

A particular interest of the committee was to identify potential untapped sources of information on the scope and dynamics of parental depression on families available in large-scale databases that have been developed in recent years. As a result of this interest, the committee has undertaken analyses of the National Comorbidity Survey-Replication sample and the Medical Expenditure Panel Survey, two large surveys generalizable to the U.S. population with data on family mental health issues, the results of which are included in this report.

Also of note, studies in families have largely not examined the genetic component and its potential interactions, something that is addressed in a paper prepared for the committee as input into this report. Despite being acknowledged as one of the four primary mechanisms by which depression in parents is related to the development of depression and other problems in children (Goodman and Gotlib, 1999; See Figure 4-1 in Chapter 4), few researchers have used genetically informed designs to address questions related to the effect of parental depression on parenting and on child functioning.

A Developmental Perspective

Studies on the effects of parental depression on parenting and child development would benefit from taking a developmental perspective, although we found such an approach to be rare. As described earlier, a developmental perspective considers developmental processes (e.g., the timing of exposure), takes into account roles of early experience of development, integrates multiple transactional influences on development, and considers the multiple alternative pathways through development. For example, assuming that risk factors have effects or interventions that work the same among families with infants and toddlers, school-age children, adolescents, and young adults ignores the vast evidence in the area of child development. A recent editorial by Hinshaw (2008) notes that this is a concern in general with respect to studies of developmental psychopathology and that studies need to address questions "across generations and across time" (p. 361).

A Shared Framework Across Literature

Compounding the challenge of developing shared integrative models, researchers in these areas often have not used common theoretical frameworks, study designs, or measures or had a common focus on the parent-child relationship as the fundamental dynamic to be addressed. This integration has been described as "methodological pluralism" (Hinshaw, 2008, p. 361). For example, depending on the nature of the outcomes of interest and often the field of expertise of the research team (e.g., social science, medicine), the quantification of effects can be varied. Social scientists often use standardized measures of "effect size" (Cohen, 1988) to allow for comparison from study to study. Cutoffs are used to describe these effects as "small" (0.20), "medium" (0.50), or "large" (0.80). The

drawback to these measures is that they are unitless and difficult to interpret from a clinical perspective.

In contrast, medical researchers often prefer to examine unstandardized differences, "effects," which make between-study comparisons difficult if the same measures are not used, or they focus on categorical outcomes, such as "depressed" versus "not depressed" on the basis of established criteria, such as the DSM-IV. The effects in studies employing such outcomes are often summarized in the form of odds ratios or risk ratios, which can vary between 0 and 1 (denoting negative association), 1 (no association), or greater than 1 (to infinity, denoting positive association). The size of such ratio-based measures could be interpreted, for example, with respect to positive associations, as "small" (greater than 1.0 to 1.5), "moderate" (1.5 to 2.0), or "large" (2.0 or greater). These must be interpreted cautiously, however, as their size can be dependent on the scale of the independent variable in question. Moreover, the interpretation of the sizes of effects should also take into consideration what has been previously observed in the relevant field in order to provide proper context.

Choice of Target Population of Study and Its Impact on Generalizability

Another issue that can adversely affect the interpretability of research findings in this area is the lack of generalizability of the samples used. This can result, for example, from a study's being based on a population referred to treatment or a population of parents of children with special needs. Results from such studies clearly cannot be generalized to the population of families at risk because of the varying characteristics of each population. Another way in which generalizability can be reduced is by the inadvertent restriction to a subgroup of the population of interest, which can result in studies with small numbers of subjects. Generalizability is enhanced when random sampling is implemented in a design that samples from all subgroups of interest. Examples of such studies can be found in many so-called complex sample surveys funded by the federal government, such as the National Comorbidity Survey (see http://www.icpsr.umich.edu/CPES/).

Randomized Treatment and Intervention Studies

In comparative intervention studies, which compare a given intervention strategy to another, the lack of randomization to study groups can adversely affect the validity of the study findings. With randomization implemented with large sample sizes, one can minimize the likelihood of the misattribution of effects to the intervention that could otherwise be explained by other factors. In the area of parental depression, the relative lack of randomized studies can be explained by the difficulty of implementation because of ethical issues, such as withholding a potentially effective treatment, or scientific concerns, such as avoiding contamination of intervention groups in behavioral studies. However, randomized clinical trials represent the optimal design for evaluating the efficacy of interventions to prevent adverse outcomes in children of depressed parents.

Sample Size and Its Implications

In general, studies that include small numbers of subjects can produce findings that are suggestive but do not provide evidence that is statistically significant. Such studies are said to lack "statistical power." In these cases, results that are clinically relevant may lack precision and thus confidence in their interpretability is reduced. Researchers often gauge the utility of the sample size of a study by the size of effect that it can minimally detect with 80 percent statistical power and a two-sided alpha (type I error rate) of 0.05. This "size" of effect is often quantified by the standardized effect size (Cohen, 1988) in which an effect of 0.20 is considered "small," 0.50 "medium," and 0.80 "large." To achieve 80 percent power, the 0.20 effect size requires approximately 800 subjects overall, 0.50 requires approximately 120, and 0.80 requires approximately 50. From another view, one can evaluate power for selected sample sizes of interest, for example, 100, 150, 200, 300, and 500, the latter two being in the range of what many would consider large. These sample sizes would require minimal effect size respectively of 0.57, 0.46, 0.40, 0.33, and 0.25.

The sizes of the samples employed in research on the effects of parental depression have often not been large, thus limiting the conclusions that can be drawn from the results and consequently preventing the kind of confident interpretation of results that is required to make policy changes. It is not surprising that large effects of individual risk or protective factors have not been observed given the inherent complexity of the factors at play with respect to the relationship of parental depression, parenting, and child development. Specifically in the context of intervention studies, the difficulty in impacting the multiple functional pathways that define this problem is reflected in the frequently observed small-size intervention effects. As we show in reviewing the literature, many published studies have only been able to detect small effects as statistically significant given the sizes of their samples. And large-scale research projects tied specifically to dissemination and implementation strategies are needed to help motivate changes in policies and systems.

Consideration of Possible Mediation of Effects

Integrative models of parental depression and its effects on parenting and child development need to consider the potential mediation of effects, which hold promise for explaining how depression in parents has its effects on children. Tests of mediation require a more complex analytic approach, such as path analysis, structural equations models, or other causal frameworks than simply adjusting out effects as covariates. The examination of possible mediation effects is an important element in understanding the underlying mechanisms for the effects of parental depression, and thus it has implications for the design and implementation of interventions. Potential problems arise, however, when mediational effects are assessed in solely cross-sectional analyses (Cole and Maxwell, 2003). We show that many studies of the effects of parental depression have not employed longitudinal designs and thus have not properly been able to examine how its effects are mediated through other factors, such as parenting practices on child outcomes.

Assessment of Effect-Modifying Factors

In many studies in the area of parental depression as a risk factor, moderators of effect have not been measured, such as exposure to violence. We would expect that when the constellation of factors associated with depression in a parent are measured, effects for the subgroup with multiple risk factors, such as depression and violence exposure, could be significantly higher than for those who have depression and no other factors. More broadly, a moderator is variable that increases or decreases the strength of association between two other variable. With the effect of depression in parents in their children, we considered the circumstances under which the effects may be stronger or weaker, including characteristics of the depression in the parents, characteristics of the children, and so forth.

Such combinations of risk factors in synergy (i.e., multiplicative) may be what actually result in poorer outcomes and not individual effects operating in a purely additive fashion. Such modifying effects may be present even in a randomized trial. Although the randomization aims to balance across the treatment or intervention groups on all potential confounding variables, measures or unmeasured, this does not eliminate the presence of effect modification. For example, if gender is an effect modifier, it is possible that the intervention could work differently in female compared with male subjects. Genetics is likely to play a moderating role in at least one of several possible patterns (Rutter, 2007). Thus, not recognizing the moderation of effects may prevent the targeting for intervention of subgroups of those who are at particularly increased risk.

Developmental models of psychopathology emphasize the importance of cumulative risk or multiple risk factors (Rutter, 2000; Rutter et al., 2001). The action of risk factors is cumulative in the sense that the presence of more risk factors is related to a higher certainty of negative outcomes (Seifer et al., 1992). Cumulative models reflect the natural covariation of many risk factors. These models assume that the confluence of many risk factors, rather than any single risk, is what leads to dysfunction. This is at least partly explained by the multiple risk factors overwhelming the adaptive capacities of the organism. For example, it has been shown that the magnitude of effect of any one family risk factor associated with psychosocial adjustment of youth is relatively small (Reid and Crisafulli, 1990) and that an increase of adjustment difficulties occurs with an increase in the number of risk factors (Forehand, Biggar, and Kotchick, 1998).

Effect of Measurement Error and Other Measurement Issues

An issue that has not been addressed in the interpretation of findings in this area is the difficulty in measuring depression and depressive symptoms, exposure to violence, and degree of substance use problems (because of the possible illicit nature of the behavior or risk of the loss of the child to state custody that might be imposed by identification of use by the authorities). Either the overestimation or underestimation of risk factor or intervention effects is possible in the presence of measurement error.

Replication of Findings

With a lack of large-scale, generalizable trials, researchers are forced to rely on the replication of findings of quasi-experimental and nonexperimental studies with similar consideration of the multiple, intercorrelated factors suspected to impact family function and child development—that is, an integrated model that links these factors together. Such replication has generally not been found in studies of parental depression, parenting, and child development. We consider strategies to reduce the negative effects on parental depression on parental practices and child outcomes that have been efficacious in two or more peer-reviewed studies. We thus consider such strategies to be ready for wider dissemination and evaluated for their effectiveness. Approaches that have not met this level of evidence are described as "promising" and should be tested in future studies to demonstrate their efficacy.

Go to:

CONCLUSION

In this chapter, we have presented the committee's approach to the evaluation of the extensive literature on the relationship of parental depression, parenting practices, and child outcomes. Our ultimate aim is to set the bar for level of evidence to show (1) associations between parental depression, parenting practices, and child outcomes and (2) the efficacy of screening, prevention, treatments, and policies on the negative effects of parental depression on children. More generally, our aim is to identify the challenges posed by researchers, clinicians, and policy makers in attempting to address problems caused by parental depression.

Four themes emerge from the committee's approach: (1) the integration of knowledge regarding the dynamics of parental depression, parenting practices, and child outcomes; (2) the application of a developmental framework in the study and evaluation of the effects of parental depression; (3) the need to conceptualize the problem as two generation in nature; and (4) the need to acknowledge the presence of the constellation of risk factors, context, and correlates of parental depression. In the chapters that follow, attention is paid to each of these themes, which is essential to understanding the complexity of the problems associated with parental depression. The report shows that, although much is known, there are still many critical questions needing to be addressed with further research and many promising approaches to screening, prevention, treatment, and policy.

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