

Developmental course and risk factors for early-onset depression: a literature review

Introduction

According to a national comorbidity survey, about half of the population in the U.S. will meet the criteria for a DSM-IV diagnosis sometime in their life (Kessler et al., 2005). Among all the disorders, major depressive disorder is the most prevalent with a 16.6% lifetime prevalence rate (Kessler et al., 2005). The first onset of a DSM-IV disorder including depression is usually in childhood or adolescence. Therefore, early prevention and intervention that focus on youth are important.

There have been no specific diagnostic criteria for early-onset depression. Though several diagnoses associated with depression in the DSM classification system can be applied to children, the use of scales and diagnostic criteria for depression seem very diverse across studies. Also, the age cut off for what constitutes as "early onset" also varies a lot in different studies. Given the difficulty of defining early-onset depression, the current paper would review papers that study depression using any type of measures with an onset during either childhood, adolescence, or early adulthood.

The current paper would focus on reviewing studies and extract information about the risk factors for having depression at an early age as well as the developmental trajectories after that. A total of 26 peer-reviewed journal articles meet the above criteria are included for review. Three themes emerge from reviewing studies related to early onset depression: (1) early onset depression itself is a risk factor; both (2) individual risk factors and (3) environmental risk

factors contribute to the development of early-onset depression. The following paper would be organized based on those three themes.

Individual risk factors

Many twin studies have suggested that there are inheritable factors underlying depression (Levinson et al., 2003; Thapar, Collishaw, Pine, & Thapar, 2012). Distinguishing genetic factors for depression is not the main focus of the current paper, but it is widely understood that no single gene or several genes that are powerful enough to directly cause depression. Genetic or inheritable factors are often considered as distal risk factors that exert its influence together with other factors on biological mechanisms. Therefore, instead of directly test the genetic component of each subject, many studies would focus on understanding the relationship between depression and temperament or depression and personality. It is because temperament and personality are often considered as largely biologically based and therefore inherited (though environment can influence that to a degree as well).

A five-year longitudinal study followed over 2000 infants shows that difficult temperament at 5 months is one of the two significant risk factors that predicted a developmental trajectory with increased depression and anxiety symptoms (Côté et al., 2009). The other risk factor found in that study was maternal depression. The inhibited temperament of children is also associated with increased risk for major depressive disorder (MDD) (Moffitt et al., 2007).

Several studies mentioned that among all personality dimensions, neuroticism is closely associated with depression. Moreover, neuroticism seems to predict early onset depression more than adult-onset depression (Korten, Comijs, Lamers, & Penninx, 2012). In addition, low positive emotionality (Moffitt et al., 2007), low harm avoidance and high self-directedness (Smith, Duffy, Stewart, Muir, & Blackwood, 2005) are predictive of recurrent, early onset.

Childhood behavior such as internalizing problems and conduct problems are also a risk factor for early-onset MDD (Moffitt et al., 2007).

Another risk factor that has been receiving more and more attention is substance use among adolescents. A longitudinal study of 4494 adolescents was conducted to study adolescent insomnia. The study found that adolescent insomnia is a risk factor for early adult depression and substance abuse and insomnia is actually associated with the use of alcohol, cannabis, and drugs other than cannabis (Roane & Taylor, 2017). Also, cigarette smoking is also a significant risk factor for developing MDD (Hanna, Yi, Dufour, & Whitmore, 2001; Lewinsohn, Rohde, & Seeley, 1998).

In sum, difficult temperament and neuroticism are the most studied individual risk factors for early-onset depression. Genetic and neuroscience studies were not included in the review because the proposed study for this course only deals with survey data.

Environmental risk factors

Comparing to individual risk factors, there are more kinds of environmental risk factors that are related to early-onset depression. Different studies may examine different environmental risk factors, but they often fall into one of the two categories: childhood adversity and family environment.

Among the 26 articles reviewed, 16 mentioned parental factors that relate to children's early onset depression. Parental depression is a major risk factor for their children's early onset depression. Two reports of the study of offspring of depressed and of normal parents consistently found that there was a significantly increased risk (14-fold) of early-onset depression (before 13) in the children of probands who also had early-onset depression (less than age 20) (Weissman et al., 1987; Weissman, Warner, Wickramaratne, & Prusoff, 1988). Other parental factors include

less warmth, more inter-parental conflict, over-involvement, assertiveness, less autonomy granting and monitoring (Yap, Pilkington, Ryan, & Jorm, 2014).

The home environment is crucial for early development and disruption of it may have significant. One study found that patients with early-onset dysthymia reported significantly more physical and sexual abuse and poorer relationships with normal controls. They also reportedly received significantly poorer parenting than those with episodic major depression (Lizardi et al., 1995).

There are no reports on the direct correlation between early-onset depression and childhood adversity in the studies that have been reviewed. One study reported that stressful life events mediated the relationship between family history and preschoolers' depression (Luby, Belden, & Spitznagel, 2006). Another study reported that childhood adversities and early-onset mental disorders independently associated with chronic physical conditions in adulthood (Scott et al., 2011).

Early onset depression as a risk factor

Apart from studies that investigate the etiology of early-onset depression, other studies often treat it as a risk factor that surrogates multiple negative influences on individuals' development.

First, early onset depression is predictive of poor mental health outcome in later life. Analysis on surveys from 6778 participants shows that childhood-onset MDD had a higher rate of comorbidity with other psychiatric disorders; it is predictive of a greater number of depressive episodes, longer episode duration, increased suicidality, and increased need for hospitalization (Korczak & Goldstein, 2009). Similar results have been reported from several other studies with different samples (Gollan, Raffety, Gortner, & Dobson, 2005; Zisook et al., 2004).

Second, early-onset MDD is predictive of five chronic physical conditions including heart disease, asthma, osteoarthritis, chronic spinal pain, and frequent or severe headache in adulthood (Scott et al., 2011).

Finally, early onset depression is also associated with drug disorders in early adulthood (Reinherz, Giaconia, Carmola Hauf, Wasserman, & Paradis, 2000), personality disorders (Abrams, Rosendahl, Card, & Alexopoulos, 1994), and future negative life events (Patton, Coffey, Posterino, Carlin, & Bowes, 2003) and so on.

Relevance to the research question

The proposed project raised a research question of what are the risk factors for early-onset depression. The current paper reviewed a series of studies on risk factors for early-onset depression. As we can see, the possible risk factors for depression are very diverse, but mostly come from personal characteristics and its immediate environment. Most of the studies that have been reviewed focus on analyzing the relationship between one specific area (such as physical health, substance use, or parental depression, etc.) and early onset depression. Given enough sample size, it is very likely to find a significant correlation between the identified variables and confirm the researchers' hypothesis. The fact that different studies used different scales on different age groups and samples makes it hard to compile all the information and make inference on the relationship among the risk factors. Therefore, the proposed study would apply machine learning method on a large data set with hundreds of variables about each participant and examine what are the risk factors and how do they influence the development of early-onset depression.

Reference

- Abrams, R. C., Rosendahl, E., Card, C., & Alexopoulos, G. S. (1994). Personality Disorder Correlates of Late and Early Onset Depression. *Journal of the American Geriatrics Society*, 42(7), 727–731.
- Côté, S. M., Boivin, M., Liu, X., Nagin, D. S., Zoccolillo, M., & Tremblay, R. E. (2009). Depression and anxiety symptoms: Onset, developmental course and risk factors during early childhood. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 50(10), 1201–1208.
- Gollan, J., Raffety, B., Gortner, E., & Dobson, K. (2005). Course profiles of early- and adult-onset depression. *Journal of Affective Disorders*, 86(1), 81–86.
- Hanna, E. Z., Yi, H. Y., Dufour, M. C., & Whitmore, C. C. (2001). The relationship of early-onset regular smoking to alcohol use, depression, illicit drug use, and other risky behaviors during early adolescence: Results from the youth supplement to the Third National Health and Nutrition Examination Survey. *Journal of Substance Abuse*, 13(3), 265–282.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*.
- Korczak, D. J., & Goldstein, B. I. (2009). Childhood Onset Major Depressive Disorder: Course of Illness and Psychiatric Comorbidity in a Community Sample. *Journal of Pediatrics*, 155(1), 118–123.
- Korten, N. C. M., Comijs, H. C., Lamers, F., & Penninx, B. W. J. H. (2012). Early and late onset depression in young and middle aged adults : Differential symptomatology , characteristics and risk factors ? *Journal of Affective Disorders*, 138(3), 259–267.

- Levinson, D. F., Zubenko, G. S., Crowe, R. R., DePaulo, R. J., Scheftner, W. S., Weissman, M. M., ... Chellis, J. (2003). Genetics of recurrent early-onset depression (GenRED): Design and preliminary clinical characteristics of a repository sample for genetic linkage studies. *American Journal of Medical Genetics*, 119B(1), 118–130.
- Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). Major depressive disorder in older adolescents: Prevalence, risk factors, and clinical implications. *Clinical Psychology Review*, 18(7), 765–794.
- Lizardi, H., Klein, D. N., Ouimette, P. C., Riso, L. P., Anderson, R. L., & Donaldson, S. K. (1995). Reports of the Childhood Home Environment in Early-Onset Dysthymia and Episodic Major Depression. *Journal of Abnormal Psychology*, 104(1), 132–139.
- Luby, J. L., Belden, A. C., & Spitznagel, E. (2006). Risk factors for preschool depression: The mediating role of early stressful life events. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 47(12), 1292–1298.
- Moffitt, T. E., Caspi, A., Harrington, H., Milne, B. J., Melchior, M., Goldberg, D., & Poulton, R. (2007). Generalized anxiety disorder and depression: Childhood risk factors in a birth cohort followed to age 32. *Psychological Medicine*, 37(3), 441–452.
- Patton, G. C., Coffey, C., Posterino, M., Carlin, J. B., & Bowes, G. (2003). Life events and early onset depression: Cause or consequence? *Psychological Medicine*, 33(7), 1203–1210.
- Reinherz, H. Z., Giaconia, R. M., Carmola Hauf, A. M., Wasserman, M. S., & Paradis, A. D. (2000). General and specific childhood risk factors for depression and drug disorders by early adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39(2), 223–231.
- Roane, B. M., & Taylor, D. J. (2017). Adolescent Insomnia as a Risk Factor for Early Adult

Depression and Substance Abuse. *Sleep*.

Scott, K. M., Von Korff, M., Angermeyer, M. C., Benjet, C., Bruffaerts, R., de Girolamo, G., ...

Kessler, R. C. (2011). Association of childhood adversities and early-onset mental disorders with adult-onset chronic physical conditions. *Archives of General Psychiatry*, 68(8), 838–844.

Smith, D. J., Duffy, L., Stewart, M. E., Muir, W. J., & Blackwood, D. H. R. (2005). High harm avoidance and low self-directedness in euthymic young adults with recurrent, early-onset depression. *Journal of Affective Disorders*, 87(1), 83–89.

Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *The Lancet*, 379(9820), 1056–1067.

Weissman, M. M., Gammon, G. D., John, K., Merikangas, K. R., Warner, V., Prusoff, B. A., & Sholomskas, D. (1987). Children of Depressed Parents. *Archives of General Psychiatry*, 44(10), 847.

Weissman, M. M., Warner, V., Wickramaratne, P., & Prusoff, B. A. (1988). Early-onset major depression in parents and their children. *Journal of Affective Disorders*, 15(3), 269–277.

Yap, M. B. H., Pilkington, P. D., Ryan, S. M., & Jorm, A. F. (2014). Parental factors associated with depression and anxiety in young people: A systematic review and meta-analysis.

Journal of Affective Disorders. Elsevier.

Zisook, S., John Rush, A., Albala, A., Alpert, J., Balasubramani, G. K., Fava, M., ...

Wisniewski, S. (2004). Factors that differentiate early vs. later onset of major depression disorder. *Psychiatry Research*, 129(2), 127–140.