



REVIEW

ADOLESCENT DEPRESSION: PROGRESS AND FUTURE CHALLENGES IN PREVENTION-CONTROL ACTIVITIES

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ABSTRACT

It is accepted that depression during adolescence is a highly prevalent yet mostly an under recognized mental health problem. Studies carried out in diverse cultures report prevalence rates ranging from 1% to 50% for adolescent depression. Presence of depression during adolescence, effects the development negatively and creates a tendency towards high-risk behaviors as alcohol, tobacco use and substance abuse. Current research points out that although there is a biological tendency for the development of adolescent depression, psychological and social factors also play an important role. Therefore intervention programs, focusing on particularly psychosocial factors, gain attention for the prevention and control of adolescent depression. The findings from school based studies which aim to prevent adolescent depression through utilizing cognitive behavioral techniques are promising. This paper discusses the burden and the factors influencing the development of depression during adolescence, as well as the objectives, methods, findings and the effectiveness of prevention programs which focus on psychosocial factors.

ERGENLERDE DEPRESYON: ÖNLEME VE KONTROL STRATEJİLERİNDEKİ GELİŞMELER VE GELECEĞE YÖNELİK HEDEFLER

ÖZET

Depresyon, ergenlik çağında oldukça sık görülebilmesine karşın çoğu zaman olması gerektiğinden daha az tanı koyulan bir sağlık sorunudur. Çeşitli toplumlarda yapılan çalışmalar, ergenlerde depresyon prevalansının %1 ile %50 arasında değiştiğini ortaya koymaktadır. Bu çağda gelişen depresyon, ergenin gelişimini olumsuz yönde etkilemekte ve intihar, alkol, sigara veya madde kullanımı gibi riskli davranışlara eğilim yaratmaktadır. Araştırmalar, ergenlerde depresyon gelişiminde biyolojik yatkınlığın yanı sıra, sosyal ve psikolojik faktörlerin de önemli rol oynadığını göstermektedir. Bu nedenle, depresyonun önlenmesi ve kontrolünde özellikle psikososyal faktörlere odaklı müdahale çalışmaları önem kazanmaktadır. Okullarda yürütülen ve bilişsel-davranışçı teknikleri temel alan depresyon önleme programlarının sonuçları olumlu olarak değerlendirilmektedir. Bu yazıda, ergenlerdeki depresyon yükü, depresyon gelişimini etkileyen faktörler ve psikososyal faktörlere odaklı depresyon önleme programlarının amaçları, uygulama yöntemleri, sonuçları ve uygulanabilirlikleri tartışılmaktadır.

INTRODUCTION

There is a growing concern regarding adolescent depression since it is highly prevalent yet mostly an under recognized mental health problem. Nevertheless, the intervention programs that aim to prevent and control adolescent depression yield promising results. Since some of the determinants of adolescent depression are modifiable, it is important to develop and discuss policies focusing on prevention and control activities.

World Health Organization reports that depression is the fourth leading cause to the global burden of disease worldwide ¹. Although today we know that depression affects all age groups, for many years it was considered to be rare before adulthood since children were considered to lack the mature psychological and cognitive structure necessary to experience these problems ². The main belief was that mood disturbance was a normative and self-limiting aspect of child and

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adolescent development. Moreover, the diagnosis of depression for these adolescents present a less differentiated clinical picture compared to adults. And because children and adolescents do not seek for help for their emotional problems, neither parents nor teachers recognize emotional problems effectively³. Yet, current epidemiological research points out that depression before adulthood, although under recognized, is a common health problem and should be addressed as a priority issue^{2,4-11}.

Several studies point out that depression and even depressive symptoms during adolescence have serious consequences both at the individual and the community level. Presence of depressive symptoms during adolescence is related with high-risk behaviors as tobacco use, substance abuse or suicidal ideation¹¹⁻¹³. Patten et al.¹⁴ noted that among adolescents who had depressive symptoms at baseline, more than one third reported the persistence of symptoms within the past 12 months. The same study determined that if depressive symptoms persisted, the risk for secondary problems as drug or alcohol abuse and suicidal attempts increased¹⁴. Even sub threshold depression or the presence of depressive symptoms is reported to be a risk factor for subsequent depression episodes for both genders^{12,15}. And because of the continuity between child or adolescent depression with that of adulthood, it is important to focus on prevention and control activities at younger ages.

The magnitude of the problem

Epidemiological studies evaluating the burden of depression among adolescents report different prevalence rates ranging from 1% to 50%⁴. The discrepancies are not surprising since the data collection tool as well as the time, the setting of the surveys and the age group considered have an important impact on the prevalence detected. Nevertheless, almost all the researches carried out in diverse cultures point that adolescent depression is prevalent.

A survey carried out among a representative sample of adolescents in US determined that lifetime prevalence of major and minor depression as 15.3% and 9.9%, respectively⁵. The 30-day period prevalence for major and minor depression was determined as 5.8% and 2.1% in the same study⁵. A school-based survey in Sweden revealed that, among the 16-17 age group, the 1-year prevalence of major depression was 5.8% and the lifetime prevalence was 11.4%⁶. Again a school-based survey encompassing the ages of 13-

22 year olds determined a prevalence rate of 16.9% in China¹⁶. The rates can be higher among the adolescents who attend to health units. A study carried out among adolescents who attended to primary care units in Brazil revealed a prevalence rate of 26.5%⁷.

There are also three studies reporting prevalence rates from Turkey. In a school-based survey carried out in one of the provinces of Turkey, it was revealed that the prevalence of depression was 12.5% in the age group 10-20⁸. Another school-based survey determined a higher prevalence rate because the latter study was carried out in a region, which was affected by a devastating earthquake. Three and a half years after the earthquake, the depression prevalence was determined as 30.8% among adolescents⁹. In another research carried out among high school students in a socio economically disadvantaged region of Istanbul, the prevalence was determined as 30.3%¹⁰.

Basically, studies evaluate the presence of depression through two approaches⁴. The first one is by utilizing screening tests, which use the self-reported symptom scales as most of the above examples. And the second approach for determining prevalence is by using diagnostic interviews. Studies using diagnostic interviews reported relatively lower rates compared to studies using self-report scales. It was proposed that the gap between the prevalence rates might result from an artifact due to adolescents' over reporting of their symptoms. But most probably a considerable high proportion of adolescents suffer from sub threshold depression⁴.

It is important to note that an increasing trend in the rates is observed among different cohorts throughout the years. With the epidemiological transition, the burden of depression among communities had been growing. It is proposed that as the communities evolve from modernization to post modernization many changes take place within the society and many persons experience psychological distress while trying to adapt to the changing social norms. This social transition is considered to move from collectivity to individualism thus weakening the individual's bond to life leading to helplessness and hopelessness¹⁷. This fact is argued as the one of the main reasons leading to the increase in depression and thus suicidal rates¹⁷. Research showed that after the 2nd World War, lifetime prevalence of depression had increased with each birth cohort¹⁸. A survey carried out among



adolescents in US determined that higher prevalence as well as early onset of the disorder was observed among the younger cohort⁵. And WHO estimates that depression will be the second leading cause of disability by 2020 worldwide¹.

Determinants of adolescent depression

Research points out to a number of risks as well as protective factors that influence the mental well being of adolescents³. Any intervention program interventions

Table I: Selected researches that focus on the school-based depression prevention interventions

Author, publication year	Target population	Intervention	Results
Clarke, 2001 (41)	At-risk offspring (aged 13-18 years) of adults treated for depression in a health maintenance organization	CBT delivered by clinical psychologists	The incidence of major depression in the intervention group was a third of that in the control group (9.3% vs 28.8% over two years).
Harnett, 2004 (44)	Students aged 12 to 16 years	Cognitive behavioral strategies and exercises delivered by teachers	No benefit
Clarke, 1995 (46)	Adolescents with elevated but subdiagnostic levels of self-reported depressive symptomatology	CBT delivered through specially trained school psychologists and counselors	A significant 12-month advantage for the prevention program, with affective disorder total incidence rates of 14.5% for the active intervention, versus 25.7% for the control condition.
Kerfoot, 2004 (47)	Depressed adolescents	CBT delivered by social workers	Adolescents who had therapy from trained social workers had a similar level of depression post treatment (mean depression score 17.5) to those who did not have such therapy (mean depression score 16.7).
Gillham 1995 (48)	5 th and 6 th grade adolescents	CBT delivered by clinical psychologists	On average children in the intervention group reported fewer depressive symptoms on average. Also the intervention group was only half as likely as the control group to report symptoms in the moderate to severe range
Seligman 2001 (49)	First year university students at risk	CBT delivered by clinical psychologists	The intervention group had fewer episodes of generalized anxiety disorder, showed a trend toward fewer depressive episodes. The intervention group had also fewer moderate depressive episodes but not severe depressive episodes.
Shochet 2001 (50)	Adolescents 12-15 years old	CBT delivered by clinical psychologists	Intervention groups showed a significantly greater decrease in depressive symptoms 10 months later compared with the control group
Puskar, 2003 (51)	Adolescents at least 13 years of age living in a rural region	CBT delivered by master's level nurses with psychiatric mental health experience	Intervention group showed improvement in depressive symptoms and certain coping skills as well as the use of cognitive problem solving coping strategies

aiming to prevent and control mental health disorders should focus on reducing the risk while promoting the preventive factors.

Biological factors

Gender is one of the factors, which influences the rate of depression and depressed mood during adolescence. In early adolescence there is an increase in the rate of depression among girls but not the boys^{6,11,19-22} although there are some studies controversial²³. The developmental events are considered to increase the vulnerability of the

female gender^{22,24}. Also an environment that fosters negativity and rumination is thought to be important²⁴.

Genetic tendency to depression is one of the known risk factors although environmental influence is sometimes hard to distinguish^{4,25,26}.

Early puberty was also shown to increase the vulnerability to adolescent depression^{11,27,28}. It was argued that this is because of major hormonal changes²⁹ or stressful effect of deviation from normality. Nevertheless, pubertal development



involves biological, psychological and social changes that all may contribute to mental health problems. And girls were more influenced than boys³⁰.

Obesity and depression are interrelated³¹. It is not clear whether obesity or depression come first since one of the expressions for depression is weight gaining or losing. Negative childhood experiences are considered to reinforce the development of both disorders and their co-occurrence³¹. Body perception among youngsters is regarded as important especially for girls, many mental health problems disorders were found more prevalent than boys and perception of overweight was shown to be an important factor³¹⁻³³. A study carried out among Chinese adolescents had indicated that perceived overweight was related to depression and anxiety for both genders. Also perceived overweight groups were exposed to a higher degree of social isolation³⁴.

Psychological and Social Factors

Cognitive factors were seen important for adolescent depression. Among those who have ability to learn from experiences, good self-esteem, high level of problem solving ability and social skills experienced depression less^{3,15,35}.

There are number of studies examining relationship between family environment and adolescent psychological background. Intact families were usually reported to be protective. Inconsistent care-giving, family conflict, poor family discipline, poor family management, death of a family member are associated with depression. Family attachment, opportunities for positive involvement in family, rewards for involvement in family are regarded as protective factors^{15,24,30,35,36}.

Academic failure in school, failure of schools to provide an appropriate environment to support attendance and learning, inadequate/inappropriate provision of education may also contribute to presence of depression among adolescents^{3,15,30}. Opportunities for involvement in school life, positive reinforcement from academic achievement may be favored factors for good mental health³.

Perceived lack of social support, perceived discrimination and marginalization, lack of cultural identity, experience of war and exposure to violence, transitions (urbanizations) are regarded as risk factors as a reflection of negative outcomes of modernization^{3,11,37-40}.

Number of friends is also associated with depression. Those who have more friends are found to have less depressive symptoms^{10,30}.

Research on prevention and control activities

WHO puts forward main reasons for developing effective interventions targeting children and adolescents. Implementing intervention activities focusing on prevention and screening programs for adolescence will be important in reducing the long term impairment in adulthood and solve the problems at the stage that it is most likely to appear. Effective interventions will also be important in reducing the health costs at the community and the individual level³.

Research puts forward promising results for depression prevention programs for adolescents who are at risk for depression. Intervention trials are based on cognitive behavioral therapy (CBT) since on the individual bases the efficiency of CBT is proven to be effective for adolescent depression. Studies using cognitive programs basically utilize two different approaches in delivering the interventions. The first one is through trained psychologists and the second one is by means of teachers or social workers. A considerable improvement is achieved in depression prevention when cognitive therapy is delivered by trained psychologists. An outstanding example is conducted by Clarke et al. A randomized controlled trial utilized cognitive

therapy prevention program targeted the offspring of depressive parents. Participants were adolescents with depressive symptoms who did not meet the diagnostic criteria for depression. This study determined the effectiveness of cognitive therapy; it revealed a cumulative major depression incidence during a median of 15 months of follow of 9.3% and 28.8% in experiment and control groups, respectively⁴¹.

A placebo-controlled trial in New Zealand evaluated the effectiveness of a school based depression prevention program. The intervention was based on a manual based program, which was derived from cognitive behavioral therapy. Immediately after the program a significant clinical benefit with an absolute risk reduction of 3% and with a number needed to treat for short-term benefit of 33 was achieved⁴².

The research points out that the intensive interventions utilizing CBT delivered by trained mental health professionals are shown to be efficient, but the activities delivered by teachers or social workers mostly showed no benefit. It is



clear that under real world conditions it is not possible to carry out prevention and control activities through psychologists. So the question that needs to be addressed is that the effectiveness of the interventions rather than their efficiency⁴³. The interventions are efficient in other words they are successful under ideal laboratory conditions. But will they be effective when delivered as a community based program in the real world? And will they be cost effective?⁴³.

A recently published study addressed the above-mentioned question. This study evaluated the effectiveness of a depression prevention program under real-world conditions in schools. The program was implemented through the existing school personnel. Although the program did not demonstrate a beneficial effect for the students, the knowledge, the confidence as well as the quality of program implementation was acceptable. It was important that the personnel did not consider the program difficult to implement⁴⁴. Authors discuss that there was a high level of variability between students within classes, which made it difficult to detect differences between classes that could be attributed to facilitator variables⁴⁴.

Some approaches are suggested in order to overcome the availability of trained staff who is capable to deliver CBT. An internet-based CBT program and a computerized cartoon-based program are examples of such approaches. Internet based programs in some cultures can

encompass a wide audience and they can be cost-effective. It is also possible to deliver individual messages according to the person's particular risk profile still they could be anonymous⁴⁵. However, the major limitation of internet-based programs is their accessibility particularly in disadvantaged populations (Table I).

Conclusion and future challenges

Depression is an under-recognized yet a prevalent health problem among adolescents. It does not only cause suffering and loss of functional ability, but it also serves as a risk factor for suicide attempts and numerous negative behaviors such as smoking, alcohol and drug use. Current research points out that although there is biological tendency to the development of adolescent depression, psychological and social factors play an important role. Prevention and control activities focus on modifying and improving the psychosocial factors. Community based prevention activities taking place in schools or the family environment are shown to be efficient. Nevertheless, the effectiveness of interventions in real life situations should be further tested and evaluated. By implementing effective strategies, which focus on prevention and control, it would be possible to reduce the burden of the disease while also decreasing the associated various risk taking behavior.

REFERENCES

1. World Health Organization. The World Health Report 2001: New Understanding, New Hope. Geneva, WHO, 2001.
2. Son SE, Kirchner JT. Depression in Children and Adolescents. *Am Fam Physician* 2000; 62: 2297-2308.
3. World Health Organization. Child and Adolescent Mental Health Policies and Plans. Mental Health Policy and Service Guidance Package, 2005.
4. Kessler RC, Avenevoli S, Merikangas KR. Mood disorders in children and adolescents: an epidemiologic perspective. *Biol Psychiatry* 2001; 49: 1002-1014.
5. Kessler RC, Walters EE. Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. *Depress Anxiety* 1998; 7:3-14.
6. Olsson GI, von Knorring AI. Adolescent depression: prevalence in Swedish high-school students. *Acta Psychiatr Scand* 1999; 99: 324-31.
7. dos Santos Palazzo L, Humberto Beria J, Alonso-Fernandez F, Tomasi E. Depression in adolescence treated at primary care centres: size of a hidden problem of general health Aten Primaria 2001; 28: 543-549.
8. Toros, Bilgin NG, Bugdayci R, Sasmaz T, Kurt O, Camdeviren H. Prevalence of depression as measured by the CBDI in a predominantly adolescent school population in Turkey. *Eur Psychiatry* 2004; 19: 264-271.
9. Karakaya I, Agaoglu B, Coskun B, Sismanlar SG, Yıldız Oc O. The Symptoms of PTSD, Depression and Anxiety in Adolescent Students Three and a Half Years After the Marmara Earthquake. *Turk Psikiyatri Derg* 2004; 15: 257-263.
10. Cebeci D, Fidanoğlu O, Çalı Ş, Ünalı Ş, Hidroğlu S, Gürbüz Y. Depression prevalence in high school students and depression's relationship with family life and other variables. 2nd National Family and Marital Therapies Congress, March 2003 Istanbul
11. Lewinsohn PM, Rohde P, Seeley JR Major Depressive Disorder In Older Adolescents: Prevalence, Risk Factors, And Clinical Implications *Clin Psychol Rev* 1998; 18: 765-794.
12. Burns JJ, Cottrell L, Perkins K, Pack R, Stanton B, Hobbs G, Hobby L, Eddy D, Hauschka A. Depressive symptoms and health risk among rural adolescents. *Pediatrics* 2004; 113: 1313-1320.
13. Glied S, Pine DS. Consequences and correlates of adolescent depression. *Arch Pediatr Adolesc Med* 2002; 156: 1009-1014.
14. Patten CA, Choi Ws, Vickers KS, Pierce JP. Persistence of depressive symptoms in adolescents. *Neuropsychopharmacology* 2001;25: 89-91.



15. Pelkonen M, Marttunen M, Aro H. Risk for depression: a 6 year follow-up of Finnish adolescents. *J Affect Disord* 2003; 77: 41-51.
16. Liu XC, Ma DD, Kurita H, Tang MQ. Self-reported depressive symptoms among Chinese adolescents. *Soc Psychiatry Psychiatr Epidemiol* 1999; 34: 44-47.
17. Willis LA, Coombs DW, Cockerham WC, Frison SL. Ready to die: a postmodern interpretation of the African-American adolescent male suicide. *Soc Sci Med* 2002; 55: 907-920.
18. Klerman GL, Weissman MM. Increasing rates of depression. *JAMA* 1989; 261: 2229-2235.
19. Sen B.J Adolescent propensity for depressed mood and help seeking: race and gender differences *Ment Health Policy Econ* 2004;7:133-45.
20. Olsson G, von Knorring AL. Beck's Depression Inventory as a screening instrument for adolescent depression in Sweden: gender differences. *Acta Psychiatr Scand* 1997; 95: 277-82.
21. Hankin BL, Abramson LY, Moffitt TE, Silva PA, McGee R, Angell KE. Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *J Abnorm Psychol* 1998; 107: 128-40.
22. Wichstrom L. The emergence of gender difference in depressed mood during adolescence: the role of intensified gender socialization. *Dev Psychol* 1999; 35: 232-45.
23. Grant K, Marsh P, Syniar G, Williams M, Addlesperger E, Kinzler MH, Cowman S. Gender differences in rates of depression among undergraduates: measurement matters. *J Adolesc* 2002; 25: 613-617.
24. Hauenstein E. Depression in adolescence *JOGNN* 2003; 32: 239-248.
25. McGuffin P, Katz R. The genetics of depression: current approaches. *Br J Psychiatry Suppl* 1989; 6: 18-26.
26. Lieb R, Isensee B, Höfler M, Wittchen HU. Parental depression and depression in offspring: evidence for familial characteristics and subtypes? *J Psychiatr Res* 2002; 36: 237-246.
27. Kaltiala-Heino R, Marttunen M, Rantanen P, Rimpela M. Early puberty is associated with mental health problems in middle adolescence. *Soc Sci Med* 2003; 57: 1055-1064.
28. Kaltiala-Heino R, Kosunen E, Rimpela M. Pubertal timing, sexual behaviour and self-reported depression in middle adolescence. *J Adolesc* 2003; 26: 531-545.
29. Brooks-Gunn J, Warren MP. Biological and social contributions to negative affect in young adolescent girls. *Child Dev* 1989; 60: 40-55.
30. Vance E, Bowen NK, Fernandez G, Thompson S. Risk and Protective Factors as predictors of outcome in adolescents with psychiatric disorder and aggression. *J Am Acad Child Adolesc Psychiatry* 2002; 41: 36-43.
31. Stunkard AJ, Faith MS, Allison K. Depression and obesity. *Biol Psychiatry* 2003; 54: 330-337.
32. Needham BL, Crosnoe R. Overweight status and depressive symptoms during adolescence. *J Adolesc Health* 2005; 36: 48-55.
33. Mitchell KS, Mazzeo SE. Binge eating and psychological distress in ethnically diverse undergraduate men and women. *Eat Behav* 2004; 5: 157-69.
34. XIE B, Chunhong L, Chou CP, Xia J, Spruijt-Metz D, Gong J, Li Y, Wang H, Jonson CA. Weight Perception and Psychological Factors in Chinese adolescents. *J Adolesc Health* 2003; 33: 202-210.
35. Facio A, Batistuta M. What makes Argentinian girls unhappy? A cross-cultural contribution to understanding gender differences in depressed mood during adolescence. *J Adolesc* 2001; 24: 671-680.
36. Liu YL. Parent-child interaction and children's depression: the relationships between parent-child interaction and children's depressive symptoms in Taiwan. *J Adolesc* 2003; 26: 447-457.
37. Kaltiala-Heino R, Rimpela M, Rantanen P, Laippala P. Adolescent depression: the role of discontinuities in life course and social support. *J Affect Disord* 2001; 64: 155-166.
38. Rieckmann TR, Wadsworth ME, Deyhle D. Cultural identity, explanatory style, and depression in Navajo adolescents. *Cultur Divers Ethnic Minor Psychol* 2004; 10: 365-82.
39. Szalacha LA, Erkut S, Garcia Coll C, Alarcon O, Fields JP, Ceder I. Discrimination and Puerto Rican children's and adolescents' mental health *Cultur Divers Ethnic Minor Psychol* 2003; 9: 141-55.
40. Brajsa-Zganec A. The long-term effects of war experiences on children's depression in the Republic of Croatia *Child Abuse Negl* 2005; 29: 31-43.
41. Clarke GN, Hornbrook M, Lynch F, et al. A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. *Arch Gen Psychiatry* 2001; 58: 1127-1134.
42. Merry S, McDowell H, Wild CJ, Bir J, Cunliffe R. A randomized placebo-controlled trial of a school-based depression prevention program. *J Am Acad Child Adolesc Psychiatry*. 2004; 43: 538-47.
43. Andrews G, Wilkinson DD. Preventing Depression The prevention of mental disorders in young people *MJA* 2002; 177: 97-100.
44. Harnett PH, Dadds MR. Training school personnel to implement a universal school-based prevention of depression program under real-world conditions. *J Sch Psychol* 2004; 42: 343-357.
45. Christensen H, Griffiths KM. Preventing Depression The prevention of depression using the Internet *MJA* 2002; 177: 122-125.
46. Clarke GN, Hawkins W, Murphy M, et al. Targeted prevention of unipolar depressive disorder in an at-risk sample of high school adolescents: a randomized trial of a group cognitive intervention. *J Am Acad Child Adolesc Psychiatry* 1995; 34: 312-321.
47. Kerfoot M, Harrington R, Harrington V, Rogers J, Verduyn C. A step too far? Randomized trial of cognitive-behaviour therapy delivered by social workers to depressed adolescents. *Eur Child Adolesc Psychiatry* 2004; 13: 92-9.
48. Gillham JE, Reivich KJ, Jaycox LH, Seligman MEP. Prevention of depressive symptoms in schoolchildren: two year follow-up. *Psychol Sci* 1995; 6: 343-351.
49. Seligman MEP, Schulman P, DeRubeis RJ, Hollon SD. The prevention of depression and anxiety. *Prevention & Treatment* 2001; 2: article 8. <http://journals.apa.org/prevention/volume2/pre0020008a.html>.
50. Shochet IM, Dadds MR, Holland D, et al. The efficacy of a universal school-based program to prevent adolescent depression. *J Clin Child Psychol* 2001; 30: 303-315.
51. Puskas K, Sereika S, Tusaie-Mumford K. Effect of the Teaching Kids to Cope (TKC) program on outcomes of depression and coping among rural adolescents. *J Child Adolesc Psychiatr Nurs* 2003; 16: 71-80.