

Depression, a major public health issue for adolescents in Greece in midst the recent socio-economic crisis: A review and proposals

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Abstract

Objective: Children and teens are a particularly vulnerable segment of the population. The vulnerability of this group and unique nature of adolescent depression along side a socioeconomic crisis make it a major public health issue for Greece. This paper conducts a preliminary review of available literature on the impact the Greek socioeconomic crisis will have on social determinants as mediators of mental health outcome: adolescent depression.

Method: Literature search was carried out using strictly online resource available through the University of Athens Medical School access accounts from local and international databases.

Results: By attempting to draw a connection from socioeconomic crisis to social determinants and on to adolescent depression, a considerable international knowledge-base was found addressing the subject from various points of view. Although none drew a clear path, some indirect evidence exists in the literature. At the same time further clarification is needed to understand adolescent depression development path and trajectory.

Conclusions: Only some primarily conclusions can be extracted from the international literature and can be extended to the Greek socioeconomic crisis and adolescent depression to predict outcome.

Key words and terms: adolescent; depression; family; suicide; problem behavior; parenting; context; puberty; epidemiological; socioeconomic crisis; risk/protective factors; developmental; historical; health system; Greece adolescence; suicide attempt; suicidal ideation; review

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Introduction

According to the World Health Organization (WHO) estimates for Disability Adjusted Life Years (DALYs), all ages and both sexes for depression, will reach second place - between the ages of 15-44. Depression is the second leading cause of disability world wide affecting approximately 121 million people. Of that, approximately 850 thousand people will commit suicide (WHO 2011a). Children and teens are a particularly vulnerable segment of the population; 1 in 5 children and 1 in 8 adolescents suffer from depression. It is the leading cause of death between the ages of 15-35 (Stuckler, Basu & McDaid 2011). The unique characteristics of adolescent depression make it quite different from adult depression (Lazaratou & Anagnostopoulos 2001), and in the midst of a socioeconomic crisis in Greece adolescent depression may become a major public health issue.

This paper takes sweeping preliminary view of literature regarding the impact of the socioeconomic crisis, with an eye on what the WHO (2011b) calls “social determinants”, as associated with the development and course of adolescent depression.

To facilitate our discussion, first we will seek to ground our approach with a sound conceptualization of depression and outline other coexisting conditions. Second, we will discuss social determinants as risk factors along with individual risk factors in association with the development and course of depression, and finally, if possible, conclude with a tie-in-to the socioeconomic-crisis variable.

Up to until the 80s, adolescent depression was thought of as simply as a “symptom” of adolescence; something of developmental stage that every teenager will go thorough and eventually come out. It took an explosion of teen suicides to finally prompt the attention of

mental health professionals in the area of adolescent depression ([Lazaratou & Anagnostopoulos 2001](#)).

The resulting attention has accumulated a considerable body of knowledge in this area. Despite this however, visibly there is no coherent body of knowledge regarding adolescent depression development. That is to say, there is little commonality of direction in the research ([Steinberg, Laurence & Lerner 2004](#)), so that we may be afforded a better understanding of the associations between large contextual factors (i.e. ethnicity, economics, policies, neighborhoods, schools etc.) to individual factors (i.e. genetics, eating, substance use, family, suicide etc.) that may direct adolescent development away from the “normality”.

Method

Literature search was carried out using strictly online resource available through the University of Athens Medical School access accounts for local and international databases. The aim of the search was to understand, first, what may be available on Greece specifically and, second what may be available internationally on the subject. Search terms used were broad enough to encompass socioeconomic variables as they affect mental health. Search terms were also specific enough to focus on individual markers (risk and protective factors) as they relate to children and adolescent depression.

The search date parameters ranged from the early 80's to the present date and consisted of mainly journal articles. Approximately 1200 articles were reviewed and were relevant in some way; however only a small number of them were used for this preliminary review.

The method and approach used throughout the research was incoherent. Each research looked at adolescent depression from a different point of view. This prompted the grouping of literature in what seemed coherent and common characteristics. The aim was, first to manage the information better, second, to obtain a “screen capture” that may yield some patterns of associations among and between variables. Finally, in this way a reasonable direction of analysis may be taken in response to the objective of this paper.

Results

As stated earlier, findings have been grouped along the lines of “commonalities” for consideration.

Comorbidity

It is well documented at this point that along side depression in adolescents there also seems to be high prevalence of a number of other disorder such as personality disorders, disruptive disorders in boys, eating disorders in girls (Petersen et al. 1993) and anxiety disorders all of which may change the intensity and course of depression (Seligman & Ollendick 1998).

Biology, genetics, environmental and contextual

Uddin et al. (2010) discusses and extends evidence for genetic factors and risk for depression in adolescents through different gender responses to social context. they make a case for implicating both genetic predisposition and social context in the development of depression. While Steinberg & Morris’ (2001) review of research to date on diverse populations, contextual influences, behavioral genetics, siblings and peer relations seem to reinforce the case for both biological and social context interaction. Further research from the same author brings to the forefront the adolescent's brain and the differences from both the child's brain and the adult's brain. (Steinberg, L. 2010). An additional review of literature on the biological correlates of major depressive disorder (MDD) in children and adolescent found that family genetics may be a marker for MDD (Birmaher & Heydl 2001). A New Zealand report into the causes of suicide focuses on the individual-level psychological theory, psychiatric epidemiology and behavioural genetics, and the causal differences in suicide rates between countries and between population-

groups within countries. Little explanation was found in models focusing on individual-level risk factors. Suggesting that broader approaches indicate many more variables at work ([Howden-Chapman et al. 2005](#)).

Socioeconomic and risk factors

Along the lines of trajectory, a study looking at the importance of proximal and distal contextual-risk in predicting psychopathology; found that risk accumulation over time is more important in predicting adolescent psychopathology than specificity ([Flouri & Tzavidis 2008](#)), again indicating a broader approach might be more useful.

A study in South Africa indicated that negative family and peer relations play a significant role in the development of adolescent depression. The study did not find socioeconomic factors to be a significant variable ([McLean 2003](#)). Another study with Greek adolescents indicated association with reports of more financial difficulties in the family and poorer academic performance and psychological health; poor academic performance is an indicator of overall mental health ([Magklara et al. 2010](#)). A suicide is a possible outcome of a major depressive episode, suicide-ideation (the thought of committing suicide) was also examined. In suicide attempt study among adolescents aged 14–18 years in Greece concluded that family ties, drug use and life-stress may be an indicator of suicide ideation ([Kokkevi et al. 2011](#)).

Interpersonal, demographic groups, societal context and mental health

A US African American study on family processes are examined as mediators of socioemotional functioning of children living in low income families. They found that economic

difficulties prevent families from mediating effectively between children and life events and obstructing socioemotional development of youth (McLoyd 1990). Low family income at different times and, chronic low income status and the impact on children's behaviour was examined by an Australian study. It was found that child behaviour problems are more frequent in low income families and that other behavioural variables: social, attentional, thought problems and internalization of problems is related to maternal depression (Bor et al. 1997). Another study using Albanian adolescent girls found that conflicting family values and socioeconomic variables associated with female adolescents is linked to anti-social and depressive behaviour (Kloep 1995).

A US study on the relationship between socioeconomic security (SES) and adolescent self-rated health and mental health status, found that high parental SES and income are related to high self-rated health among adolescents. However, their effect is minimized when psychosocial factors (self-esteem, social stressors, health-related behaviors such as smoking and drinking, and social ties with parents and peers) and access to medical care are considered; that socioeconomically advantaged adolescents report less depressive affects; adolescents with high self-esteem report less depressive affects (Call & Nonnemaker 1999). Goodman (1999), looking at socioeconomic gradients among another group of US adolescents found for self-rated health depression, obesity, and suicide attempt indicated a linear associated with income. With respect to the rate of adolescent suicide during the economic and political crisis in Yugoslavia in 87-99 Nis showed a decrease until 99 when the bombing was carried out; suicide by fire arm was a common method (Petrovich et al. 2001).

During the exploration of mental distress during global economic crisis, found SES still remains a predictor for mental health especially for younger ages; unemployment and housing

being a key factor. Interestingly demographic groups (i.e. gender, race etc.) showed no significant difference for depression (Cokes & Kornblum 2010). A Hong Kong study using adult individual-level factors depression was found to relate to the economic downturn, but unemployment in this case was not of prime importance (Lee et al. 2010).

In this longitudinal study 300 family members, 136 adults, 82 preadolescents, 82 adolescents were recruited. Social determinants were examined as predictors of a wide range of behavioural problems among them depression, anxiety, delinquency, aggression, and relationship difficulties. The study shows that in addition to parents being impacted other children, adolescents and other adults are effected adversely (Santiago, Wadsworth & Stump 2011).

Relationships: economic crisis, mental health systems and outcome

This US study indicated that the health states and risks for children are affected negatively due to a combination of social determinants (including economic crisis) as health benefits and support services are reduced (Miller & Coulter 1984). Supporting this find on health states, Ludermir & Harpham (1998) explaining urbanization in Brazil and quality of life. Concluded, economic displacement or unemployment emerges as a significant risk factor for mental health outcome and is more important than rural to urban migration due to economic difficulties.

On a review of evidence of how past economic crisis and the current crisis affected funding for mental health treatment, it seems that a few of the wealthier countries are actually allocating funding to the mental health system. This is to deal with the anticipated increase in mental health problems. However, in many countries, mental health funding is likely to be reduced (Hodgkin & Karpman 2010). This is particularly interesting when considering the Greek

health system, as [Mossialos, Allin & Davaki \(2005\)](#) state, the Greek health system still does not provide universal coverage and is plagued with inequalities of funding, delivery of services, access and quality. As the study states mental health services have been under restructuring since 1984 with no end in sight' still lacking the ability to monitor and track trends in mental health according to social condition ([Mossialos, Allin & Davaki 2005, pp. 8,15](#)), in many respects it has been in "crisis" in any case.

In response to such problems, [Kyriopoulos & Tsiantou \(2010\)](#) warns that policies must reduce inequality along social determinants. They conclude the economic crisis will affect financing of health care and unemployment and this will increase the risk of mental disorders and result in suicides. In support of this line, another Greek study, asserts that social and psychological impact of unemployment has historically increased suicide and the current trend in countries is that it's on the rise due to economic crisis ([Katsoridas & Lechouritis 2010](#)).

Adolescent depression and suicide

Risk and protective factors were examined in suicidal and nonsuicidal public high school students with life stresses as independent factor and family cohesion as key in this study ([Rubenstein et al. 1989](#)). More recent research in the same area of risk and protective factors including parental loss, separation, and divorce have been cited as contributors supporting the family cohesion thesis ([Brent et al. 2002](#)).

In a Greek study risk factors are extended to the relationship between use of un-prescribed licit and illicit drugs, drinking with depressive symptoms and suicidal behaviour; prevalence of suicidal ideation, attempts was found to be steadily associated with severity and frequency of substance use ([Madianos, Gefou-Madianou & Stefanis 1994](#)). An extension to the

above study found that risk behaviour (drug use, alcohol) was related to depression (Madianos et al. 1995).

A review of literature by Kienhorst, De Wilde & Diekstra (1995), regarding suicidal occurrences and correlates, found psychological and psychiatric states, such as depression, in relation to suicidal behaviour resistant to any sound conclusions. On the other hand, we have a systematic review of population studies regarding suicide and individual factors, such as psychiatric, psychological, physical, personal, familial and social with significant correlates of suicide (Evans, Hawton & Rodham 2004).

Overviews on the subject

Steinberg, Laurence & Lerner (2004) provide a historical overview on the research on adolescence and the different phases of research. Petersen et al (1993) review of adolescent depression literature on prevalence, course and risk factors – recommends a biopsychosocial approach. Taking the above recommendation, Feldman's (2011) review of lifespan development falls within the biopsychosocial model.

The nature of this paper makes it necessary to also have a “contextual” overview on adolescent depression and Lazaratou & Anagnostopoulos (2001) provide us with an overview from the Greek literature database.

History is filled with economic downturns, none more relevant than a historical overview of the great depression and health during those times (Tapia Granados & Diez Roux 2009). While Bringewatt & Gershoff (2010) provide a review for the general complexities surrounding mental health services and policies and delivery to families with low SES where high prevalence of mental illness is noted.

Background and stats

A number of articles and Web Sites provided general information on the subjects of depression and socioeconomic determinants, classification of disorders (APA 2000; WHO 2007, 2011a, 2011b) as well as statistics and epidemiological trends (HSA 2011; U.S.CB 2011). Also a number of general reviews were conducted to illuminate patterns of research and themes in the literature (Bringewatt & Gershoff 2010; Smetana, Campione-Barr & Metzger 2006).

Discussion

As was mentioned in the method, the “screen capture” of the literature tells that the literature is quite fragmented in methodology and direction with no common point of departure. Part of this problem is lack of clarity in conceptualizing what adolescent depression is.

There are three identifiable responses to this, and each response represents different levels of observation. Each response has assumption(s) about the nature of psychopathology and serves a different purpose. For example, depressed mood – a concept that come to us from developmental research and is observed along side developmental features (Feldman 2011). Here we make no assumptions of the presence of other symptoms. Typically we are looking for polarity of mood, for example, you do not expect to find happy thoughts in a depressed mood; depressive syndromes – clusters of emotions, thoughts and behaviours associated with depression. However these clusters don't have a theoretical explanation of what caused them to be associated, nor is there an explanation for natural association. At the same time this clustering is calculated as being statistically improbable to have occurred by chance (Petersen et al. 1993); clinical depression – Two models of diagnosis exist, the Diagnostic and Statistical Manual of Mental Disorders 4th edition Text Revision (DSM IV-TR) (APA 2000), and the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) (WHO 2007). The basis for diagnosis here is the presence, duration and intensity of a phenomenon with sets of symptoms. The focus is on the current levels of distress, disability, and prognosis for impairment of functioning (APA 2000; WHO 2007). Two possible diagnoses for depression: Major Depression Disorder (MDD) or Dysthymic Depression Disorder. In MDD we are looking at a timeframe and symptomatology of the last two weeks in a person's life and with Dysthymia

in the last year ([APA 2000](#); [WHO 2007](#)), both have a set of contingencies for interpretation and diagnosing.

Therefore the indiscriminant use of the term depression has resulted in misunderstandings. The other thing that becomes painfully apparent when looking at the “screen capture” is the difficulty in discerning a theoretical premise of causality and of adolescent “normative” development ([Steinberg, L. & Morris 2001](#)).

The misuse of the term depression and lack of theoretical and normative development premise complicates observations of depression further, especially, when accompanied by a number of other observable mental disorders - comorbidity ([Petersen et al. 1993](#); [Seligman & Ollendick 1998](#)).

From what we have seen from our review results complications do not stop here. There are also developmental features of adolescence that differentiate between the child the adolescent and the adult, and consequently depression. As we have seen their brains differ ([Steinberg, L. 2010](#)), and others suggest that hormonal systems may act as genetic traits that interact with the outside world, such as family, and predispose adolescent behaviour ([Birmaher & Heydl 2001](#)). Others yet, looking at global trends to adolescent suicide suggest that individual risk factors are inconclusive at best ([Howden-Chapman et al. 2005](#)). This response off course is to be expected since during the great depression the general health of the population increased, however, and surprisingly, suicides rates also increased ([Tapia Granados & Diez Roux 2009](#)).

If, however, general health is good during economic crisis, then social determinants, such a as low income, poverty etc., should not be such an important factor in adolescent depression, the South African research would seem to confirm this ([McLean 2003](#)). On the Greek and Serbian front the most interesting note was on “life stressors” as an indicator of suicide ideation

and suicide (Kokkevi et al. 2011; Petrovich et al. 2001). Clearly showing that in the end, it may not be a specific factors at all that contribute to adolescent depression that may lead to suicide. This non-specificity seems to be confirmed, at least in part, from research looking at interpersonal, group and contextual factors (Bor et al. 1997; Kloep 1995; McLoyd 1990). More specifically, in the Greek case (Roussos et al. 2005) “life stressor”, such as the 99 earthquake, carried with it not only post-traumatic stress disorder but a high rate of depression with children and adolescents closer to the epicenter.

Literature looking at health systems in general and mental health out come seem to be more coherent regarding the provision of services, quality and access (Miller & Coulter 1984). and some countries in anticipation of escalating health problems are investing in this area (Hodgkin & Karpman 2010). They seem to focus on other areas rather than specific factors to counter the escalation. The only exception in these studies is unemployment as a possible specifier-contributor (Katsoridas & Lechouritis 2010; Kyriopoulos & Tsiantou 2010; Ludermir & Harpham 1998), although the path to adolescent depression is elusive.

One particularly harsh outcome of adolescent depression is suicide. Here as well, most research is unclear of the path and trajectory of depression and the effects of comorbidity (Kienhorst, De Wilde & Diekstra 1995). Possible explanations however may lie again the “life stressors” (Rubenstein et al. 1989) in relation to other support mechanisms (Hodgkin & Karpman 2010). A pattern seems to be emerging around the theoretical premise of the “shock or accumulation of risk model” – since both refer to “life stressor” and trajectory of adolescent depression (Howden-Chapman et al. 2005).

Such theoretical premise is important since they seem to fit well with the idea that the adolescent brain maturation may be linked to an increased vulnerability to risk behaviour – it is a

period of heightened vulnerability. Shock and accumulation of risk models fit well with this evolutionary theoretical premise (Steinberg, L. 2010). In other words, risk taking in this case of evolutionary theory is “natural” for the adolescent but acute stress and/or the accumulation of stress in a given environment, over time (trajectory), may be a predictive factor in the development of depression. Perhaps it is in this context that the socioeconomic crisis may act to impose itself on the risk-“seeking” youth, by acting as the “life stressor” that effects a broad range of biopsychosocial factors, such as, environments, availability of legal/illegal drugs, delinquency, family-ties-loosening, peer relations, individual predisposition etc.. As Kokkevi et al (2011) noted, prevalence of suicide ideation in Greece has increased from 1984 to 2007 considerably. To explain this Kokkevi et al (2011) goes on to state:

“Changes that have taken place in Greek society during the last 30 years may help to explain our findings. Young people’s lifestyles have been increasingly... [changing]. This period has seen a growth of population, divorces have increased and the one-parent family became more common. Traditionally strong family ties are loosening. The participation of women in the labour force has become larger... An increasing number of adolescents do not live in an intact family with both their parents and probably do not enjoy the necessary warmth and sense of safety to the child that has been shown by many surveys to constitute protective factors against suicide attempts... Another factor... was increased availability of illegal drugs...”

One thing to note however, is that according to the Hellenic Statistical Authority (2011), suicides between 2001 and 2007 for ages 10-14 and 15-19 have not increased. Despite the radical changes in Greek society there is still something within this culture that is stemming the tie from adolescent depression to suicide – clearly this “something” needs to be investigated from a Greek perspective.

This brief has taken a view of the literature regarding the impact of the socioeconomic crisis on social determinants and the development and course of adolescent depression as applied to Greece. While on course, we noted the poor use of the term depression in research, we noted the incoherent knowledge-base and the lack of a theoretical premise, and finally the absence of normative adolescent development theory. These shortcomings were in most part duplicated in the Greek knowledge-base along with a need for general research in this area, thereby reducing the over-reliance of international data. To interpret Greek phenomena such as adolescent depression and the socioeconomic crisis in Greece more “in-house” research is needed.

General conclusions that can be drawn up are that there is some evidence that lack of measures to protect the population over the last 30 years, and the subsequent accumulation of “risk-factors” during this time, along with the nature of the adolescent as a - “risk-seeker” – have created in any case the conditions where adolescent development is slowly and steadily exacerbated. The Greek economic crisis is simply a random event, like a disaster, that will take a bad situation and make it worse.

What emerged from the review as an interesting point to investigate is “shock model theory and accumulation theory” in relation to adolescent depression and suicide.

References

- APA 2000, *Diagnostic and statistical manual of mental disorders (Revised 4th ed.)*, American Psychiatric Association, Washington, DC.
- Birmaher, B & Heydl, P 2001, 'Biological studies in depressed children and adolescents', *The International Journal of Neuropsychopharmacology*, vol. 4, no. 02, pp. 149-57.
- Bor, W, Najman, JM, Andersen, MJ, O'Callaghan, M, Williams, GM & Behrens, BC 1997, 'The relationship between low family income and psychological disturbance in young children: an Australian longitudinal study', *Aust N Z J Psychiatry*, vol. 31, no. 5, pp. 664-75.
- Brent, DA, Moritz, G, Liotus, L, Schweers, J, Balach, L, Roth, C & Perper, JA 2002, 'Familial Risk Factors for Adolescent Suicide', in RJ Kosky, HS Eshkevari, RD Goldney & R Hassan (eds), *Suicide Prevention*, Springer US, pp. 41-50.
- Bringewatt, EH & Gershoff, ET 2010, 'Falling through the cracks: Gaps and barriers in the mental health system for America's disadvantaged children', *Children and Youth Services Review*, vol. 32, no. 10, pp. 1291-9.
- Call, KT & Nonnemaker, J 1999, 'Socioeconomic Disparities in Adolescent Health: Contributing Factors', *Annals of the New York Academy of Sciences*, vol. 896, no. 1, pp. 352-5.
- Cokes, C & Kornblum, W 2010, 'Experiences of Mental Distress by Individuals During an Economic Downturn: The Story of an Urban City', *The Western Journal of Black Studies*, vol. 34, no. 1, pp. 24-35.
- Evans, E, Hawton, K & Rodham, K 2004, 'Factors associated with suicidal phenomena in adolescents: A systematic review of population-based studies', *Clinical Psychology Review*, vol. 24, no. 8, pp. 957-79.
- Feldman, SR 2011, *Development Across the Life Span*, Pearson Education, Inc.
- Flouri, E & Tzavidis, N 2008, 'Psychopathology and prosocial behavior in adolescents from socio-economically disadvantaged families: the role of proximal and distal adverse life events', *Eur Child Adolesc Psychiatry*, vol. 17, no. 8, pp. 498-506.
- Goodman, E 1999, 'The role of socioeconomic status gradients in explaining differences in US adolescents' health', *Am J Public Health*, vol. 89, no. 10, pp. 1522-8.
- Hodgkin, D & Karpman, EH 2010, 'Economic Crises and Public Spending on Mental Health Care', *International Journal of Mental Health*, vol. 39, no. 2, pp. 91-106.
- Howden-Chapman, P, Hales, S, Chapman, R & Keskimäki, I 2005, *The Impact of Economic Recession on Youth Suicide: A comparison of New Zealand and Finland*, ISBN 0-478-29653-3, New Zealand Ministry of Health Wellington.
- Hellenic Statistical Authority 2011, *Statistical Yearbook of Greece*, viewed May 29 2011, <http://dlib.statistics.gr/portal/page/portal/ESYE/categoryyears?p_cat=10007369&p_topic=10007369>.
- Katsoridas, D & Lechouritis, G 2010, 'Οι κοινωνικές και ψυχολογικές επιπτώσεις της ανεργίας', *Encephalos*, vol. 47, no. 4, pp. 181-8.
- Kienhorst, I, De Wilde, E & Diekstra, R 1995, 'Suicidal behaviour in adolescents', *Archives of Suicide Research*, vol. 1, no. 3, pp. 185-209.
- Kloep, M 1995, 'Concurrent and predictive correlates of girls' depression and antisocial behaviour under conditions of economic crisis and value changes: the case of Albania', *Journal of Adolescence*, vol. 18, no. 4, pp. 445-58.
- Kokkevi, A, Rotsika, V, Arapaki, A & Richardson, C 2011, 'Increasing self-reported suicide attempts by adolescents in Greece between 1984 and 2007', *Social Psychiatry and Psychiatric Epidemiology*, vol. 46, no. 3, pp. 231-7.

- Kyriopoulos, J & Tsiantou, V 2010, 'Η οικονομική κρίση και οι επιπτώσεις της στην υγεία και την ιατρική περίθαλψη', *ARCHIVES OF HELLENIC MEDICINE*, vol. 27, no. 5, pp. 834-40.
- Lazaratou, H & Anagnostopoulos, DC 2001, 'Adolescence and Depression', *Archives of Hellenic Medicine*, vol. 18, no. 5, pp. 466-74.
- Lee, S, Guo, W-j, Tsang, A, Mak, ADP, Wu, J, Ng, KL & Kwok, K 2010, 'Evidence for the 2008 economic crisis exacerbating depression in Hong Kong', *Journal of Affective Disorders*, vol. 126, no. 1-2, pp. 125-33.
- Ludermir, AB & Harpham, T 1998, 'Urbanization and mental health in Brazil: Social and economic dimensions', *Health & Place*, vol. 4, no. 3, pp. 223-32.
- Madianos, MG, Gefou-Madianou, D, Richardson, C & Stefanis, CN 1995, 'Factors affecting illicit and licit drug use among adolescents and young adults in Greece', *Acta Psychiatr Scand*, vol. 91, no. 4, pp. 258-64.
- Madianos, MG, Gefou-Madianou, D & Stefanis, CN 1994, 'Symptoms of depression, suicidal behaviour and use of substances in Greece: a nationwide general population survey', *Acta Psychiatr Scand*, vol. 89, no. 3, pp. 159-66.
- Magklara, K, Skapinakis, P, Niakas, D, Bellos, S, Zissi, A, Stylianidis, S & Mavreas, V 2010, 'Socioeconomic inequalities in general and psychological health among adolescents: a cross-sectional study in senior high schools in Greece', *Int J Equity Health*, vol. 9, p. 3.
- McLean, CS 2003, 'Factors which influence adolescent depression', University of South Africa.
- McLoyd, VC 1990, 'The Impact of Economic Hardship on Black Families and Children: Psychological Distress, Parenting, and Socioemotional Development', *Child Development*, vol. 61, no. 2, pp. 311-46.
- Miller, CA & Coulter, EJ 1984, 'The world economic crisis and the children: A United States case study', *World Development*, vol. 12, no. 3, pp. 339-64.
- Mossialos, E, Allin, S & Davaki, K 2005, 'Analysing the Greek health system: a tale of fragmentation and inertia', *Health Economics*, vol. 14, no. S1, pp. S151-S68.
- Petersen, AC, Compas, BE, Brooks-Gunn, J, Stemmler, M, Ey, S & Grant, KE 1993, 'Depression in adolescence', *Am Psychol*, vol. 48, no. 2, pp. 155-68.
- Petrovich, B, Todorovich, B, Kocich, B, Cvetkovich, M & Blagojevich, L 2001, 'Influence of socio-economic crisis on epidemiological characteristic of suicide in the region of Nis (southeastern part of Serbia, Yugoslavia)', *European Journal of Epidemiology*, vol. 17, no. 2, pp. 183-7.
- Roussos, A, Goenjian, AK, Steinberg, AM, Sotiropoulou, C, Kakaki, M, Kabakos, C, Karagianni, S & Manouras, V 2005, 'Posttraumatic stress and depressive reactions among children and adolescents after the 1999 earthquake in Ano Liosia, Greece', *Am J Psychiatry*, vol. 162, no. 3, pp. 530-7.
- Rubenstein, JL, Heeren, T, Housman, D, Rubin, C & Stehler, G 1989, 'Suicidal behavior in "normal" adolescents: risk and protective factors', *Am J Orthopsychiatry*, vol. 59, no. 1, pp. 59-71.
- Santiago, CD, Wadsworth, ME & Stump, J 2011, 'Socioeconomic status, neighborhood disadvantage, and poverty-related stress: Prospective effects on psychological syndromes among diverse low-income families', *Journal of Economic Psychology*, vol. 32, no. 2, pp. 218-30.
- Seligman, LD & Ollendick, TH 1998, 'Comorbidity of Anxiety and Depression in Children and Adolescents: An Integrative Review', *Clinical Child and Family Psychology Review*, vol. 1, no. 2, pp. 125-44.
- Smetana, JG, Campione-Barr, N & Metzger, A 2006, 'Adolescent development in interpersonal and societal contexts', *Annu Rev Psychol*, vol. 57, pp. 255-84.
- Steinberg, L 2010, 'A behavioral scientist looks at the science of adolescent brain development', *Brain Cogn*, vol. 72, no. 1, pp. 160-4.
- Steinberg, L & Lerner, RM 2004, 'The Scientific Study of Adolescence', *The Journal of Early Adolescence*, vol. 24, no. 1, pp. 45-54.

- Steinberg, L & Morris, AS 2001, 'Adolescent development', *Annu Rev Psychol*, vol. 52, pp. 83-110.
- Stuckler, D, Basu, S & McDaid, D 2011, *Depression amidst depression: Mental health effects of the ongoing recession*, WHO Regional Office for Europe.
- Tapia Granados, JA & Diez Roux, AV 2009, 'Life and death during the Great Depression', *Proc Natl Acad Sci U S A*, vol. 106, no. 41, pp. 17290-5.
- U.S. Census Bureau 2011, *Death Rates from Suicide, by Selected Characteristics 1990-2007*, viewed May 29 2011, <<http://www.census.gov/compendia/statab/2011/tables/11s0125.pdf>>.
- Uddin, M, Koenen, KC, de los Santos, R, Bakshis, E, Aiello, AE & Galea, S 2010, 'GENDER DIFFERENCES IN THE GENETIC AND ENVIRONMENTAL DETERMINANTS OF ADOLESCENT DEPRESSION', *Depression and Anxiety*, vol. 27, no. 7, pp. 658-66.
- WHO 2007, *International Statistical Classification of Diseases and Related Health Problems 10th Revision*, 2007 edn, 2011, <<http://apps.who.int/classifications/apps/icd/icd10online/>>.
- WHO 2011a, *Depression*, viewed 30/5/11 <http://www.who.int/mental_health/management/depression/definition/en/#>.
- WHO 2011b, *Socioeconomic determinants*, viewed 2011 2011, <<http://www.euro.who.int/en/what-we-do/health-topics/health-determinants/socioeconomic-determinants>>.