Mental Health Promotion and the Prevention of Mental Disorders in South Africa

I Petersen[1], A Bhana[1,2], L Swartz[3]
[1]Department of Psychology, University of KwaZulu-Natal, Durban, South Africa
[2]Human Sciences Research Council of South, South Africa
[3]Department of Psychology, Stellenbosch University. Stellenbosch, South Africa

Abstract
The need for greater attention to mental health promotion and the prevention of mental disorders in South Africa is highlighted by the cycle of poverty and mental ill-health, the potential for social gains, the question of affordability of treatment in the face of the increasing burden of mental disorders, and the limitations of existing treatment methods. This article, which provides a desk review of the current status of mental health promotion and prevention of mental disorders in South Africa, suggests that South Africa has a number of policies that bode well for promoting mental health from infancy through to old age. There is, however, a need for programmatic interventions to promote resilience in vulnerable populations. Of note, is the need for programmes to address maternal depression and strengthen attachment and psychosocial stimulation during infancy, strengthen families, promote health enhancing school environments, and address intimate partner violence and build health enhancing social capital. Given the multifaceted nature of risk and protective influences, the need for a multi-sectoral plan of action is highlighted.

Keywords: Mental health; Promotion; Prevention; South Africa

Received: 25/06/2012
Accepted: 25/07/2012
doi: http://dx.doi.org/10.4314/ajpsy.v15i6.50

This article is based on a paper presented at the National Mental Health Summit convened by the Department of Health, Republic of South Africa from 12-13 April 2012.

Introduction

There is growing recognition of the need to scale up treatment efforts for mental disorders in South Africa as articulated in the recent Declaration on Mental Health in South Africa that emerged from the first National Summit on Mental Health, held in April 2012. This recognition is given impetus by the 75% treatment gap[1,2], with neuropsychiatric disorders ranking third after HIV/AIDS and other infectious diseases in South Africa[3]; high co-morbidity with HIV/AIDS, cardiovascular disease and diabetes[4]; as well as poor child outcomes as a result of maternal mental disorders.[5] Translating this recognition into practice is, however, likely to be slow given the large burden that infectious diseases, particularly HIV/AIDS and tuberculosis place on the health care system. There is also mounting concern over the affordability of the escalating cost of treatment of mental disorders, given the increasing disease burden of mental disorders. Depression is estimated to become the second leading burden of illness globally by 2030.[6] Even where treatments are available, such efforts are unlikely to substantively reduce the prevalence of mental disorders in the face of existing treatment methods.[7]

Mental health promotion and prevention interventions for at-risk populations hold potential for breaking the cycle of poverty and mental ill-health, through addressing the social determinants of poor mental health and supporting the realization of people's potential in the face of risk.[8,9] Mental health promotion and prevention interventions early in the lifespan have been shown to promote social gains later in life for the individual and society, including reduced out of wedlock births, increased earnings, less reliance on social services and reduced rates of criminal behavior.[10] Alongside any planning for improvements in accessibility and quality of treatments, it is thus important to consider the role of mental health promotion and prevention efforts.

Mental health promotion is concerned with promoting optimal psycho-physiological development and mental health in people. Preventing the onset of mental disorders is the goal of

Correspondence
Prof. I Petersen
Department of Psychology, School of Applied Human Sciences, Howard College, University of KwaZulu-Natal, Durban, 4000, South Africa
email: peterseni@ukzn.ac.za

primary prevention. Early detection and treatment so as to reduce the severity of a mental disorder are the aims of secondary prevention; and rehabilitation to prevent relapse in people with mental disorders is the goal of tertiary prevention.[11,12] This article is concerned with mental health promotion and the primary prevention of mental disorders (henceforth referred to as mental health promotion and prevention). While their goals are different, the target population as well as the strategies used to reach their outcomes overlap.

Mental health is influenced by the interplay of multiple risk and protective factors, including biological and genetic factors, proximal interpersonal and environmental factors, as well as more distal political, economic, social and cultural factors. This necessitates an ecological approach to mental health promotion and prevention that incorporates multifaceted, comprehensive and inter-sectoral actions. At a distal level, policy interventions are required to address the social determinants of poor mental health, which include poverty dimensions, conflict and oppressive social orders.[13] Programmatic interventions that strive to increase resilience of people through strengthening protective factors within individuals and within the environment proximal to individuals are also important to support the realization of potential and promote positive mental health outcomes in contexts of risk. In addition, mental health promotion and prevention interventions should be informed by a lifespan developmental approach given the various developmental challenges and vulnerabilities across the lifespan, with concomitant risk and protective factors.

Informed by an ecological and lifespan developmental approach, this article outlines the developmental challenges and risk factors for poor mental health associated with the various developmental phases across the lifespan in South Africa. This is followed by a desk review of existing reviews, distal policy level actions as well as programmatic mental health promotion and prevention interventions for each developmental stage.

Prenatal development and infancy

Prenatal development and infancy are crucial periods for sensori-motor, neurocognitive and social-emotional development and a particularly vulnerable period for the development of a wide range of neurocognitive and socio-emotional deficits.[14] During this period, the developing child is particularly vulnerable to an array of environmental assaults which originate from distal 'upstream' poverty related factors. Chronic and severe malnutrition prenatally and during infancy can result in deprivation of essential micronutrients, resulting in deficits in neurocognitive and socio-emotional development.[15] Iodine deficiency is particularly hazardous for mental health, and can cause irreversible intellectual disability.[16] Prenatal and postnatal exposure to infectious diseases such as rubella, toxoplasmosis and the human immunodeficiency virus (HIV) as well as exposure to high levels of toxins such as lead, arsenic, pesticides, tobacco smoke and alcohol can also result in neurocognitive deficits. Cerebral insults associated with birth trauma can also lead to brain malfunction and a range of mental and physical disabilities.[17] Postnatally, poor caregiver emotional and motivational states associated with maternal depression can interrupt adequate feeding and care, as well as impair the development of a secure attachment relationship between an infant and his/her caregiver, essential for healthy socio-emotional development.[18]

Distal policy interventions are crucial to address the many environmental risk influences during this developmental phase. These include: strengthening of health systems to improve the provision of obstetric care and immunization; increasing the general public's knowledge of the dangers of alcohol use and other narcotics during pregnancy; promoting child safety to prevent head injuries; and increasing access to micronutrients for vulnerable populations such as salt iodization programmes, folic acid food fortification and selective protein nutrition supplementation programmes. Proximally, a combination of home visits and clinic care for at-risk families have the greatest success for promoting healthy socio-emotional and cognitive development in infants.[19,20]

At a policy level, South Africa has a number of policies across a number of sectors which promote mental health during prenatal development and infancy.[21] For example, the Child Support Grant may promote food security in vulnerable populations. The Prevention of Mother to Child Transmission Programme (PMTCT) has had a marked effect on reducing the transmission of HIV from infected mothers to their newborn children. South Africa's national PMTCT programme has over the past 9 years reduced the transmission rate of HIV from mother to child to 4%. This, notwisthstanding numerous health system inefficiencies and inequalities.[22-25] The National Integrated Plan for Early Childhood Development (NIP for ECD) coordinates a range of interventions, and the Integrated Nutrition Programme (INP) has made provision for the iodization of table salt and supplementation of staple foods with essential micronutrients.[21]

There are, however, gaps with respect to proximal psychosocial programmes to alleviate maternal depression and promote mother-child attachment and psychosocial stimulation of infants.[21] South Africa has very high rates of maternal depression, with a recent survey revealing a prevalence of as high as 47% in a high HIV prevalence area.[26] One randomized control trial in the Western Cape of a home visitation programme to provide counselling as well as promote attachment, indicates that lay community-based workers can be trained to provide such an intervention within a task shifting model, with improved maternal sensitivity and attachment being demonstrated at 12 and 18 months post the intervention respectively.[27] The need for a similar intervention to be integrated into the work of community caregivers forming part of the re-engineered PHC system is indicated.

Proximal programmes to reduce alcohol consumption should also be prioritized, particularly in the Western and Northern Cape provinces, which have some of the highest rates of foetal alcohol syndrome (FAS) in the world.[28-30] The high rate of alcohol consumption in the Western Cape has its origins in the 'dop' system where wine was distributed daily to workers on wine farms as part payment for labour. International evidence suggests that the integration of screening and brief interventions using motivational interviewing into maternal health care can help reduce alcohol intake during pregnancy.[31]

Childhood and Adolescence

Developmental challenges for *preschool children* include the achievement of self-regulatory control as well as the development of social relatedness, both of which are important for healthy cognitive development and social competence.[17]

During *middle childhood* (6-12 years), the achievement of a healthy self-esteem is a key developmental challenge. This can be hampered by pre-existing neurocognitive deficits as well poor self-regulatory control and social relatedness which may compromise a child's academic abilities as well as the establishment of healthy peer relationships. Vulnerable children may be at elevated risk for affiliating with deviant peer groups and consequently at risk for anti-social behavior.[32] Adolescence commences with the onset of puberty and can range from as early as 10 years to as late as 20 years. Key developmental challenges include the development of psychological autonomy, establishing intimate friendships, and developing a sense of identity.[33] Adolescents are particularly vulnerable to engaging in 'risk behaviour' due to heightened emotional arousal that may compromise rational decision-making.[34]

Across childhood and adolescence, exposure to traumatic life events and violence, as well as harsh, inconsistent or abusive parenting can interfere with achieving mastery over these developmental challenges, and increase children's vulnerability to a range of internalizing mental disorders such as anxiety and depression and externalizing behavioural disorders, such as conduct disorder and attention-deficit/hyperactivity disorder (ADHD).[20]

Distal interventions to promote mental health in children and adolescents include policies to improve contextual and environmental factors, such as upgrading of neighbourhoods to ensure safe recreational spaces, adequate health care, as well as educational and social welfare/development services.[20]

At the intrapersonal and proximal levels, a consistent finding is that caregiver warmth and support as well as developmentally appropriate monitoring and control, both associated with authoritative (as opposed to authoritarian or *laissez faire)* parenting, can moderate or mediate the relationship between stressors and mental distress in children. The school environment and school-based programmes that promote academic and socio-emotional coping and interpersonal skills can also assist to build positive social and emotional development in children and adolescents. Children with emotional and learning disorders, in particular, require special services to cater for their specific needs to prevent academic failure and school drop-out.[35]

Once again South Africa has a number of distal policies that have potential to promote mental health in children and adolescents.[21] The Child Support Grant in South Africa is as important during this life stage as for infants. Up to 8.7 million children, i.e., 58% (in a total population of 15 million children) under the age of 14 years were in a receipt of such a grant in 2008.[36] South Africa also has foster care grants to assist in the financial provision of orphaned children. Further, the National School Nutrition Programme, which has been in operation for 13 years provides meals to school-going children, reaching approximately 7 million children.[37]

Within the education sector, the introduction of a national reception year of schooling (Grade R) as part of the White Paper on Early Childhood Development (ECD) in 2001 should promote cognitive development in children.21 Unfortunately, the unevenness in ECD implementation and the questionable as is the quality of basic general educational provision, with South Africa performing poorly on international assessments of achievement in mathematics, science and literacy compared to other countries in east and sub-Saharan Africa.[38]

A significant gap that needs to be addressed at a distal policy level is the high drop-out rate from schooling, with international evidence that school dropout is associated with elevated risk behaviours and poor mental health outcomes in youth.[35] A recent review suggests that it is a major problem amongst black adolescents living in impoverished, marginalized areas in South Africa, particularly from grade 9 onwards.[21] Multiple reasons for school drop-out are indicated, including repeating classes, lack of remedial programmes, poor quality of interaction between teachers and learners, leisure boredom, as well as children's perceptions of their relative poverty to others.[21,39]

The school provides an ideal setting to promote interpersonal and coping skills. While South Africa has had a national life skills programme as part of the school curriculum, a previous review suggests that implementation has again been shown to be a problem, with partial implementation having reduced effectiveness.[21] Improving the overall quality of teaching and learning in South Africa's school system will require a significant shift in approach to current practices which compromises attracting the best teachers into the teaching profession.[39]

Family strengthening interventions for children and adolescents are equally important. Apartheid left a legacy of fractured black families as a result of the migratory labour system. There is also additional disruption to families as a result of the HIV/AIDS pandemic, with South Africa having an estimated 1 900 000 child orphans due to AIDS in 2009.[40] Evidence from one RCT in South Africa suggests that it is possible to effectively deliver family strengthening programmes using trained community-based workers within a task shifting model. In this respect, the Collaborative HIV/AIDS Adolescent Mental Health Programme South Africa (CHAMPSA), which has also recently been adapted to support caregivers of HIV+ children, demonstrated significant improvements in communication and monitoring and control in the parents/caregivers receiving the intervention compared to the controls.[41]

Further, there is a need for whole school programmes to promote school connectedness. The latter involves a number of dimensions including a sense of belonging, school involvement, and positive school climate, including teacher support and has been shown to assist in promoting mental health during the middle childhood years.[42] The Department of Health has policy guidelines for health promoting schools and the Department of Basic Education is in favour of whole school development. Central to the health promoting whole school approach is an appreciation of contextual influences on risk behavior and mental health which demands a comprehensive systems intervention. Strengthening health enabling school policies such as anti-bullying policies, recreational facilities to promote health and well-being, parental and community relationships, and the provision of life skills programmes to develop interpersonal skills as well as adolescent friendly health services are central to this approach.[20] This approach, however, assumes school functionality as a basic requirement and such comprehensive systems level interventions are not easily attainable in South Africa given social, structural and resource constraints at multiple levels.[39,43]

Adults

Given that 25% of mental disorders in adulthood begin before the age of eight years, and 50% by adolescence, prevention of many adult mental disorders requires interventions earlier in the lifespan.[44] There are, however, identified risk factors for the development of mental disorders that may operate independently or interact with pre-existing vulnerabilities to trigger the onset of mental illness in adults. International evidence indicates that the social determinants of depression, which contributes the highest disease burden of neuropsychiatric disorders internationally include stressful life events and violence; crime, conflict and disasters; stressful working environments; stigma and discrimination; and poverty related factors such as food insecurity, poor housing and unemployment/underemployment.[13]

The South African Stress and Health (SASH) study found that low socio-economic status and low educational levels are associated with increased psychological distress.[45] Recent negative life events and relationship problems were predictors of 12 month and lifetime prevalence of mental disorders.[46] In women, physical partner violence, reported at 19%, was the strongest predictor of any lifetime disorder.[47] Interpersonal violence is a major public health problem in South Africa, being the second leading cause of disease burden in Disability Adjusted Life Years (DALYs).[3] Further, it is also associated with elevated risk for engaging in high health risk behaviours such as smoking, alcohol consumption, and the use of sedatives and analgesics in women.[47] For men, predictors of mental distress include criminal assault, childhood abuse and political detention and torture.[46] Further, the SASH study revealed elevated risk for CMDs in people who reported discrimination, with chronic non-racial discrimination being a strong predicator.[48]

Distal policy interventions required to address the social determinants of mental disorders in adults in South Africa thus overlap with many existing public health, poverty alleviation and gender equity initiatives as well as actions to reduce discrimination and interpersonal violence.

Proximal mental health promotion and prevention programmes for adults that have shown promising outcomes in other LMICs include those that combine building social capital with economic generation initiatives.[20] Social capital provides people with access to emotional support and resources for dealing with stressful life events. Economic generation initiatives assist in addressing poverty related social determinants of poor mental health. The importance of incorporating both of these strategies into mental health promotion and prevention interventions for adults in South Africa is reinforced by findings from the SASH study that lower levels of social capital as well as lower socio-economic status are independently associated with increased psychological distress in South Africa.[49]

In the context of interpersonal violence being of particular concern in South Africa, an exemplar of an evidence-based programme in South Africa that has the potential to be scaled up is the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) programme. This programme addresses intimate partner violence, through skills building and promoting financial independence within the context of strengthening social capital. It targeted deprived women and combined a microfinance intervention with a participatory learning programme that included HIV prevention, communication skills and gender empowerment. A RCT study found that two years after completing the programme participants reported 55% fewer acts of violence by their intimate partners in the previous 12 months compared to control participants.[50]

Older People

South Africa has the highest number of older persons in Africa, with projections that 9.5% of the population will be over the age of 60 in 2015.[51] The two biggest mental health conditions in later life are dementia and depression.[52] Unhealthy lifestyles and associated diseases such as hypertension, type II diabetes, hypercholesterolaemia, obesity and smoking are risk factors for vascular dementia in later life. Deficiencies of folate and vitamin B12 have also been identified as risk influences.[52] In South Africa, these conditions are becoming more prevalent with the diffusion of urban lifestyle risk factors, including tobacco smoking, unhealthy diet, and physical inactivity[53-55]; with cardiovascular disease projected to increase by over 40% in the 35-65 year age group by 2030.[55] Risk factors for late life depression, include being disabled, especially having a functional impairment, a history of prior depression, as well as being socially isolated.[52] In addition, in South Africa, many older people who take care of their sick children or orphaned grandchildren as a result of the HIV/AIDS pandemic are also at risk. The financial, physical and emotional burden of this caregiving role on older people in relation to bereavement, stigma and discrimination, social isolation and lack of support is increasingly becoming apparent.[51,56-58]

In relation to distal policy level interventions to promote healthy lifestyles, South Africa has some of the most progressive policies in Africa. These include ''sin'' taxes on alcohol and tobacco products, health label warnings on these products, as well as restrictions on tobacco and alcohol use in public places and restrictions on tobacco advertising. South Africa also has one of the most generous state pension systems in the developing world, although it rarely serves to promote independent living for the elderly, rather serving to alleviate household poverty, with unintended beneficiaries being children and the unemployed.[51]

Proximal mental health promotion for older people remain, however, limited. Traditionally, the elderly are cared for by their children in African culture. In the context of changing patterns of support many older people, however, now they have to take on the burden of caring for the unemployed, sick and/or orphaned children.[51] Programmes for older people which provide emotional, practical and further financial support are thus indicated.

Conclusion

This review indicates the following successes and challenges with regard to mental health promotion and prevention in South Africa. In respect of prenatal development and infancy, South Africa has a number of policies in place to address distal risk influences during this critical developmental period. Particular successes in relation to policy implementation relate to the roll-out of PMTCT services, childcare grants and nutritional support. Gaps still exist, however, with respect to proximal interventions to address maternal depression, and

strengthen attachment and psychosocial stimulation during this critical developmental phase.

During childhood and adolescence, the school is an important site for the delivery of mental health promotion and prevention programmes. While South Africa has a number of positive policy developments within the education sector, such as the introduction of a Grade R year of schooling as well as a national lifeskills programme, there is concern about implementation; with the quality of the delivery of these programmes being questionable. In relation to proximal programmes, a significant gap is the need to strengthen families and promote health enhancing school environments.

In relation to promoting mental health in adults and older people, there are a number of distal policy level interventions in South Africa that should be beneficial, including poverty alleviation, gender equity, social redress policies as well as efforts to promote healthy lifestyles. At a proximal level, the need for programmatic mental health promotion and prevention interventions that address interpersonal violence is urgently indicated. Programmes that simultaneously promote sustainable livelihoods as well as also promote health enhancing social capital should also be encouraged.

Given the multifaceted nature of risk and protective influences, a starting point for the development of a plan of action for mental health promotion and prevention in South Africa, would be the development of a multisectoral platform for engagement of various stakeholders at national, provincial and district levels. Economic evaluation studies also suggest that early interventions with children and adolescents offer the greatest cost savings to societies in relation to reduced health and social spending later in life.[59] In the context of limited resources, programmatic interventions should thus prioritize the youngest age groups. Further, selective and indicated interventions, which target those at greatest risk, show greater effects and may be more efficient.[60]

References

1. *Seedat S, Stein DJ, Herman A, Kessler R, Sonnega J, Heeringa S, et al. Twelve-month treatment of psychiatric disorders in the South African Stress and Health Study (World Mental Health Survey Initiative). Soc Psychiatry Psychiatr Epidemiol 2008;43(11):889-97. Epub 2008/08/05.*
2. *Seedat S, Williams DR, Herman AA, Moomal H, Williams SL, Jackson PB, et al. Mental health service use among South Africans for mood, anxiety and substance use disorders. S Afr Med J 2009;99(5 Pt 2):346-52. Epub 2009/07/11.*
3. *Bradshaw D, Norman R, Schneider M. A clarion call for action based on refined DALY estimates for South Africa. S Afr Med J 2007;97(6):438, 40. Epub 2007/08/19.*
4. *Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. Lancet 2007;370(9590):859-77. Epub 2007/09/07.*
5. *Walker SP, Wachs TD, Grantham-McGregor S, Black MM, Nelson CA, Huffman SL, et al. Inequality in early childhood: risk and protective factors for early child development. Lancet 2011;378(9799):1325-38. Epub 2011/09/29.*
6. *World Health Organization. The global burden of disease: 2004 update. Geneva: World Health Organization; 2008.*
7. *Andrews G, Sanderson K, Corry J, Lapsley HM. Using epidemiological data to model efficiency in reducing the burden of depression. J Ment Health Policy Econ 2000;3(4):175-86. Epub 2002/04/23.*
8. *Lund C, De Silva M, Plagerson S, Cooper S, Chisholm D, Das J, et al. Poverty and mental disorders: breaking the cycle in low-income and middle-income countries. Lancet 2011;378(9801):1502-14. Epub 2011/10/20.*
9. *Petersen I. At the heart of development: an introduction to mental health promotion and the prevention of mental disorders in scarce-resource contexts. In: Petersen I, Bhana A, Flisher AJ, Swartz L, Richter L, editors. Promoting mental health in scarce-resource contexts. Cape Town: Human Sciences Research Council Press; 2010. p. 3-20.*
10. *Olds DL. The nurse–family partnership: An evidence-based preventive intervention. Infant Mental Health Journal 2006;27(1):5-25.*
11. *World Health Organization. Promoting Mental Health. Concepts, emerging evidence, practice. Summary Report. Geneva: World Health Organization.; 2004.*
12. *World Health Organization. Prevention of Mental Disorders: Effective Interventions and Policy Options. Summary Report. Geneva: World Health Organization; 2004.*
13. *Patel V, Lund C, Hatherill S, Plagerson S, Corrigall J, Funk M, et al. Mental disorders: equity and social determinants. In: Blas E, Kurup AS, editors. Equity, social determinants and public health programmes. Geneva: World Health Organization; 2010. p. 115-34.*
14. *Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. Developmental potential in the first 5 years for children in developing countries. Lancet 2007;369(9555):60-70. Epub 2007/01/09.*
15. *Walker SP, Wachs TD, Gardner JM, Lozoff B, Wasserman GA, Pollitt E, et al. Child development: risk factors for adverse outcomes in developing countries. Lancet 2007;369(9556):145-57. Epub 2007/01/16.*
16. *Engle PL, Grantham-McGregor S, Black M, Walker SP, Wachs TD. How to avoid the loss of potential in over 200 million young children in the developing world. Child Health and Education 2009;1(2):58-72.*
17. *Richter L, Dawes A, de Kadt J. Early childhood. In: Petersen I, Bhana A, Flisher AJ, Swartz L, Richter L, editors. Promoting mental health in scarce-resource contexts. Cape Town: Human Sciences Research Council Press; 2010. p. 99-123.*
18. *Cooper PJ, Tomlinson M, Swartz L, Landman M, Molteno C, Stein A, et al. Improving the quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: randomised control trial. BMJ 2009;338(b974):1-8.*
19. *Eshel N, Daelmans B, de Mello MC, Martines J. Responsive parenting: interventions and outcomes. Bull World Health Organ 2006;84(12):991-8. Epub 2007/01/24.*
20. *Petersen I, Barry M, Lund C, Bhana A. Mental Health promotion and the prevention of mental disorders. In: Patel V, Prince M, Cohen A, Minas H, editors. Global Mental Health: Principles and Practice Oxford: Oxford University Press; under preparation.*
21. *Petersen I, Swartz L, Bhana A, Flisher AJ. Mental health promotion initiatives for children and youth in contexts of poverty: the case of South Africa. Health Promot Int 2010;25(3):331-41. Epub 2010/04/24.*
22. *Tomlinson M, Doherty T, Jackson D, Lawn JE, Ijumba P, Colvin M, et al. An effectiveness study of an integrated, community-based package for maternal, newborn, child and HIV care in South Africa: study protocol for a randomized controlled trial. Trials 2011;12:236. Epub 2011/11/03.*
23. *Jackson DJ, Chopra M, Doherty TM, Colvin MS, Levin JB, Willumsen JF, et al. Operational effectiveness and 36 week HIV-free survival in the South African programme to prevent mother-to-child transmission of HIV-1. Aids 2007;21(4):509-16. Epub 2007/02/16.*
24. *Colvin M, Chopra M, Doherty T, Jackson D, Levin J, Willumsen J, et al. Operational effectiveness of single-dose nevirapine in preventing mother-to-child transmission of HIV. Bull World Health Organ 2007;85(6):466-73. Epub 2007/07/20.*

25. Coetzee D, Hilderbrand K, Boulle A, Draper B, Abdullah F, Goemaere E. Effectiveness of the first district-wide programme for the prevention of mother-to-child transmission of HIV in South Africa. Bull World Health Organ 2005;83(7):489-94. Epub 2005/09/24.
26. Rochat TJ, Tomlinson M, Barnighausen T, Newell ML, Stein A. The prevalence and clinical presentation of antenatal depression in rural South Africa. J Affect Disord 2011;135(1-3):362-73. Epub 2011/09/02.
27. Cooper PJ, Tomlinson M, Swartz L, Landman M, Molteno C, Stein A, et al. Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: randomised controlled trial. BMJ 2009;338:b974. Epub 2009/04/16.
28. Viljoen DL, Gossage JP, Brooke L, Adnams CM, Jones KL, Robinson LK, et al. Fetal alcohol syndrome epidemiology in a South African community: a second study of a very high prevalence area. Journal of Studies on Alcohol 2005;66(5):593-604. Epub 2005/12/08.
29. May PA, Gossage JP, Marais AS, Adnams CM, Hoyme HE, Jones KL, et al. The epidemiology of fetal alcohol syndrome and partial FAS in a South African community. Drug and alcohol dependence 2007;88(2-3):259-71. Epub 2006/11/28.
30. Urban M, Chersich MF, Fourie LA, Chetty C, Olivier L, Viljoen D. Fetal alcohol syndrome among grade 1 schoolchildren in Northern Cape Province: prevalence and risk factors. S Afr Med J 2008;98(11):877-82. Epub 2009/01/31.
31. Hankin JR. Fetal alcohol syndrome prevention research. Alcohol Res Health 2002;26(1):58-65. Epub 2002/08/06.
32. Dodge KA, Greenberg MT, Malone PS. Testing an idealized dynamic cascade model of the development of serious violence in adolescence. Child Dev 2008;79(6):1907-27. Epub 2008/11/29.
33. Breinbauer C, Maddaleno M. Youth: Choices and change: Promoting healthy behaviours in adolescents. Washington DC: Pan American Health Organization; 2005.
34. Spear LP. Rewards, aversions and affect in adolescence: Emerging convergences across laboratory animal and human data. Developmental Cognitive Neuroscience : a journal for cognitive, affective and social developmental neuroscience 2011;1(4):390-403. Epub 2011/09/16.
35. Patel V, Flisher AJ, Nikapota A, Malhotra S. Promoting child and adolescent mental health in low and middle income countries. J Child Psychol Psychiatry 2008;49(3):313-34. Epub 2007/12/21.
36. McEwen H, Kannemeyer C, Wollard I. Social Assistance Grants: Analysis of the NIDS Wave 1 Dataset. Discussion Paper no. 10. Cape Town: Southern Africa Labour and Development Research Unit, 2009 Contract No.: Version 4.1..
37. Department of Basic Education. National School Nutrional Programme. Annual Report 2009/2010. Pretoria: Department of Basic Education, Republic of South Africa, 2011.
38. Schindler J. Public Schooling. In: Kraak A, Press K, editors. Human Resources Development Review 2008 Education, Employment and Skills in South Africa. Pretoria: HSRC Press; 2008. p. 228-53.
39. Bhana A, Swartz S, Taylor S, Scott D, Vawda M, Dlamini NJ. Education and skills development. In: Magongo B, Motimele M, editors. South African youth context: The young generation. Midrand, South Africa: National Youth Development Agency; 2012.
40. UNAIDS. Country Reports. [21 June 2012]; Available from: http://www.unaids.org/en/regionscountries/countries/southafrica/.
41. Bell CC, Bhana A, Petersen I, McKay MM, Gibbons R, Bannon W, et al. Building protective factors to offset sexually risky behaviors among black youths: a randomized control trial. J Natl Med Assoc 2008;100(8):936-44. Epub 2008/08/23.
42. Bhana A. Middle childhood and pre-adolescence. In: Petersen I, Bhana A, Flisher AJ, Swartz L, Richter L, editors. Promoting mental health in scarce-resource contexts Emerging evidence and practice. Cape Town: HSRC Press; 2010. p. 124-42.
43. Westraad S. Changing Schools in Challenging Contexts. The documentation of a South African whole school development journey. Port Elizabeth: GM South Africa Foundation, 2011.
44. Swartz L, Herrman H. Adults. In: Petersen I, Bhana A, Flisher A, Swartz L, Richter L, editors. Promoting mental health in scarce resource contexts Emerging evidence and practice. Cape Town: HSRC Press; 2010. p. 167-79.
45. Tomlinson M, Grimsrud AT, Stein DJ, Williams DR, Myer L. The epidemiology of major depression in South Africa: results from the South African stress and health study. S Afr Med J 2009;99(5 Pt 2):367-73. Epub 2009/07/11.
46. Seedat S, Stein DJ, Jackson PB, Heeringa SG, Williams DR, Myer L. Life stress and mental disorders in the South African stress and health study. S Afr Med J 2009;99(5 Pt 2):375-82. Epub 2009/07/11.
47. Gass JD, Stein DJ, Williams DR, Seedat S. Intimate partner violence, health behaviours, and chronic physical illness among South African women. S Afr Med J 2010;100(9):582-5. Epub 2010/09/09.
48. Moomal H, Jackson PB, Stein DJ, Herman A, Myer L, Seedat S, et al. Perceived discrimination and mental health disorders: the South African Stress and Health study. S Afr Med J 2009;99(5 Pt 2):383-9. Epub 2009/07/11.
49. Myer L, Stein DJ, Grimsrud A, Seedat S, Williams DR. Social determinants of psychological distress in a nationally-representative sample of South African adults. Soc Sci Med 2008;66(8):1828-40. Epub 2008/02/27.
50. World Health Organization. Preventing intimate partner and sexual violence against women: taking action and generating evidence. Geneva: World Health Organization, 2010.
51. Lombard A, Kruger E. Older Persons: The case of South Africa. Aging International 2009;34:119-35.
52. Prince M. Older people. In: Petersen I, Bhana A, Flisher AJ, Swartz L, Richter L, editors. Promoting mental health in scarce-resource contexts. Cape Town: Human sciences Research Council Press; 2010. p. 180-207.
53. Mayosi BM, Flisher AJ, Lalloo UG, Sitas F, Tollman SM, Bradshaw D. The burden of non-communicable diseases in South Africa. Lancet 2009;374(9693):934-47.
54. Levitt NS. Diabetes in Africa: epidemiology, management and healthcare challenges. Heart 2008 Nov;94(11):1376-82 Epub 2008 Jun 2.
55. Maredza M, Hofman KJ, et al. A hidden menace: Cardiovascular disease in South Africa and the costs of an inadequate policy response. SA Heart 2011;8:48-57.
56. Orner P. Psychosocial impacts on caregivers of people living with AIDS. AIDS Care 2006;18(3):236-40. Epub 2006/03/21.
57. Boon H, Ruiter RA, James S, van den Borne B, Williams E, Reddy P. Correlates of grief among older adults caring for children and grandchildren as a consequence of HIV and AIDS in South Africa. Journal of Aging and Health 2010;22(1):48-67. Epub 2009/11/20.
58. Boon H, James S, Ruiter RA, van den Borne B, Williams E, Reddy P. Explaining perceived ability among older people to provide care as a result of HIV and AIDS in South Africa. AIDS Care 2010;22(4):399-408. Epub 2010/02/09.
59. Zechmeister I, Kilian R, McDaid D. Is it worth investing in mental health promotion and prevention of mental illness? A systematic review of the evidence from economic evaluations. BMC Public Health 2008;8:20. Epub 2008/01/24.
60. O'Connell ME, Boat T, Warner KE, editors. Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities. Washington, DC: National Academies Press; 2009.