Profile of stress factors associated with mental disorders in children and adolescents referred for evaluation and treatment to the Free State Psychiatric Complex, 2007

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Introduction. South African children and adolescents face serious challenges. Over the past decades children have been exposed to rapid and stressful changes in their environment, including increased crime and violence.

Aim of study. The aim of the study was to determine the profile of stress factors leading to mental disorders in children and adolescents referred to the Child and Adolescent Unit at the Free State Psychiatric Complex, Bloemfontein, from January 2006 to December 2007.

Methods. A total of 669 children (0 - 12 years) and adolescents (13 - 18 years) referred to the unit for evaluation and treatment were included in the study.

Results. Thirty per cent were diagnosed with attention deficit and disruptive behaviour disorders, followed by major depressive disorders (22.7%), anxiety disorders (18.5%), conduct disorders (16.1%), mild mental retardation (15.7%), adjustment disorders (9.6%), elimination disorders (8.8%), developmental disorders (7.6%) and bereavement (7.0%). Social stressors were identified in 64.1% of participants, and psychological stressors in 19%.

Conclusions. Stress plays an important role in the lives of children and adolescents, which could lead to emotional problems if not well managed. The functioning of children and adolescents should be monitored continuously. Schools are in a favourable position to identify stressors affecting children and adolescents. Educators therefore need training and opportunities to consult on mental health matters. Furthermore, religious organisations should be enlisted to identify stressors manifesting as spiritual dysfunction. School health services can play a role in the recognition of biological stressors such as epilepsy, pregnancy, enuresis, illness, speech problems and sensory dysfunction.

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Children and adolescents in southern Africa have to deal with serious challenges. Large families have been the norm, and children younger than 16 years of age constitute approximately half of the population. Furthermore, over the past four to five decades, children have been exposed to rapid and stressful changes in their environment. Children constantly experience the enormous impact of urbanisation, the break-up of the extended family, migration, industrialisation, racism, divorce and other forms of family disruption, crime, violence and political upheaval.[1]

Mental disorders can have far-reaching effects on the functioning and adjustment of young people. They confer an increased risk of illness and interpersonal and psychosocial difficulties in children and adolescents.[2] Almost any adult psychiatric condition can occur in this age group; for example, anxiety disorders and depression are very common. Substance abuse is increasingly being seen at younger ages. Other disorders in children and adolescents include somatoform and dissociating disorders, gender identity disorder, eating disorder, sleep disorder and intellectual disability.[1] Rossman *et al.*[3] reported that 13 - 50% of youth exposed to inter-parental violence qualify for diagnosis of post-traumatic stress disorder

(PTSD). In another study on youth in foster care, Lubit[4] found that 42% of those who had suffered physical abuse experienced PTSD.

A wide variety of factors induce stress in children and adolescents. Some of them can be dealt with constructively by means of positive emotional responses and resilience acquired over time.[1] However, a negative response to these factors may result in a number of disorders affecting the endocrine, metabolic and auto-immune systems and may give rise to psychiatric symptoms. These factors also have an effect on the development and growth of the individual. Certain neurological functions may be affected as well and can result in addictive behaviour, fearful reactions and negative changes in the perception of pain.[2] Identification of these factors plays a crucial role in the early diagnosis and effective treatment of patients.

Children are dependent on their caretakers and learn from their relations and experiences in their environments; they are therefore extremely vulnerable to psychosocial and environmental problems.[1] Psychosocial factors are especially prone to elicit suicidal behaviour in adolescents. These include problems with regard to family matters, behaviour, social life and recent exposure to a suicide attempt. Family problems include parental absence, parental abuse and parental substance abuse, a family history of suicide, or conflict with parents. Impulsivity, explosiveness, attention deficit hyperactivity disorder, depression and bipolar disorder are all classified as behavioural problems. Social problems may include academic problems, conduct problems or disciplinary crises, humiliation or socio-economic problems.[5]

Factors that induce stress can be classified into 3 distinct groups, namely predisposing factors, modulating factors and precipitating factors. Predisposing factors are present from birth and include gender, age and race. Modulating factors include age, socio-economic status, marital status and lifestyle. Precipitating factors are traumatic incidents resulting in major changes in the life of an individual, such as the death of a relative, retirement and divorce.[6]

In a study by Ostberg *et al.*[7] on the relationship between living conditions and psychosomatic complaints in Swedish schoolchildren, it has been found that girls are more likely than boys to present with headaches and recurrent abdominal pain (RAP) in response to stress. Somatic symptoms like these have repeatedly been shown to be associated with mental distress. Psychiatric disorders can therefore be linked to somatic pain syndromes, and pain and gender can be valuable identification markers for psychological problems. The association between headaches and depression remains unclear and requires continued investigation. However, a notable correlation between headaches and anxiety has been established.[8]

Differences are evident in the way adolescents attempt suicide. Adolescent females make suicide attempts more often, but males may be more likely to succeed in their attempts owing to the lethality of their actions. These differences may in part be due to the fact that females are more prone to panic attacks and are more susceptible to sexual abuse, especially during the adolescent years.[9]

Children and adolescents living with a single parent experience more stressors than those who live with both parents. They report more symptoms[7] and experience more pressure if they are in a single-parent home or if their parents re-marry.[10] Other risks in single-parent households are an increase in psychiatric morbidity, death and abuse.[7,11]

Social problems may impede the child's development and may result in disorders. The relationship of children with their parents can be a notable source of stress. Factors such as arguing, communication problems and parental abuse affect relationships negatively and increase stress in children. Conflict may also arise with regard to house rules and how leisure time is spent. A common complaint among adolescents is that while they are not treated like adults, their parents expect them to behave as such.[10]

Financial problems appear to be a significant stressor in South Africa, as we are a Third-World country. Young people struggle to find work and worry about economic burdens on the family. Economic stress also leads to physical problems such as headaches, RAP and sleeplessness, which can in turn result in other complications.[5] Because of family financial problems, young people may have to find jobs to support themselves and their relatives. This may conflict with their academic priorities, and they often complain that the day seems too short to meet all their obligations.[10]

Sexual abuse is a widespread problem with serious effects on the development and well-being of the child. It results in fear, shame, guilt, depression, anxiety, somatic complaints and aggressive behaviour. Social and communication skills and self-respect may be affected,[12,13] and the symptoms may lead to further complications and even to suicide.[7] Children and adolescents are susceptible to sexual abuse, with statistics showing that more than 60% of sexual offences involve persons younger than 18 years of age.[13] Sexual abuse is especially traumatising if committed by someone the child is familiar with.[12]

McMahon *et al.*[14] reviewed all research on relations between specific stressors and specific psychological outcomes among children and adolescents. Across the various stressors they examined (exposure to violence, abuse, divorce/marital conflict, poverty, illness and cumulative stress), the most consistent evidence for specificity was found in relation to sexual abuse.[14]

Sexual abuse can also result in the transmission of sexually transmitted infections, including human immunodeficiency virus (HIV), leading to the acquired immune deficiency syndrome (AIDS). Over the past three decades, HIV/AIDS has had devastating effect

on the world's population, especially in southern Africa, including children and adolescents.[15,16]

Toth and Cicchetti[17] highlight emotional abuse as an often overlooked, potential precipitant or exacerbating factor of child trauma that occurs together with many other forms of violence exposure, and may account for their detrimental outcomes. A recent national representative study found that every year domestic violence occurred in the homes of approximately 30% of children living with two parents.[18] According to Margolin and Gordis,[19] exposure of young people to violence in the home occurs at high rates and is often noted as one of the most common and severe adverse events experienced during childhood.

In a Japanese study of 580 adolescents, it was found that younger subjects (5th/8th grades) reported more stress in the domains of school, peers and family, whereas older youth (10th grade) reported more stress with regard to self-image.[20]

No recent research conducted in South African on stress factors affecting children and adolescents with mental disorders could be found in the literature. Consequently, the need to investigate biological, psychological and social stress factors in children and adolescents with mental disorders was identified. The aim of the study was to determine the profile of stress factors that led to the development of mental disorders in children and adolescents referred to the Child and Adolescent Unit of the Free State Psychiatric Complex (FSPC) in Bloemfontein from January 2006 to December 2007.

Methods

A descriptive, retrospective study was conducted. Children (from birth to 12 years) and adolescents (13 - 18 years) who were referred to the Child Mental Health Unit at the FSPC for evaluation and treatment during the period January 2006 - December 2007 were included in the study. They would have been evaluated and diagnosed according to the DSM IV classification[21] by the multi-professional team of the unit. The team included a child and adolescent psychiatrist, a clinical psychologist, a psychiatry registrar, a clinical psychology intern, psychiatric professional nurses, a social worker and an occupational therapist.

A data form was compiled and used to record the relevant information from the clinical files of the research population. The researchers completed the data forms themselves. Data were analysed by the Department of Biostatistics at the University of the Free State (UFS) using frequencies and percentages for categorical variables, and means or percentiles for numerical variables.

The study was approved by the Ethics Committee of the Faculty of Health Sciences at the UFS. Permission was obtained from the Chief Executive Officer of the FSPC.

Results and discussion

Demographic information

Six hundred and sixty-nine participants were included in the study, of whom 447 (66.8%) were children between birth and age 12 years. The median age of the children was 8 years (range 1 - 12 years), while the adolescents (*n*=222) had a median age of 15 years

Table 1. Gender, parental background and living arrangements of children and adolescents seen at the Child and Adolescent Unit of the FSPC from January 2006 to December 2007

	Children (*n*=447)		Adolescents (*n*=222)	
	n	**%**	***n***	**%**
Gender				
Male	301	67.30	106	47.75
Female	146	32.70	116	52.25
Parental background				
Mother still alive	357	79.90	168	75.70
Father still alive	255	57.10	106	47.75
Parents divorced	104	23.30	54	24.30
Biological parents still married	140	31.30	62	27.90
Living arrangements				
Living with both parents	131	29.30	49	22.10
Living with mother	176	39.40	84	37.80
Living with a member of the extended family (excluding father)	75	16.80	47	21.20
Foster care	36	8.10	26	11.70

Table 2. Number of diagnoses made in children and adolescents seen at the Child and Adolescent Unit of the FSPC from January 2006 to December 2007

	Children (*n*=447)		Adolescents (*n*=222)		Total (*N*=669)	
No. of diagnoses	***n***	**%**	***n***	**%**	***n***	**%**
0	49	11.0	26	11.7	75	11.2
1	202	45.2	92	41.4	294	43.9
2	141	31.5	74	33.3	215	32.1
3	39	8.7	24	10.8	63	9.4
4	12	2.7	5	2.3	17	2.5
5	3	0.7	1	0.5	4	0.6
6	0	0	0	0	0	0
7	1	0.2	0	0	1	0.1

Table 3. Diagnoses in children and adolescents seen at the Child and Adolescent Unit of the FSPC from January 2006 to December 2007

	Children (*n*=447)		Adolescents (*n*=222)		Total (*N*=669)		Difference in proportions (%)		
Diagnosis	***n***	**%**	***n***	**%**	***n***	**%**	**Lower CI**	**Difference**	**Upper CI**
Attention deficit & disruptive behaviour disorders	178	39.8	23	10.4	201	30.0	**23.0**	**29.5**	**35.2**
Depressive disorders	52	11.6	94	42.3	146	21.8	**-37.8**	**-30.7**	**-23.6**
Anxiety disorders	69	15.4	44	19.8	113	16.9	-10.9	-4.4	1.6
Conduct disorders	69	15.4	32	14.4	101	15.1	-5.0	1.0	6.4
Mental retardation	73	16.3	32	14.4	105	15.7	-4.2	1.9	7.4
Adjustment disorders	46	10.3	18	8.1	64	9.6	-2.8	2.2	6.5
Elimination disorders	49	11.0	5	2.3	54	8.1	**4.8**	**8.7**	**12.2**
Developmental disorders	40	8.9	9	4.1	49	7.3	**0.7**	**4.9**	**8.5**
Bereavement	32	7.2	15	6.8	47	7.0	-4.2	0.4	4.2
V Code	18	4.0	10	4.5	28	4.2	-4.4	-0.5	2.6
Schizophrenia & other psychotic disorders	4	0.9	19	8.6	23	3.4	**-12.1**	**-7.7**	**-4.4**
Bipolar mood disorder	3	0.7	7	3.2	10	1.5	**-5.7**	**-2.5**	**-0.4**
Organic brain disorder	6	1.3	1	0.5	7	1.0	-1.3	0.9	2.5
Epilepsy	5	1.1	3	1.4	8	1.2	-2.9	-0.2	1.5
Tic disorder	3	0.7	3	1.4	6	0.9	-3.3	-0.7	0.9
Impulse control disorder	3	0.7	1	0.5	4	0.6	-1.9	0.2	1.6
Eating disorders	0	0	2	0.9	2	0.3	-3.2	-0.9	0.2
Substance abuse disorder	0	0	2	0.9	2	0.3	-3.2	-0.9	0.2
Personality disorders	1	0.2	0	0	1	0.1	-3.0	-0.7	0.5
Sexual disorders	0	0	1	0.5	1	0.1	-2.5	-0.5	0.5
Somatoform disorders	0	0	1	0.5	1	0.1	-2.5	-0.5	0.5
Unknown	50	11.2	27	12.2	77	11.5	-6.6	-1.0	3.9
No diagnosis	3	0.7	0	0	3	0.4	-1.1	0.7	2.0

CI = confidence interval.
Numbers in bold denote statistically significant differences.

Table 4. Stressors identified in children and adolescents diagnosed with mental health problems

	Children (*n*=447)		Adolescents (*n*=222)		Total (*N*=669)		Difference in proportions (%)		
Stressor	***n***	**%**	***n***	**%**	***n***	**%**	**Lower CI**	**Difference**	**Upper CI**
Social stressors	273	61.1	156	70.3	429	64.1	**-16.5**	**-9.2**	**-1.5**
Psychological stressors	80	17.9	47	21.2	127	19.0	-10.0	-3.3	2.9
Biological stressors	34	7.6	17	7.7	51	7.6	-4.8	-0.1	3.9
Spiritual stressors	0	0	1	0.5	1	0.1	-2.5	-0.5	0.5
Unknown	0	0	1	0.5	1	0.1	-2.5	-0.5	0.5
No stressor	111	24.8	38	17.1	149	22.3	**1.0**	**7.7**	**13.8**

CI = confidence interval.
Numbers in bold denote statistically significant differences.

Table 5. Number of stressors identified in children and adolescents seen at the Child and Adolescent Unit of the FSPC from January 2006 to December 2007

	Children (*n*=447)		Adolescents (*n*=222)		Total (*N*=669)	
Number of stressors	***n***	**%**	***n***	**%**	***n***	**%**
0	112	25.1	38	17.1	150	22.4
1	212	47.4	101	45.5	313	46.8
2	82	18.3	54	24.3	136	20.3
3	38	8.5	24	10.8	62	9.3
4	3	0.7	4	1.8	7	1.0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	1	0.5	1	0.1

(range 13 - 18 years). Gender, parental background and living arrangements of the participants are summarised in Table 1. Two-thirds (67.3%) of the children referred were male, while 47.7% of the adolescents were male. Only 31.3% of the children's and 27.9% of the adolescents' biological parents were still married.

Diagnoses formulated in children and adolescents

A total of 67 different diagnoses were listed, although some of these were similar (for example, various eating disorders). The median number of diagnoses was one, and Table 2 shows the number of diagnoses made per child or adolescent in the sample. The diagnoses were grouped according to the main *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) classifications,[12] as shown in Table 3. The total is larger than 669, as some children and adolescents had co-morbid diagnoses.

In 35 cases, where co-morbid diagnoses fell into the same overarching category, that specific category was only counted once. Of the 669 referrals, 201 (30.0%) were diagnosed with attention deficit and disruptive behaviour disorders, followed by major depressive disorders (*n*=152; 22.7%), anxiety disorders (*n*=124, 18.5%), conduct disorders (*n*=108, 16.1%), mild mental retardation (*n*=105; 15.7%), adjustment disorders (*n*=64; 9.6%), elimination disorders (*n*=59, 8.8%), developmental disorders (*n*=51, 7.6%) and bereavement (*n*=47, 7.0%). Comparison of the distribution of these diagnoses between children and adolescents (Table 3) reveals that the two groups differed significantly with regard to diagnoses of attention deficit and disruptive behaviour disorders, depressive disorders, elimination disorders, developmental disorders, schizophrenia and other psychotic disorders, and bipolar mood disorders.

Stressors identified in children and adolescents

A total of 75 different stressors were listed, although, as with the diagnoses, many of these were similar. As such, the stressors were once more grouped according to larger categories, namely social, psychological, biological and spiritual stressors. The following social stressors were identified: domestic violence, family substance abuse, financial problems, lack of support, parents' divorce, problematic relations in the family, problems at school, and xenophobic attacks.

Table 6. The most common stress factors associated with clinical diagnoses in children and adolescents seen at the Child and Adolescent Unit of the FSPC between January 2006 and December 2007

	ADHD (*n* (%))		Depressive disorders (*n* (%))		PTSD (*n* (%))		Mental retardation (*n* (%))		Adjustment disorders (*n* (%))	
Stress factors	**Children (*n*=178)**	**Adolesc. (*n*=23)**	**Children (*n*=49)**	**Adolesc. (*n*=91)**	**Children (*n*=35)**	**Adolesc. (*n*=27)**	**Children (*n*=73)**	**Adolesc. (*n*=32)**	**Children (*n*=46)**	**Adolesc. (*n*=18)**
Problems at school	34 (19.1)	8 (34.8)	7 (14.3)	20 (22.0)	1 (2.7)	3 (11.1)	15 (20.6)	10 (31.3)	7 (15.2)	3 (16.7)
Absence of or loss of contact with a family member	27 (15.2)	1 (4.4)	7 (14.3)	11 (12.1)	2 (5.7)	3 (11.1)	7 (9.6)	-	8 (17.4)	3 (16.7)
Unstable family life	27 (15.2)	5 (21.7)	16 (32.7)	23 (25.3)	7 (20.0)	7 (25.9)	11 (15.1)	3 (9.4)	9 (19.6)	6 (33.3)
Death of a family member	20 (11.2)	5 (21.7)	10 (20.4)	20 (22.0)	11 (31.4)	7 (25.9)	8 (11.0)	-	5 (10.9)	2 (11.1)
Problematic relations with a family member	3 (1.7)	2 (8.7)	2 (4.1)	14 (15.4)	3 (8.6)	7 (25.9)	1 (1.4)	1 (3.1)	1 (2.2)	3 (16.7)
Parents divorced/ separated	13 (7.3)	1 (4.4)	4 (8.2)	6 (6.6)	1 (2.9)	1 (3.7)	1 (1.4)	-	10 (21.7)	2 (11.1)
Living in a new environment	10 (5.6)	3 (13.0)	1 (2.0)	13 (14.3)	2 (5.7)	4 (14.8)	5 (6.9)	3 (9.4)	12 (26.1)	7 (38.9)
Rape	-	-	-	10 (11.0)	9 (25.7)	11 (40.7)	2 (2.7)	-	4 (8.7)	1 (5.6)
Sexual abuse by a known person	5 (2.8)	-	4 (8.2)	4 (4.4)	4 (11.4)	2 (7.4)	4 (5.5)	-	3 (6.5)	1 (5.6)
Chronic mental illness	-	-	-	-	-	-	2 (2.7)	-	-	-

ADHD = attention deficit hyperactivity disorder; PTSD = post-traumatic stress disorder; Adolesc. = adolescents.

The main psychological stressors found in the study were emotional abuse, physical abuse, sexual abuse, hopelessness, isolation, low self-esteem, rape, rejection, worthlessness, nightmares, bereavement and behavioural problems. Biological stressors were epilepsy, pregnancy, speech problems, pain, enuresis, medical illness, menstrual problems and physical disability. Satanist involvement was the only spiritual stressor. Surprisingly, HIV/AIDS was not one of the stressors identified in this research population. Possible reasons for this finding could be that children, adolescents and their parents are not willing to share this information because of personal reasons, or that these conditions were reflected on Axis III of the 5-axis formulation, which was not part of the study.

Table 4 shows the stressors according to the major categories listed above. The total is again larger than 669, as some children and adolescents experienced multiple stressors. The median number of stressors was 1, and Table 5 shows the number of stressors identified per child or adolescent in the sample.

A large number of stressors fell into the same overarching category, although, as with the diagnoses, in each instance that category was only counted once. However, it should be noted that 126 participants (18.8%) experienced 2 stressors belonging to the same overarching category, 30 (4.5%) experienced 3 stressors from the same category, and 4 (0.6%) experienced 4 stressors all within the same category.

The stress factors identified in this group of children and adolescents with mental health problems are listed in Table 5. The major stressors identified in the total study group were social, occurring in 429 (64.1%). Psychological stressors accounted for a further 19% (*n*=127). The children experienced a significantly smaller proportion of social stressors than the adolescents, but conversely, a significantly greater proportion of children had no stressor identified. The association between the most common stress factors and the clinical diagnoses in children and adolescents is summarised in Table 6.

Conclusion

From the results reported here, it is clear that children and adolescents in the Free State province face serious challenges. Many of them are subjected to severe stress, which can lead to emotional problems if not well managed.

It is therefore important to monitor the functioning of children and adolescents continuously. Educational institutions, such as crèches, preschools and primary and secondary schools, are in a good position to identify biopsychosocial stressors affecting the well-being of children and adolescents. In this regard, educators

need more training and opportunities to consult on mental health matters. Similarly, religious organisations should be enlisted to identify stressors manifesting as spiritual dysfunction. School health services should also play a part in the recognition of biological stressors such as epilepsy, pregnancy, enuresis, medical illnesses, speech problems and sensory dysfunction.

Despite the significance of the findings, the results of this study should be interpreted with caution. Only children and adolescents referred to the FSPC were included, and the findings cannot be generalised to other populations. However, its significance should not be underestimated. It contributes to important academic data in a field that has been largely neglected in South Africa, and provides information on possible stress factors leading to the development of mental disorders in children and adolescents.

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