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SELF – MUTILATION IN ADOLESCENTS ADMITTED TO TARA PSYCHIATRIC HOSPITAL: PREVALENCE AND CHARACTERISTICS

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg in partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Psychiatry

Johannesburg, 2016

DECLARATION

I, Venera Petkova Stancheva, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in the branch of Psychiatry at the University of the Witwatersrand, Johannesburg.

It has not been submitted before for any degree or examination at this or any other University.

……..

……..day of ……, 2016

DEDICATION

This thesis is dedicated to my husband Ivo and my son George who gave me the courage to face new challenges, whose love and support has made this research possible, and to my late mother Rilka Pavlikyanova (1943-1987), a great parent who taught me perseverance and never to give up.

PRESENTATIONS

1. An oral presentation at the South African Association for Child and Adolescent Psychiatry and Allied Professions, Johannesburg, South Africa, September 2010: Self-mutilation in adolescents admitted to Tara Hospital: Preliminary findings. Stancheva V, Libhaber E, Albertyn L.

2. An oral presentation at the South African Society of Psychiatrists National Conference, Cradle of Human Kind Resort, South Africa, 20-24 September 2012: Self-mutilation in clinical population of adolescents: Prevalence and characteristics. Stancheva V, Libhaber E, Albertyn L.

ABSTRACT

Self-mutilation in youth is a major public health problem with increasing prevalence all over the world and is associated with high risk of suicide. Studies suggest that this behaviour is more commonly observed among hospitalised adolescents

The aims of the study were to estimate the prevalence of self-mutilation, identify the factors associated and describe the specific characteristics for this behaviour among clinical population of adolescents.

A retrospective file audit of 334 patient files over four years (2006-2010) was conducted at Tara Adolescent and Eating Disorder Unit. The study compared adolescents who self-mutilated with those who did not self-mutilate. Multiple logistic regression analysis was used to identify risk factors (demographics, family structure, parental psychopathology, childhood trauma, substance abuse, previous suicide attempt and sexuality). Additional information regarding the precipitating factors, response to self-mutilation, methods of self-mutilation, locations and frequency was described according to gender.

There were 183 patients who self-mutilated (age=15.8± 1.3 years, 73.2% females) and 151 non-self-mutilators (15.3± 1.2 years, 52.3% females). The prevalence of self-harm was 54.8% (95%CI, 49.1-59.7). Being a female, Caucasian, having a step-parent, having a parent with a mental illness, history of domestic violence, physical and sexual abuse and previous suicide attempts were found to be associated with self-mutilation ($p<0.01$). Smoking (adj OR 2.0 95% CI=1.3-3.2) and alcohol abuse (adj OR3.4 95%CI=2.0-5.5) increased the risk for self-harm. Females with increased number of comorbidities and emerging Personality Disorders self-harm more than their male peers. Superficial self-cutting was the most frequent method of self-mutilation (93.6%, 95%CI=90.2-97.0). The most common precipitating factor among both sexes was

sadness (58.9%), followed by anger (45.0%).

In conclusion, self-mutilation is a common and repetitive behaviour among hospitalised adolescents. The severity of the physical, sexual abuse and previous parasuicides increased the risk for self-harm in combination with smoking and alcohol abuse. However poor social support, academic problems, bullying, cannabis use and being homosexual was not associated with self-mutilation. Disruptive Behaviour Disorders were more prevalent among self-mutilators. Although superficial self-cutting was the most common method of self-mutilation, majority of the adolescents used different methods to self-harm. Clinicians should be aware of the increased risk to self-harm among hospitalised adolescents and develop strategies to decrease this behaviour.

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LIST OF ABBREVIATIONS

ADHD:	Attention-Deficit/ Hyperactivity Disorder
BP:	Bipolar Disorder
BPD:	Borderline Personality Disorder
CBT:	Cognitive Behavioural Therapy
CD:	Conduct Disorder
DBD:	Disruptive Behavioural Disorder
DSM IV:	Diagnostic and Statistical Manual of Mental Disorders. Fourth edition
ED:	Eating Disorders
GMC:	General Medical Condition
MDD:	Major Depressive Disorder
NSM:	Non-self-mutilators
PD:	Personality Disorder
PTSD:	Post Traumatic Stress Disorder
RSA:	Republic of South Africa
SM:	Self-mutilators
USA:	United State of America

CHAPTER 1

INTRODUCTION

Self-mutilation is a pathological behaviour that has become more prevalent among adolescents and is recognised as a serious problem impacting on the individuals, their families and health professionals. Favazza defines it as a deliberate destruction of body tissue without intent to die, that can be repetitive and is of a socially unacceptable nature (1).

1.1 Classification of self-mutilation

The classification that is currently used was constructed by Favazza & Rosenthal in 1990 (2), further modified by the two of them (3) and fully presented in the second edition of Bodies under Siege by Favazza (4). Self-mutilation is divided into three categories: 1) major, 2) stereotypical and 3) superficial, depending on the degree of tissue destruction and the pattern of the exhibited behaviour (5).

1) Major self-mutilation involves acts in which a significant amount of body tissue is destroyed, such as eye enucleation, castration and limb amputation. Major self-mutilation is commonly associated with Acute Psychotic Episodes, Schizophrenia, Manic Episodes, Depressive Episodes and Acute Intoxication. Self-harming in the presence of known psychopathology is a biologically-driven behaviour, determined by a complex interaction between biological, psychological and environmental factors (3, 5-8).

2) Stereotypical self–mutilation involves acts that are often repetitive, with a fixed pattern of expression. Examples are activities such as head banging, arm hitting, self-biting, eye ball pressing and arm dislocation. These behaviours are mainly observed in institutionalized and severely intellectually disabled individuals, including those with

developmental disabilities. They have been described in Autistic Spectrum Disorder (9), in Lesch-Nyhan Syndrome (10) and in patients with Giles de la Tourette Syndrome (11).

3) Superficial self-mutilation is the most prevalent type, resulting in little tissue damage. It includes acts such as skin cutting, skin burning, needle sticking, pricking, scratching and interference with wound healing. This behaviour has a repetitive nature, occurs sporadically and is not lethal (3-5, 12). This type of self-mutilation is most commonly seen in adolescents (13-16).

Different terms are used in the literature to describe the same phenomenon – self-harm, deliberate self-harm, self-injurious behaviour and non-suicidal self-injury. However, self-mutilation remains the most commonly used term. It implies that there is no intent to die (12).

In DSM IV, self-mutilation is referred to as a symptom of Borderline Personality Disorder (BPD) (17). Although research findings support the above statement; studies in adolescents have also indicated that self-mutilation was observed in a variety of psychiatric disorders such as Major Depressive Disorder (MDD), Bipolar Disorder (BD), Anxiety Disorders, Attention-Deficit/Hyperactivity Disorder (ADHD), Conduct Disorder (CD), Adjustment Disorders, Post Traumatic Stress Disorder (PTSD), Psychotic Disorders and Eating Disorders (ED) (18, 19, 20). Castille, et al., found that among self-mutilators, 56.4% had Mood Disorders, 30.4% had Anxiety Disorders, 4.3% had PTSD and 4.3% had ED (21).

1.2 Prevalence of self-mutilation

The exact prevalence of superficial self-mutilation in adolescents is unknown. This complex phenomenon occurs privately and is often overlooked or under-diagnosed by health care professionals. It is often unreported by the adolescents and their parents. However, most studies reported an increase in the prevalence of self-harming behaviour

in a community sample of adolescents (12-19, 22, 23) and among inpatients (13-16, 18, 19, 22).

According to the CASE study, conflicting information could be a result of the different types of study populations, such as community samples, school children and children visiting the emergency department, or as a result of the different methods and assessment tools used (23).

A higher prevalence of 13.5% was found in females and a much lower prevalence of 4.3% was found among males. The highest rate was documented in Australia at 11.8% and the lowest rate of 3.6% in the Netherlands (23). Furthermore, studies from other European countries have documented prevalence rates as low as 2.9% among German adolescents (24) and as high as 12.3% among Sami and Norwegian adolescents (25). Superficial self-mutilation of 20% was reported among Turkish high school students, but no other study had confirmed such high prevalence rates (26). In the rest of Europe, Canada, New Zealand and the USA, the prevalence in community samples of adolescents ranged from 6.9% to 15% (13, 27-34).

There is a paucity of information regarding the prevalence of self-mutilation among adolescent psychiatric inpatients, although self-mutilation is one of the five causes of hospital admissions (35). In the literature, prevalence ranges between 38% and 80%, confirming that this behaviour is more prevalent among a clinical population of adolescents (36, 37). Most of the adolescents who self-harmed in the wards had a history of self-mutilation prior to their admission (36, 38, 39).

Female gender, increased adolescent age, previous history of self-harming and parasuicides are among the most important risk factors for self-mutilation in hospitalised adolescents (35-41). Living with a step-parent, having a history of trauma, being exposed to ongoing problems in the family system or being diagnosed with Depressive Disorder

increases the risk of self-mutilation even further (37, 39-43).

In addition to the duration of stay in the ward and the number of admissions, the attitude of the staff has been suggested to contribute to self-mutilation among adolescent inpatients (44).

The most frequently used methods of self-mutilation among hospitalised adolescents are: superficial skin cutting, scratching and interference with wound healing, with most of the acts occurring in the evenings and weekends (37-44). Among those who repeatedly self-mutilated during their in-hospital stay, BPD and Depressive Disorders were the most prevalent psychiatric diagnoses (14, 32, 42, 44, 45).

1.3 Demographic characteristics

Self-mutilation is rare before puberty. It is more commonly seen during adolescence, with the first onset at about 16 years in the USA (12) and 14-15 years in England and Germany (24, 28). Prevailing beliefs suggest that self-mutilation occurs mainly in women (1, 3, 5, 6, 37) and more recent studies confirm this (13-16, 23, 24, 27, 28, 33, 39-42, 45). Few studies have shown no significant gender difference (46-48).

Not many studies have examined racial differences in adolescents, probably because most of the research reports come from countries with predominantly Caucasian populations. Favazza, et al., in a mixed sample of adolescents and adults, found that 97% of the self-mutilators were Caucasian (49). Hawton, et al., found that self-mutilation was less common among Asian than white female adolescents (28). Mann found that in the USA, African-Americans are at the lowest risk for self-mutilation (50).

The impact of religious beliefs on self-mutilation has been understudied. Only one study in an adult sample found that among the participants, 25% were Protestants, 18% Catholic, 5% Fundamentalists, 3% Jewish, 20% practiced other faiths and 29% had no religious preference (49). Dervic, et al., confirmed that Christians tended to self-harm and attempt

suicide more often (51). However, no study specifically looked at the association between religion and self-mutilation.

The literature has revealed an association between adverse childhood environments and self-mutilation (13, 14, 18, 27-31, 45-49, 52). The risk was found to be greater for adolescents with separated or divorced parents, parents with a higher level of unemployment and parents who abuse substances or suffer from mental illness (14, 18, 46, 49, 50, 52).

However, Ross & Heath (53) found that most adolescent self-mutilators came from homes where their parents were married (59%). The prevalence of self-mutilation is even higher among adolescents exposed to domestic violence and those living in families with poor social support and low incomes (13, 18, 22, 46, 49, 54-58).

1.4 History of traumatic experiences

The presence of traumatic experiences early in life has been shown to precipitate self-harm in children, adolescents and adults (3, 12, 13-16, 19, 23, 27-31, 39, 45).

Self-mutilators often have a history of physical or sexual abuse as children, compared to the general population (3, 19, 22-30, 37, 39, 48, 54, 56, 57). In an early study by Zlotnick, et al., a history of childhood sexual abuse was present in 79% of the self-mutilators (59). O'Connor, et al., found that physical abuse, sexual abuse and being bullied at school were significantly related to self-mutilation, irrespective of gender (58). De Kloet, et al., in a more recent study, reported that a history of any trauma was associated with a nine-fold increase in self-harm. Traumatic experiences included being bullied at school (39%), physical abuse (25.7%) and domestic violence (27.8%). Furthermore, this study found that a history of sexual abuse alone was associated with a five-fold increase in self-mutilation (39). Physical and sexual abuse was found to be a strong predictor for self-harm among adolescents in the TORDIA study (60). Others have confirmed the same

findings (61, 62). Academic difficulties, bullying at school and problems with peers have been observed more among male self-mutilators (13, 14, 16, 18, 24, 25, 29). Difficulties with schoolwork preceded self-mutilation in more than two thirds of the adolescents (63). Relationship problems with friends and bullying were significantly more prominent in adolescent girls than boys in this study.

1.5 Self-mutilation and suicidality

Self -mutilation in young people tends to have a low potential for lethality, but the research has shown that 5% of adolescent self-mutilators would commit suicide 9 years after the initial incident (15). Self-harm is a strong predictor of suicide, with the highest risk occurring in the first 6 months after a self-harming episode (15, 24, 25). Hawton, et al., followed a population of 5,205 adolescents between 2000 and 2010. In total, 51 had died by the end of the study period – nearly half by suicide or probable suicide (63). It was reported that suicide was associated with older adolescent age, male gender, history of psychiatric disorder and substance abuse (15, 25, 63). In addition, a link was found between the frequency and severity of the self-harm episodes and suicide (15, 32, 64, 65).

In another publication, 70% of adolescents engaging in recent self-harming behaviour reported a lifetime history of suicide attempts, with 55% of them reporting two or more suicide attempts (45). More recent studies continued to indicate that a history of non-suicidal self-injury was a strong predictor of suicide attempts, suggesting an overlap between the two behaviours (32, 67-70).

However, no study has shown that non-suicidal self-injury is an independent risk factor for completed suicide. In addition, suicide may be an unintended result of self-harm; therefore behaviours of self-mutilation should be treated as a sign of a potential risk to commit suicide.

In view of the above findings, it is important to examine factors associated with self-

mutilation in order to prevent fatalities among young people.

1.6 Substance abuse and self-mutilation

The majority of studies showed an increase in self-mutilation among male and female adolescents who used substances (12-14, 22, 24, 28, 30-32, 45, 52, 58, 63, 71). Substance use usually preceded the self-mutilation (12, 14, 23). Hawton, et al., has documented an escalation in self-mutilating behaviour with increased consumption of cigarettes or alcohol (14, 28). A strong association between drug use and self-mutilation was found in other publications (29, 34, 35, 38, 41). In the CASE Study, it was reported that 73.7% of the adolescents had a history of alcohol abuse and 71.2% had used other illegal drugs at the time of the most recent self-mutilating episode (23). Alcohol use was most prevalent among self-harming adolescents from Norway, Hungary and Australia and least prevalent among Dutch-speaking self-mutilators from the Netherlands and Belgium. The act of self-harming was often preceded by alcohol intake among Irish and English adolescents (23). In a research report from Norway, it was found that cannabis use increased the self-harming and suicidal attempts among Sami (ethnic group) adolescents (25). In Moran's review on the natural history of self-harming behaviour, more proof was accumulated showing that self-mutilation during adolescence was independently associated with high-risk of alcohol use, cannabis use and cigarette smoking (16).

1.7 Sexual orientation and self-mutilation

Confusion around sexual preference has been identified as a risk factor for self-mutilation. A few publications have shown that men and women with homosexual or bisexual orientation are more likely to self-mutilate than heterosexuals (13, 14, 18, 25, 30, 42, 71-76). Most self-harm occurred around the time when the participants realised that they were not exclusively heterosexual. An earlier study by Pattison & Khan found that, among homosexual self-mutilators aged 6 to 75 years, four had a Psychotic Disorder and seven

had Depressive Disorder. However, no distinction could be made whether the mental illness or the same sex orientation was contributing more to the self-mutilating behaviour (46). In their sample of 240 females with habitual self-mutilation, Favazza & Conterio, found that 53% had “a troublesome sexual feeling”, 9% were homosexual, 5% were bisexual, but the majority (73%) were heterosexual. No distinction was made between adults and adolescents (49).

Another study found that adolescent boys and girls, who had been worried about their sexual orientation, had higher rates of self-mutilation. However, verbal descriptions of their findings used terms such as “worries about sexual orientation”, which precluded the comparison with other studies that looked at homosexuality, bisexuality and heterosexuality among adolescents who self-harm (52). Skegg found that homosexual or bisexual men and women are more likely to self-harm, with a greater risk for homosexual men and conflicting results for teenage girls (15).

A more recent article from New Zealand explored the association between sexual attraction and self-reported depression, self-harm and suicidality in a sample of 9107 randomly selected secondary school students. The results concluded that 92% of the adolescents were attracted to the opposite sex, but those attracted to the same sex or to both sexes were at greater risk for self-harming, suicide and depressive symptoms (76). Two other studies on Scottish scholars confirmed the same findings (31, 58). In contrast to them, Hawton, et al., found that most adolescents who self-mutilate are attracted to the opposite sex (64). Therefore it cannot be concluded that there is an association between sexual orientation and self-mutilation.

1.8 Methods and locations of self-mutilation

Self-cutting was found to be the most common method of self-mutilation in community samples of adolescents, followed by self-hitting, burning and needle pricking (13-16, 19,

23-25, 28, 32, 48, 63). Research that was conducted among the youth of Northern Ireland reported the same results among 64% of the male and 57% of the female adolescents (30). Superficial self-cutting was more common than taking an overdose in all studied countries included in the CASE study (23). Other studies have repeatedly confirmed that cutting-type behaviours are the most predominant among female and male self-mutilators (41, 42, 45, 46, 49, 52-54, 60, 62, 66, 68, 69).

Although less research was done on adolescent inpatients, cutting was the most prevalent method (about 80%) of self-harm among this population, followed by “severe scratching” and “needle sticking into the skin” (33, 35-39). A Canadian study on hospitalised adolescents reported that superficial cutting, interference with wound healing and scratching was presented in 62.3% of their participants (41). Injury to the skin by cutting and burning was the most common method of self-injury among 14-19 year old Australian adolescent in-patients (39).

Common locations were the wrists, thighs and arms (13, 15, 23, 35, 42, 46, 49). Among Hungarian adolescents, the most afflicted areas were the lower arm, hands and fingers, including the lower leg (23, 32).

1.9 Precipitating factors for self-mutilation

A variety of factors have been shown to be associated with this type of behaviour in adolescents (4, 6-9, 12, 13-16, 18-25, 27, 31, 32, 39, 65, 69-71). The most common reasons given in the CASE study were “to get relief from a terrible state of mind”, followed by “to die” (23). Wanting to punish oneself was a precipitating factor in 46% of the boys and 38% for the girls in an Irish study (30).

Generally, negative affective states (anger, depression, loneliness, frustration) were observed prior to self-harming (19). The most common reasons precipitating the behaviour were: reducing depression, feeling lonely, the need to feel pain and release emotional numbness or emptiness, followed by self-hatred, self-punishment, and

distraction from problems. More girls than boys reported despair and depression (42, 43, 45).

Hostility and anxiety were reported as precipitating factors in a few studies (53, 78).

One study identified a dissociative episode (feeling of unreality) as the most significant precipitating factor, with self-cutting ending the dissociative episode and bringing the self-mutilators back to reality, reminding them that they do exist (47). The lack of a “feeling state” was later found to be a trigger for self-mutilation by other researchers (12, 13, 19, 78, 79). The high level of a reported negative emotional state prior to self-mutilation probably confirms that this behaviour is used by adolescents as a mechanism to regulate and cope with difficult emotions.

Studies have repeatedly shown that the least common reason for self-mutilation among the adolescents is the so called “manipulative reason” (12, 27, 30, 32, 39, 60, 70).

1.10 Response to self-mutilation

Responses to self-mutilation differ across studies (5, 12-16, 19, 23, 29, 33, 38, 41, 45, 48, 49, 63, 70, 78-82). Csorba, et al., found that half of the participants felt no pain or only mild physical pain, and over one third felt relief after self-harming (32). Numerous studies have shown that self-mutilation reduces negative affect and emotional arousal (78, 79). Some theories address the biological effect of self-injury, such as the release of endorphins, which induce pleasant feelings (12, 78, 79). Favazza & Conterio speculated that endorphin release following self-injury may cause acute alleviation of negative affect, which explains the repetitive nature of this behaviour (49).

1.11 Psychiatric diagnosis and self-mutilation

Publications have supported the hypothesis that self-mutilation is more commonly observed in patients with psychiatric and personality disorders. Howton, et al., in their multicentre study, found that 28.0% of the self-mutilators had received treatment for a

psychiatric illness and 12.9% were on treatment with psychotropic medications during the study period (63). Sampson, et al., studied 16-64 year old patients admitted to an acute psychiatric unit and found that Depressive Disorders and Personality Disorders (PD) were more prevalent in the group with a history of self-mutilation. However, their results could not be generalised to adolescents only, as the age of the sample ranged between 16-64 years (88).

Few studies looked at self-mutilation and psychiatric diagnosis in adolescents only. Phillips, et al., found that among 193 adolescent (aged 13-18) inpatients, those diagnosed with Adjustment Disorders and relationship problems were more likely to self-harm then those with primary diagnosis of MDD (38). A possible explanation could be attributed to the fact that MDD is not usually associated with aggression toward the self and probably most of the depressed adolescents did not have a previous history of self-harming behaviour.

Nock, et al., found that 86% of self-mutilators met DSM IV criteria for at least one diagnosis. Half of the adolescents met criteria for internalizing disorders (Anxiety Disorders, Depressive Disorders), but most for externalizing disorders and substance abuse disorders. MDD was observed mainly in females and CD was diagnosed in 71.4% of the male adolescents. More than half of both genders met criteria for at least one personality disorder (45). A study by Darche compared adolescent female patients with and without self-mutilating behaviours. He found that self-mutilators have often been diagnosed with CD, ED and Anxiety Disorder (37).

Recent research strongly suggests that specific affective temperamental types are frequently the precursors of MDD and Bipolar Disorder.

Guerreiro, et al., looked at affective temperament and self-harm in a community adolescent sample. Depressive, cyclothymic, irritable and anxious temperaments have been shown to be associated with self-harming behaviour in both genders. Dominant

depressive temperaments in females and dominant irritable temperaments in males showed the strongest association with self-harming (87).

Depressive Disorders are very common among self-mutilating adolescents and often predict a repetition of self-harm and suicide (13, 14, 25, 27, 28, 89-94).
O'Connor, et al., reported that among adolescent self-mutilators from both sexes, the most prevalent findings were higher levels of depression and anxiety and lower levels of optimism and good self-esteem (58).
In the TORDIA study, Rosenbaum, et al., found that non-suicidal self-injury was more common than suicidal attempts (38.0% vs. 9.5%) among adolescents with Treatment Resistant Depression. A history of self-harming was a strong predictive factor for repeated self-harm, completed suicide and poor response to the trial treatments of Depressive Disorder including Cognitive Behavioural Therapy (CBT) (60). De Kloet, et al., reported Depressive Disorder to be the most common diagnosis among self-mutilating adolescents (60%), followed by Adjustment Disorder (34.0%) and PTSD (39). Treatment of Depressive Disorders with antidepressant and CBT significantly reduced the self-harming behaviour (70).

The diagnosis of PD in adolescents remains controversial. However, in many studies, the diagnosis of BPD in this population has established validity and was often identified among inpatients with a history of self-mutilation (97-99,101,102). Engaging in repetitive acts of self-harm or suicide is a diagnostic feature of BPD, but it is still not clear whether specific BPD symptoms predict repeated self-mutilation and suicidal self-injury.
Muehlenkamp, et al., studied 441 clinical charts of ethnically diverse adolescents admitted to an outpatient suicide treatment clinic. They found that, among self-mutilators and those who attempted suicide, the majority displayed symptoms of BPD (99). The core areas of BPD psychopathology were investigated and adolescents who reported higher levels of

interpersonal chaos and emotional dysregulation were found to be at the greatest risk for repeated self-harm (89-91, 96-102).

In agreement with the above, Nock, et al., found that approximately two thirds of female adolescent self-harmers admitted to the hospital met criteria for a PD. Half of the participants met criteria for BPD, followed by Avoidant and Paranoid Personality Disorders (45).

Motivation of the study

Since the establishment of the adolescent ward at Tara Hospital, no formal research has been done to study the population of self-mutilators and identify risk factors contributing to this repetitive behaviour. Furthermore, an increase in referrals with a main complaint of self-mutilation was noted. As shown in the literature review, there is a paucity of information regarding the prevalence and risk factors for self-mutilation in hospitalised adolescents.

To the best of my knowledge, no study has been done in Republic of South Africa which examines self-mutilating behaviour in clinical populations of adolescents and factors associated with it. However, professionals working in adolescent mental health have noted that there seems to be an increase in this type of behaviour. Therefore, this study aims to find the prevalence and factors associated with self-mutilating behaviour in adolescents admitted to Tara Psychiatric Hospital. The results from the study could be used to develop hospital protocols and policies, to create awareness in the public, improve patient care and reduce the repetitive nature of this distressing behaviour.

CHAPTER 2

2.0 Materials and Methods

2.1 Aim

The aim of the study was to estimate the prevalence and identify factors associated with self-mutilation in adolescents admitted to Tara Psychiatric Hospital during the period January 2006 to December 2010.

Specific objectives:

- To estimate the prevalence of self-mutilating behaviour among a clinical sample of adolescences admitted to Tara Hospital between January 2006 and December 2010.
- To describe the demographics, family structure, social circumstances, including a history of physical, sexual abuse, school history, substance use and sexual preference in self-mutilators and non-self-mutilators.
- To compare the characteristics of self-mutilators to non-self-mutilators
- To describe the method, frequency, location and precipitating factors for self-mutilation.
- To describe the response to self-mutilation.
- To determine the prevalence and co-morbidity of mental disorders using DSMIV-TR.

2.2 Methodology

2.2.1 Study Design

This is a retrospective cross-sectional descriptive study.

A review of clinical records of all adolescents admitted to Tara Psychiatric Hospital during January 2006 and December 2010 year period was done

2.2.2 Study setting

The study took place at the Adolescent and Eating Disorder Units, Tara Psychiatric Hospital which is one of the University of Witwatersrand Academic Psychiatric Hospitals. The Adolescent Ward is an open ward with 15 beds and takes care of patients, aged 13-18 years. The Eating Disorder Unit has a capacity of 10 beds. Adult and adolescent users were admitted to the Eating Disorder Unit. The two wards are separated by a corridor. Both wards are managed by one Psychiatric Registrar, one Consultant Psychiatrist with expertise in the field, one senior psychologist, two intern psychologists and nursing staff consisting of eight registered nurses. Both wards follow different therapeutic and occupational therapy programs. The patients from the two wards do not interact among each other during their hospital stay.

2.2.3 Study population and sample

All adolescents aged 13 to 18 years admitted to the hospital were included in the study. The Adolescent Unit and Eating Disorder Unit received on average 80 to 90 new patients in total per year.

If a patient was admitted a second time and if during the second admission the patient was older than 18 years, the second admission was not considered. If a patient was admitted more than once for a different reason and with a different diagnosis, each admission was counted separately. If a patient was re-admitted with the same diagnosis, he/she was included in the analysis only once. Patients' files were requested from medical records at the hospital after obtaining a letter of permission to use the clinical records from the head of the health establishment. Only complete records were included in the study.

A record was considered complete if it contained the following information:

- Patient details
- Adolescent Interview form fully completed
- Parental interview form fully completed

- Doctors notes
- Discharge form with established diagnosis according to DSMIV-TR.

If any of the above were missing, or if the information in the record could not provide the required data, the record was considered “incomplete” and not included in the study.

If the information showed that the patient had a medical condition only (not psychiatric) that could contribute to self-mutilation, a genetic disorder or Severe Intellectual Disability, those files were excluded from the analysis.

Of 392 files in total, 22 files were missing, 4 were incomplete, 8 belonged to patients with a primary diagnosis of Intellectual Disability and 16 had a significant medical condition with a psychiatric presentation, but not a primary psychiatric diagnosis. Eight of the adolescents were readmitted with the same diagnosis; therefore they were included in the analysis only once. Three hundred and thirty four files were included in the final analysis, of which 183 belonged to self-mutilators.

The diagram bellow summarises the selection process.

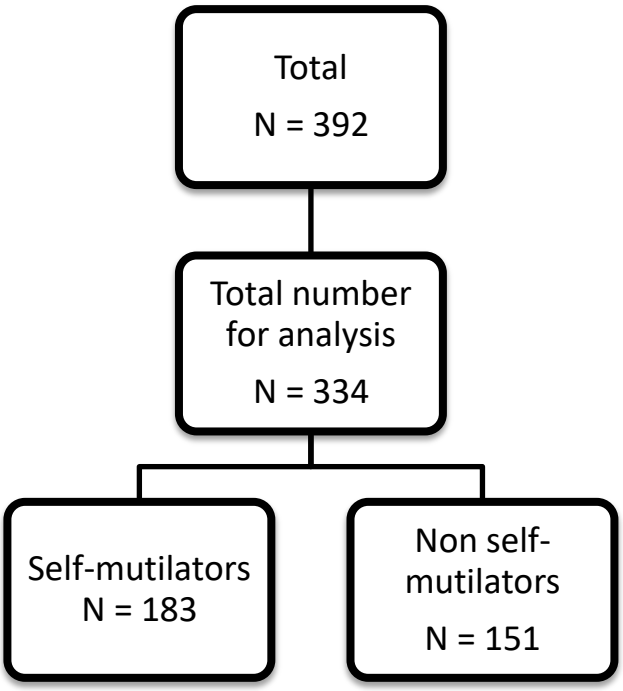


Figure 2.1 Patient selection and exclusion

2.3 Tools

A data collection sheet was developed by the researcher (Appendix 1). Information on demographic characteristics, family background, history of traumatic experiences, academic and peer difficulties, history of substance abuse and previous suicidal/self-harming experiences and sexual orientation were included. In addition, the data collection sheet contained information on methods and location of self-harm, precipitating factors, repetition and response to self-mutilation. Information on self-mutilation in the ward was entered if documented. Diagnosis on admission was made mainly by the referral practitioners, registrars under training with limited expertise in the field. The discharge diagnosis was finalized after the patient was treated in the ward by a consultant psychiatrist, using DSM IV-TR. Primary diagnosis was defined as the first listed on the discharge form. In order to reduce inaccuracy of diagnoses, the analysis of data was performed with discharge diagnosis only.

Due to incomplete diagnoses in the discharge summary, mental disorders were then classified according to the following categories:

- Mood Disorders
- Anxiety Disorders
- Eating Disorders
- Psychotic Disorders
- Disorders due to General Medical Conditions and Substance abuse
- Disruptive Behavioural Disorders

The number of comorbidities was also retrieved from the files (Appendix 1)

2.4 Pilot study

In order to determine the completeness of the files and to estimate a sample size a pilot study was undertaken. The pilot study included 10 self-mutilators and 10 non-self-

mutilators.

The following issues were identified and taken into consideration. The smallest difference of 20% between the two groups was found in parental employment status, history of sexual abuse, academic problems and homosexuality.

For this study to have 90% power and a significance level of $p<0.05$, it was calculated that the minimal sample size should consist of at least 120 participants in each group.

2.5 Ethical considerations

All information was collected anonymously on the data collection sheet, and patient's confidentiality was protected (Appendix 1). Only the researcher and her supervisors had access to the information sheet.

Permission for this study was granted by the Human Research Ethic Committee (Medical) of the University of The Witwatersrand, number M110307 (Appendix 2). A letter authorising the use of hospital records was signed by the Head of the Tara Hospital (Appendix 3).

2.6 Data collection and Management

The data collection sheet was developed by the researcher, approved by the supervisors and was finalised after the pilot study. From the ward admitting book the participants between 13-18 years were selected. The files of the identified inpatients were requested from the Records Department at Tara Hospital.

The patient files were reviewed on the premises of the hospital. To protect patients' confidentiality no names were used. An individual number was allocated to every participant. Every file was reviewed in detail by the researcher and the relevant information was recorded on the data collection sheet (Appendix 1).

The reviewed files were returned to Records Department after that. The information from the data sheet was transferred to an Excel spread sheet and analysed.

2.7 Statistical analysis

Data were analysed with Statistica 12.0 software, Stasoft, USA. Categorical data were presented as frequency, percentage and 95% CI. To assess differences of categorical variables between self-mutilators and non-self-mutilators a Chi-Squared test was used and a Fisher exact test when appropriate. Bonferroni corrections were applied for 2x2 comparisons.

Continuous variables were summarised as mean (SD) and for comparisons between the two groups and a t-test was used, provided they were normally distributed.

Univariate logistic regression analysis was performed to identify possible risk factors for self-mutilation and unadjusted Odds Ratio (OR) was calculated for each independent variable. For the purpose of analysis the variable 'race' was recoded as '0' for being Caucasian and '1' non-Caucasian (Black Africans and Coloured) due to the small numbers in the last category. Predictor variables with $p<0.20$ in the univariate analysis were included in the multiple logistic regression model where adjusted ORs were computed. The following independent variables were included in the model: gender, race, domestic violence, alcohol consumption, smoking, suicide attempt, parents mental disabilities, physical abuse, sexual abuse and peer bullying.

Odds ratios were accompanied by 95% CI. Statistical significance was set at a p-value < 0.05.

CHAPTER 3

3.0 Results

3.1 Characteristics of the sample

In total 334 patient files were included in the final analysis. Of those, 183 belonged to patients who self-mutilated. The prevalence of self-mutilation among adolescents admitted for in-hospital treatment was 54.8% (95% CI, 49.1-59.7%).

The mean ages of self-mutilators were 15.8±1.3 years and 15.7±1.5 years for the non-self-mutilators.

Among the sample of 183 self-mutilators, the mean age of onset was 13 years 8 months±2.3 SD. One patient started self-mutilating as early as 9 years and 6 months. Another only started when she turned 18 years of age. More females (73.2%) self-mutilated than males (p=0.0001).

The self-harming behaviour was reported in 66.7% of the cases by the child and the parent, in 29.3% by the child only and in 4% by a parent only.

In this sample, 6.8% of the patients self-mutilated once and 14% did it between two and five times.

Among all self-mutilators, more than one third had self-harmed more than five times (35.1%).The highest recorded frequency for three of the patients was 20 times. The proportion of females (73.2%) was higher in the self-mutilating group compared to the non-mutilators (p=0.0001). However the frequency of self-mutilation was similar in both genders (p=0.8).

3.2 Ethnicity and Religion

Table 3.1 details the demographic characteristics of self-mutilators and non-self-mutilators

Table 3.1: Demographic characteristics of SM versus NSM

Demographics	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P value
Sex				
Female	134 (73.2)	79 (52.3)	213 (63.8)	0.0001
Male	49 (26.8)	72 (47.7)	121 (36.2)	
Ethnicity*				
English	88 (51.5)	48 (38.7)	136 (46.1)	
Afrikaans	64 (37.4)	25 (20.2)	89 (30.2)	< 0.0001
Africans	19 (11.1)	51 (41.1)	70 (23.7)	
Race				
Caucasian	145 (79.2)	62 (41.1)	207 (62.0)	
Coloured	6 (3.3)	11 (7.3)	16 (4.8)	< 0.0001
African	32 (17.5)	78 (51.6)	111 (33.2)	
Religion				
Not religious	38 (20.8)	19 (12.6)	57 (17.1)	
Christian	126 (68.9)	122 (80.8)	248 (74.3)	
Jewish	18 (9.8)	6 (4.0)	24 (7.2)	0.01
Muslim	1 (0.5)	1 (0.6)	2 (0.6)	
Hindu / others	0 (0.0)	3 (2.0)	3 (0.9)	
Schooling				
Mainstream	171 (93.4)	130 (86.1)	301 (90.1)	0.03
Special Ed	12 (6.6)	21 (13.9)	33 (9.9)	

SM-self-mutilators, NSM-non self-mutilators; *ethnicity missing n =12(SM); n=29(NSM). Percentage calculated by columns

The majority of the admitted adolescents were English speaking (46.1%), followed by Afrikaans speaking (30.2%) and by those using African languages (23.7%). Of the self-mutilators 51.5% spoke English and only 11.1% spoke an African language. Of all the admitted self-mutilating adolescents, 79.2% were Caucasian, and 17.5% were Africans. Importantly self-mutilation was more prevalent among Caucasian adolescents who were English and Afrikaans speakers (p<.0001).The majority of all self-mutilators were Christians (68.9%), or not religious at all (20.8%). Religion in this sample, proved to be an important factor for self-mutilation (p=0.01). The majority of the adolescents attended mainstream schools. From the self-mutilators 93.4% were in mainstream school and only 6.6% of adolescents attended special education school (p=0.03).

3.3 Family background

Table 3.2 below summarises the familial characteristics of the admitted adolescents. The majority of the adolescents came from a single parent family (41.9%) or from a household with two biological parents (32.9%). Adolescents living in families with step-parents tended to self-harm more. Parent structure was identified as a significant factor for self-mutilation (p=0.02).

Unemployment among parents in this sample was 13.6%. The majority of the adolescents came from families where at least one (40.5%) or both parents were employed (45.9%) and no difference was found between self-mutilators or non-self-mutilators (p=0.14).

Physical disability in one or both parents had not been found to be a contributory factor for self-mutilation in their adolescent children (p=0.6).

Table 3.2 Family characteristics

Family background	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P value
Parent structure				
Single parent	79 (43.2)	61 (40.4)	140 (41.9)	
Both parents	52 (28.4)	58 (38.4)	110 (32.9)	
Step-parent	37 (20.2)	16 (10.6)	53 (15.9)	0.02
Adopted	8 (4.4)	10 (6.6)	18 (5.4)	
Foster parent	2 (1.1)	5 (3.3)	7 (2.1)	
No parents	5 (2.7)	1 (0.7)	6 (1.8)	
Parent Employment*				
One parent	77 (42.8)	57 (37.7)	134 (40.5)	
Both parents	84 (46.7)	68 (45.0)	152 (45.9)	0.14
None	19 (10.5)	26 (17.3)	45 (13.6)	
Physical disability*				
One parent	16 (8.9)	13 (8.6)	29 (8.8)	
Both	2 (1.1)	4 (2.6)	6 (1.8)	0.6
None	162 (90.0)	134 (88.8)	296 (89.4)	
Mental disorder*				
One parent	66 (36.7)	26 (17.2)	92 (27.8)	
Both	7 (3.9)	3 (2.0)	10 (3.0)	< 0.0001
None	107 (59.4)	122 (80.8)	229 (69.2)	
Parent Substance use				

One parent	66 (36.1)	36 (23.8)	102 (30.5)	
Both	7 (3.8)	1 (0.7)	8 (2.4)	0.04
None	110 (60.1)	114 (75.5)	224 (67.1)	
Low social support				
Yes	47 (25.7)	52 (34.4)	99 (29.6)	0.09
No	136 (74.3)	99 (65.6)	235 (70.4)	
Domestic violence				
Yes	56(30.6)	21 (13.9)	77 (23.1)	0.0003
No	127 (69.4)	130 (86.1)	257 (76.9)	

SM-self-mutilators, NSM-non-self-mutilators; * missing frequencies n=3 (SM for parental employment, physical, mental disorder). Percentage calculated by columns.

Most of the adolescents (69.2%) came from families where the parents had no mental illness. However, 36.7% of the adolescents who self-mutilated had at least one parent with a mental illness and in 3.9%, both parents were affected. Having a parent with a mental illness was associated with self-mutilation in their offspring ($p<0.0001$).

A history of substance abuse among both parents was recorded in 2.4% of the participants, among one parent in 30.5% and was more often observed among parents of self-mutilators ($p=0.04$).

Low social support was not a significant contributing factor for self-mutilation among the admitted adolescents ($P=0.09$). In this sample 23.1% of the adolescents were exposed to domestic violence and most were self-mutilating ($p=0.0003$).

3.4 School settings

As shown in Table 3.3 below, 55.4% experienced academic problems. No difference was found between self-mutilators and non-self-mutilators ($p=0.1$). Although 45.2% of the

adolescents admitted to having peer relation problems, there was not a significant difference between self-mutilators and non-self-mutilators (p=0.05). However a tendency towards having more peer relation problems in the self-harming group has to be acknowledged.

Bullying at school was not found to be more prevalent among self-mutilators (p=0.9).

Table 3.3 School settings

	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P
Academic problems				
Yes	94 (51.4)	91 (60.3)	185 (55.4)	0.1
No	89 (48.6)	60 (39.7)	149 (44.6)	
Peer relationship problems				
Yes	92 (50.3)	59 (39.1)	151 (45.2)	0.05
No	91 (49.7)	92 (60.9)	183 (54.8)	
Bullying				
Yes	31 (17.0)	26 (17.2)	57 (17.1)	0.9
No	152 (83.0)	125 (82.8)	277 (82.9)	

SM-self-mutilators, NSM-non-self-mutilators. Percentage calculated by columns

3.5 Traumatic experiences

3.5.1 Sexual abuse

Table 3.4 below summarises the findings. More self-mutilators had a history of sexual abuse than non-self-mutilators (p=0.006). In most cases, the perpetrator was a parent,

family member or friend.

Table 3.4 History of sexual abuse

	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P-value
Sexual Abuse	55 (30.1)	26 (17.2)	81 (24.3)	0.006
Perpetrator				
Parent	8 (14.5)	1 (3.9)	9 (11.1)	
Family member	19 (34.5)	5 (19.2)	24 (29.6)	0.05
Friend	8 (14.5)	5 (19.2)	13 (16.1)	
Others	20 (36.5)	15 (57.7)	35 (43.2)	
Frequency				
Once	26 (47.3)	15 (57.7)	41 (50.6)	
Twice	9 (16.3)	7 (26.9)	16 (19.8)	0.03
3-5 times	5 (9.1)	1 (3.8)	6 (7.4)	
>5 times	15 (27.3)	3 (11.6)	18 (22.2)	
Method				
Non-genital	14 (25.4)	2 (7.7)	16 (19.8)	
Genital no penetration	6 (10.9)	3 (11.5)	9 (11.1)	0.001
Genital full penetration	31 (56.4)	17 (65.4)	48 (59.2)	
Anal	4 (7.3)	4 (15.4)	8 (9.9)	

SM-self-mutilators, NSM-non-self-mutilators. Percentages calculated by columns

The majority of the victims had been abused once (50.6%) or more than five times prior to

their admission (22.2%). Among adolescents abused more than five times, the majority (27.3%) were self-mutilators (p=0.03).

The most frequent method of sexual abuse was full penetration with self-mutilators being more affected (p=0.001). The difference in methods of sexual abuse between female and male self-mutilators was found to be statistically significant with more females being subjected to non-genital sexual molestation or full genital penetration, while males experienced more anal sexual abuse (p<0.001).

3.5.2 Physical abuse

As illustrated in Table 3.5, 71(21.3%) of the adolescents had a history of physical abuse. Self-mutilators were physically abused more than non-self-mutilators (p=0.03).

The majority of the abused adolescents reported more than one incident of abuse; however, no statistically significant difference was found between the two groups (p=0.3). In most of the cases, the perpetrator was a parent or a family member. Hitting was the most prevalent form of physical abuse (93.0%), with self-mutilators experiencing more of these episodes than non-self-mutilators (p=0.01). No statistically significant difference between the two groups was noted in regard to punching (p=0.05), although a tendency towards self-mutilators being punched more was shown. However self-mutilators were more exposed to physical assault with a belt (p=0.001).

Table 3.5 History of physical abuse

	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P
Physical abuse	48 (26.2)	23 (15.2)	71 (21.3)	0.03
Perpetrator				
Parent	33 (68.8)	18 (78.3)	51 (71.8)	
Family member	13 (27.1)	4 (17.4)	17 (23.9)	0.07
Others	2 (4.1)	1 (4.3)	3 (4.3)	
Frequency				
Once	4 (8.3)	2 (8.7)	6(8.5)	
Twice	1 (2.1)	1 (4.3)	2 (2.8)	
3-5 times	3 (6.3)	2 (8.6)	5 (7.0)	0.3
>5 times	40 (83.3)	18 (78.4)	58 (81.7)	
Method				
Hitting	45 (93.4)	21 (91.3)	66 (93.0)	0.01
Punching	22 (45.8)	9 (39.1)	31 (46.5)	0.05
Using belt	14 (29.2)	3 (13.0)	17 (23.9)	0.001

SM-self-mutilators, NSM-non-self-mutilators. Percentage calculated by columns. More than one method used per person

3.6 History of attempted suicide.

Table 3.6 summarises the findings.

The frequency of suicide attempts was higher among self-mutilators than non-self-mutilators ($p<0.0001$). When comparing between genders, female self-mutilators had more parasuicide attempts than male self-mutilators ($p=0.02$).

Overdosing (86.2%) was the most frequent method used, followed by poisoning and strangulation. An important finding was that self-mutilators overdosed more ($p<0.0001$) and they tended to utilise more violent methods of attempted suicide such as strangulation ($p=0.002$), poisoning ($p=0.004$) and drowning ($p=0.001$).

Table 3.6 History of previous suicide attempts

	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P-value
Suicide attempt				
Yes	111 (60.7)	27 (17.9)	138 (41.3)	< 0.0001
No	72 (39.3)	124 (82.1)	196 (58.7)	
Frequency				
Once	35 (31.6)	15 (55.6)	50 (36.3)	
Twice	38 (34.2)	8 (29.6)	46 (33.3)	< 0.0001
3 or more times	38 (34.2)	4 (14.8)	42 (30.4)	
Method				
Overdose	98 (88.3)	21 (77.8)	119 (86.2)	< 0.0001
Poison	24 (21.6)	6 (22.2)	30 (21.7)	0.004
Strangulation	24 (21.6)	5 (18.5)	29 (21.0)	0.002
Drowning	4 (3.6)	0 (0.0)	4 (2.9)	0.001

SM-self-mutilators, NSM-non-self-mutilators. More than one method used by the adolescents. Percentages calculated by columns

3.7 History of substance abuse

As shown in Table 3.7, a strong association was found between substance abuse and self-mutilating. Although the majority of the admitted adolescents did not consume alcohol (66.1%), of those who did, 83 were self-mutilators ($p<0.0001$).

Of the admitted adolescents 38.7% smoked. Among smokers, 84 self-harmed.

A significant association was found between smoking and self-mutilation ($p=0.003$).

However, no significant difference between self-mutilators and non-self-mutilators was found in regard to cannabis use ($p=0.1$).

Analyses by sex found no difference between female and male self-mutilators with regard to alcohol, smoking and cannabis use ($p=0.3$, $p=0.9$, $p=0.4$ respectively).

Table 3.7. Substance abuse in SM vs. NSM

Substance	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P-value
Alcohol				
Yes	83 (45.4)	30 (19.9)	113 (33.9)	< 0.0001
No	100 (54.6)	121 (80.1)	221 (66.1)	
Cigarettes				
Yes	84 (45.9)	45 (30.0)	129 (38.7)	0.003
No	99 (29.6)	106 (70.0)	205 (61.3)	
Cannabis				
Yes	61 (33.3)	39 (25.8)	100 (30.0)	0.1
No	122 (66.7)	112 (74.2)	234 (70.0)	

SM-self-mutilators, NSM-non-self-mutilators. Percentages calculated by columns

3.8 Sexual preference

As detailed in Table 3.8, eighty one percent of the adolescents in this sample were heterosexual and from those, eighty two percent were self-mutilators. Only 11 were homosexual and, of those, 8 were self-mutilators. In total 46 adolescents were not sure about, or could not differentiate their sexual preference and of those, 21 were self-mutilators. No association was found between self-mutilation and sexual preference (p=0.5) and no difference could be identified between genders (p=0.8).

Table 3.8 Sexual preference

Sexual preference	SM (183) N (%)	NSM (151) N (%)	Total (334) N (%)	P-value
Heterosexual	150 (82.0)	118 (79.7)	268 (81.0)	
Homosexual	8 (4.4)	3 (2.0)	11 (3.3)	0.5
Bisexual	4 (2.2)	2 (1.4)	6 (1.8)	
Not differentiated	19 (10.4)	23 (15.5)	42 (12.7)	
Not sure	2(1.0)	2(1.4)	4(1.2)	

SM-self-mutilators, NSM-non-self-mutilators; missing n=3 (NSM). Percentages calculated by columns

3.9 Method of self-mutilation.

Most of the adolescents utilized multiple methods of self-mutilation. As illustrated in Figure 3.1 below, skin-cutting (93.0%) was the most common method, while scratching was the least common (7.0%).

No significant difference in the methods used to self-harm was found between the two genders (p=0.9). However, more female patients used cutting (68.5% vs. 25.4%), burning (12.0% vs. 2.8%), interference with wound healing (12.0% vs. 1.7%) and head banging (5.3% vs. 2.4%). This finding could be a reflection of the self-mutilation being more prevalent among female adolescents in the study.

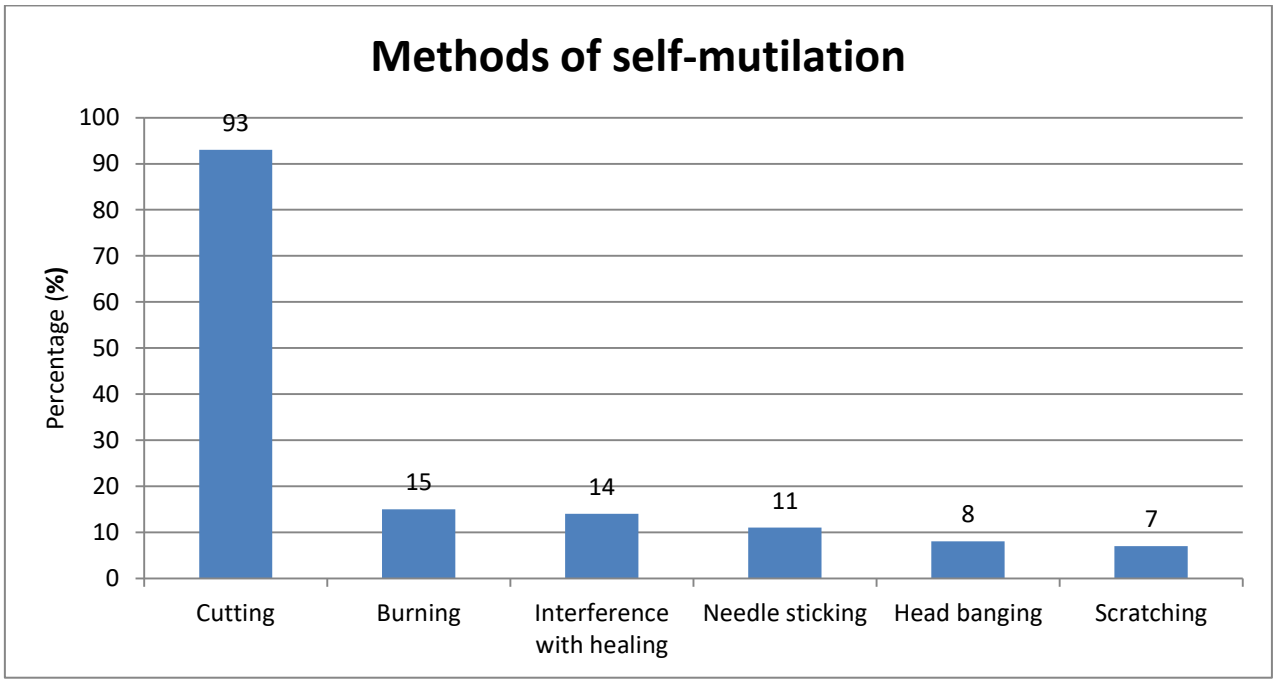


Figure 3.1 Methods of self-mutilation

3.10. Location of self-mutilation

Most of the adolescents admitted to self-harm in different locations. As illustrated in Figure 3.2, the region of the body most preferred for self-mutilation is the wrist (67.8%), followed by the arm (60.6%). About 35.5% of the self-mutilators tend to self-harm on their thighs with 53 being female and 12 being male. In the self-mutilator group, only 11.5% of the inpatient adolescents would harm their abdomen and the majority of these were female (p=0.003) There were no other significant differences between the sexes with regards to a preferred location for self-mutilation.

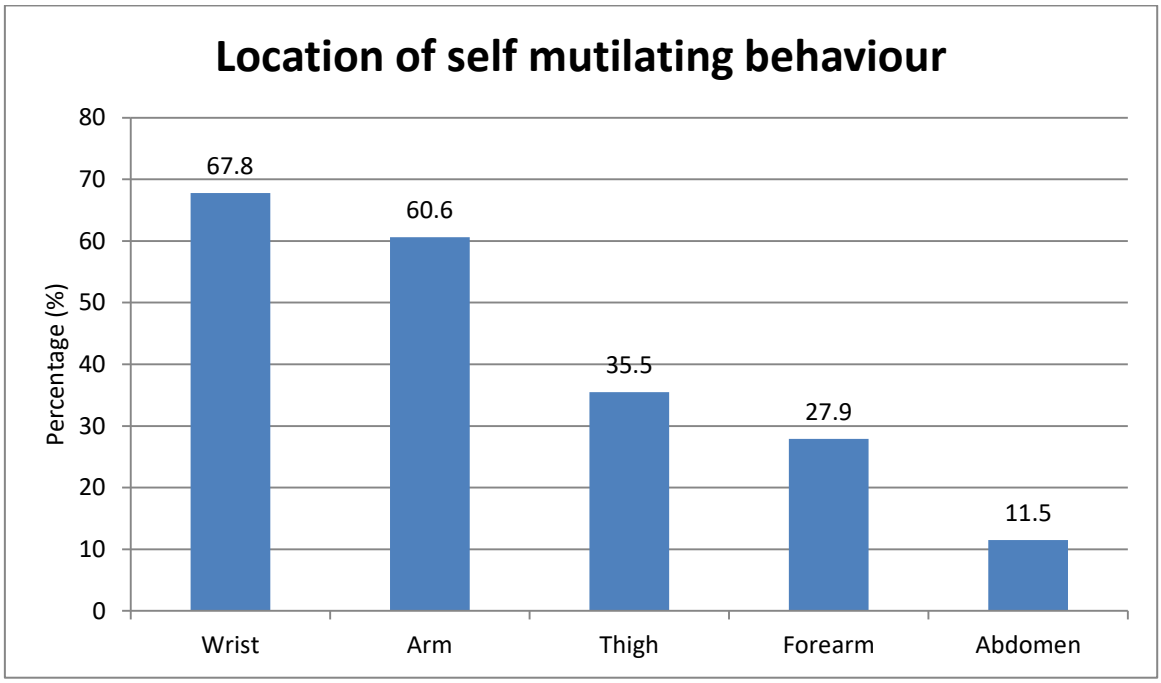


Figure 3.2 Location of self-mutilating behaviour

3.11 Precipitating factors for self-mutilating behaviour

Sadness, anger and fights with parents were reported by the adolescents to precede the self-mutilation.

The most common precipitating factor among both sexes was sadness, with 58.9% of the self-mutilators disclosing that they felt sad or experienced low mood prior to harming themselves.

Anger was reported as a precipitating factor by 45% of the self-mutilators and no significant difference was found between the genders.

Fights with parents (24.4%) was the third most reported precipitating factor and it was more prevalent among female adolescents (p=0.02). Figure 3.3 illustrates the findings.

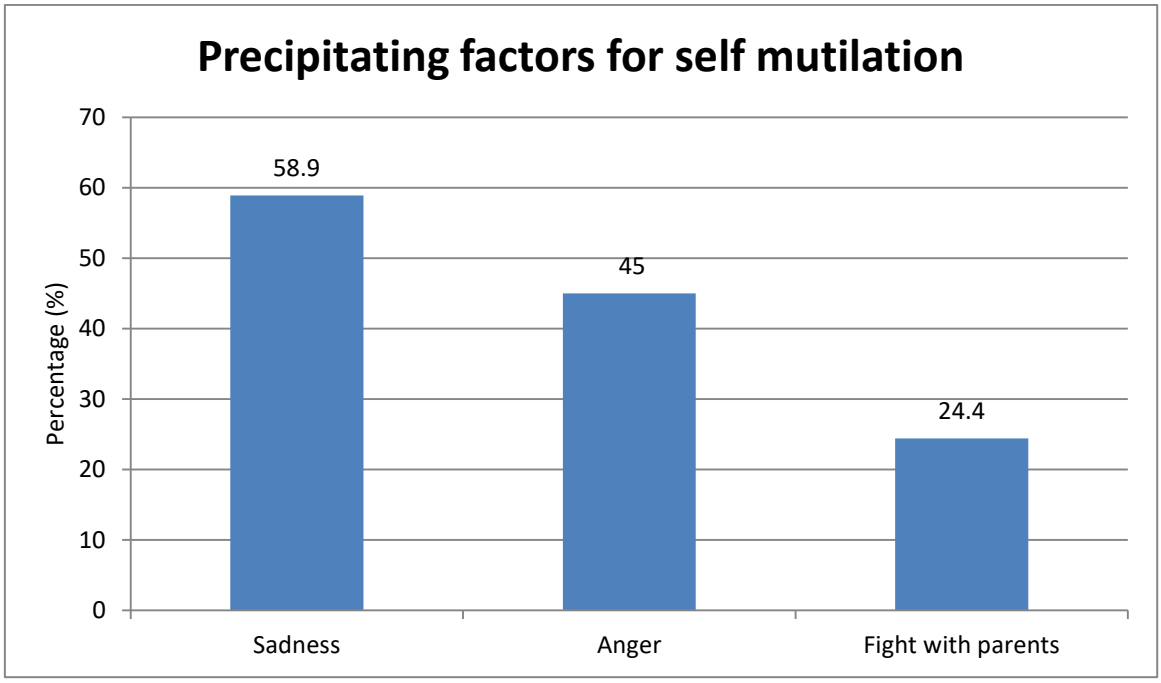


Figure 3.3 Precipitating factors for self-mutilation

3.12 Response to self-mutilation.

The most common responses to self-mutilation were pain (35.5%) and relief (34.4%). Among the self-mutilators, 13.7% did not feel differently after the act and 15.9% were not sure what their response was. No statistically significant difference was found between the sexes (p=0.5). The findings are summarized in Figure 3.4.

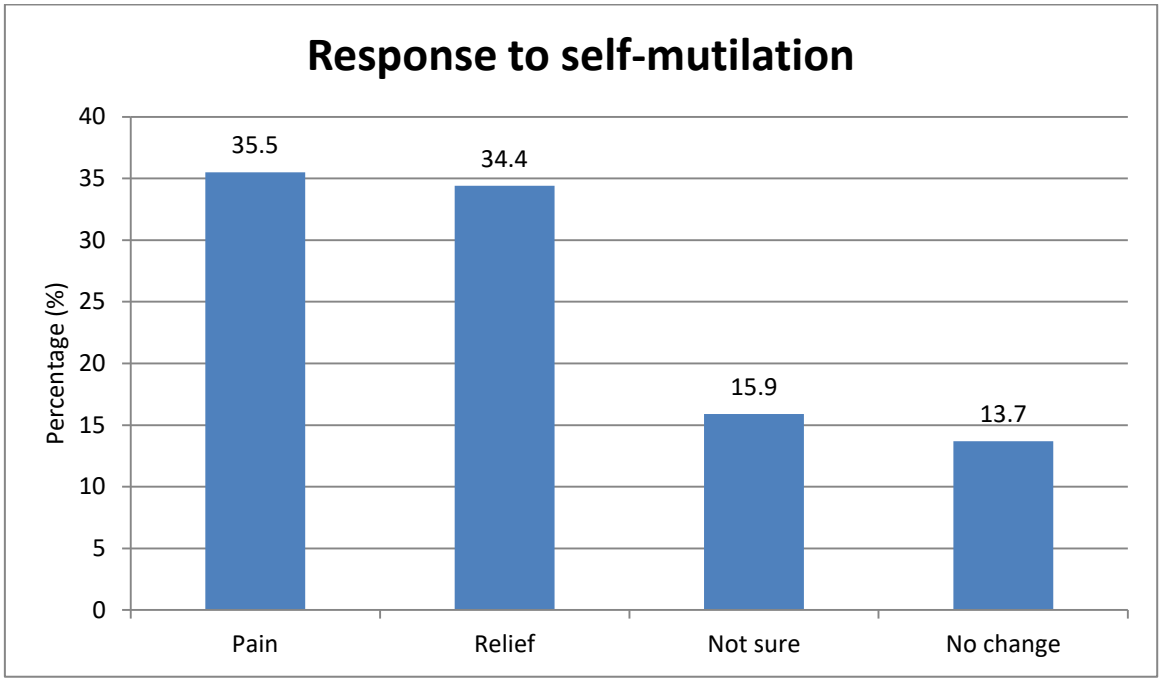


Figure 3.4 Response to self-mutilation

3.13 Self-mutilation in the ward

The repetitive behaviour of self-mutilation in the ward was observed in 13.7% of the self-mutilators (19 females and 6 males). Although more females self-harmed during the hospitalisation, statistically significant differences between the sexes could not be found (p=0.7).

3.14 Psychiatric diagnoses on discharge

As summarised in Figure 3.5, from the adolescents admitted to Adolescent ward and Eating Disorder ward, 29.5% were discharged with a primary diagnosis of a Mood Disorder, 23% with DBD, 17.9% with an Eating Disorder, followed by an Anxiety Disorder (7%), a Substance Use Disorder (5%), an Adjustment Disorder (5%) and a Disorder due to a General Medical Condition (GMC) (5%). When self-mutilators and non-self-mutilators were compared, Mood Disorders were the most prevalent on discharge (Figure 3.6). No difference was found between the self-mutilators and non-self-mutilators in regard to the above mentioned diagnoses (p=0.6).

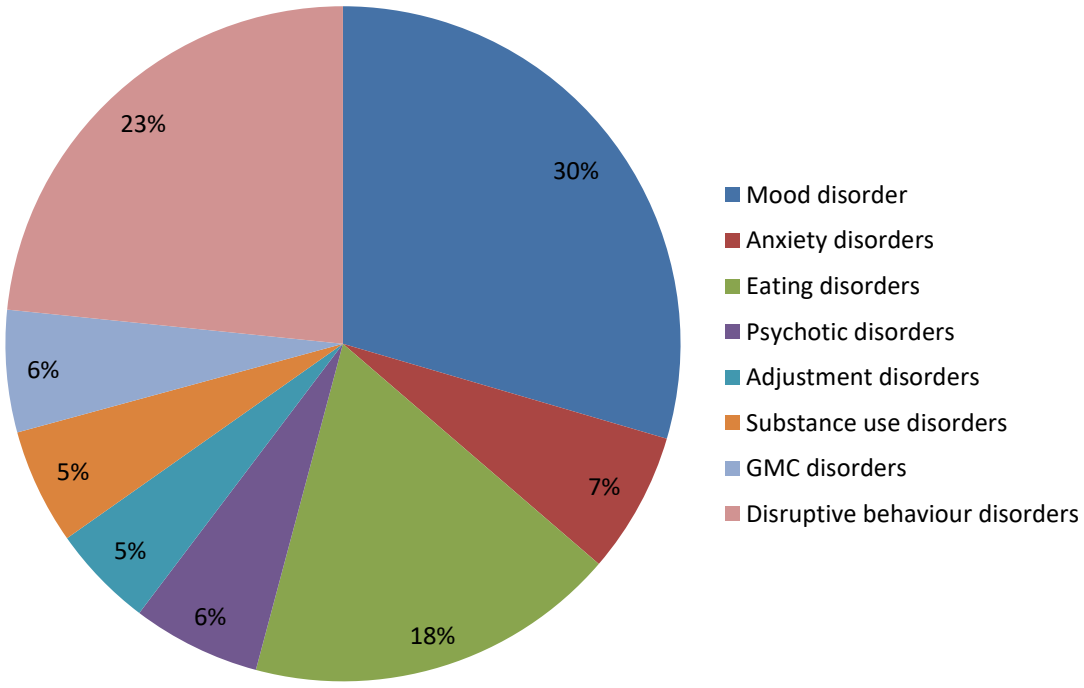


Figure 3.5 Diagnosis on discharge

On discharge, 23.0% of all the adolescents were diagnosed with DBD. When the two groups were compared, DBD was diagnosed in 33.0% of the self-mutilators and in only 12.0% of the non-self-mutilators. However, more non-self-mutilators (n=19) than self-mutilators (n=1) were diagnosed with Psychotic Disorders (p<0.0001).

Further analyses using 2X2 comparison between the diagnoses were performed and adjusted with Bonferroni correction (p<0.0018). DBD were more prevalent on discharge in self-mutilators than Mood Disorders (p=0.0017), Anxiety Disorders (p=0.0017), ED (p=0.0016) and Psychotic Disorders (p=0.0001). Indisputably Psychotic Disorders on discharge were more prevalent among non-self-mutilators (p<0.0001). After adjustment, it was found that Psychotic Disorders were more prevalent than ED among non-self-mutilators (p=0.0003) and less prevalent than Adjustment Disorders (p=0.0003) and Disorders due GMC in self-mutilators (p=0.0012).

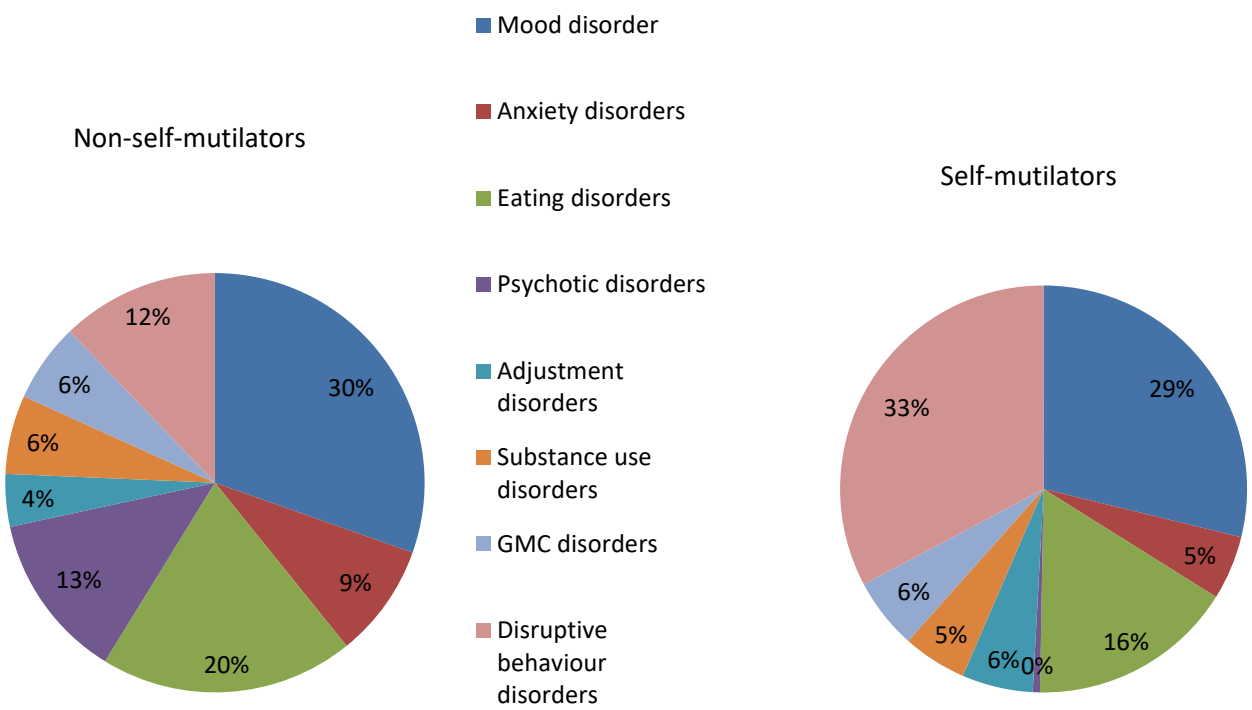


Figure 3.6 Diagnosis on discharge: comparison between SM and NSM

3.15 Comorbidities

Comorbidity (an additional diagnosis to the primary diagnosis) is a rule rather than an exception in children and adolescents and therefore it was further investigated. One hundred adolescents (29.9%) on discharge did not have any comorbid condition.

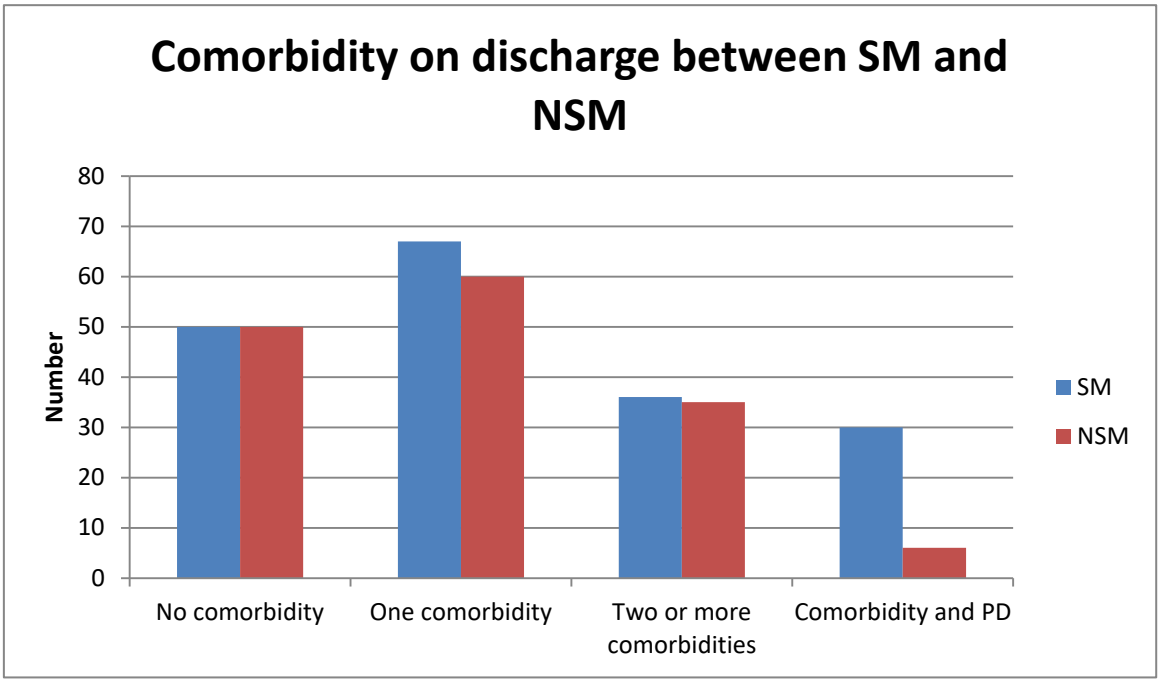


Figure 3.7 Comorbidity on discharge

Among them the most prevalent single diagnosis was Mood Disorders (29%), followed by ED (26%), Adjustment Disorders (10%), Psychotic Disorders (7%) and DBD (6%). The least prevalent diagnoses were Substance Use Disorders (5%), Disorders due to GMC (5%) and Anxiety Disorders (3%). From the remaining adolescents, 38.0% had one and 21.3% had two or more comorbidities on discharge (Figure 3.7). No difference was found between self-mutilators and non-self-mutilators (p=0.7). However, more self-mutilators (n=30) than non-self-mutilators (n=6) on discharge received an additional diagnosis of emerging PD (p=0.004). Analyses by sex revealed that female adolescents with one comorbidity (n=44), mutilated more than male adolescents (n=23) with one comorbidity (p=0.03). Females with two or more comorbidities (n=24) mutilated more than males

(n=12) with the same number of comorbidities (p=0.006). All the females with an additional comorbidity of emerging PD (n=30) self-mutilated, but none of the males (n=6) who had this comorbidity self-harmed (p=0.02). Further adjustment of the results was done using Bonferroni correction (p=0.0083). Female adolescents with a main diagnosis and a comorbidity that included emerging PD (n=30) self-mutilated more in comparison with adolescents with a main diagnosis only (p=0.0007). Adolescents with a main diagnosis and a comorbidity that included emerging PD (n=36) self-mutilated more when compared to adolescents who had a main diagnosis and two or more comorbidities (n=35 NSM and n=36 SM), but no emerging PD (p=0.0014). No difference was found between self-mutilators (n=50) and non-self-mutilators (n=50) that presented with a main diagnosis and no comorbidities (p=0.68). Adolescents with one comorbidity (n=60 NSM and n=67 SM) did not self-harm more than adolescents with two or more comorbidities (n=35 NSM and n=36 SM), when emerging PD was not part of the comorbidities (p=0.78).

3.16 Predictors of self-mutilation

The findings are summarised in Table 3.9.

Gender was independently associated with self-mutilation and being male reduced the risk of self-mutilation by 60.0%. Parents' mental disability and parents' substance abuse were found to be associated with self-mutilation. Self-mutilating behaviour increased more than two times if there was a history of domestic violence (OR=2.73) and sexual abuse (OR=2.07). Peer bullying was associated with self-mutilation too (OR=1.56). A strong association was found between alcohol consumption and self-mutilation; self-mutilation increased 3.3 times if one was a consumer. Also suicide attempt was strongly associated with self-mutilation (OR=7.04). Smoking doubled the risk of self-mutilation.

Table 3.9: Univariate Logistic Regression analysis for self-mutilation

	Unadjusted Odds Ratio	95% Confidence Interval	*P*-value
Age (years)	1.05	0.90 -1.23	0.52
Gender (Male)	0.40	0.25 -0.63	<0.0001
Race code (non-Caucasian)	0.18	0.11 -0.19	<0.0001
Domestic violence	2.73	1.56 -4.77	0.0004
Parents physical abuse	1.87	1.07 -3.26	0.027
Peer bullying	1.56	1.01 -2.42	0.0045
Sex abuse	2.07	1.22 -3.50	0.007
Parents mental disability	2.97	1.79 -4.94	<0.0001
Parents substance abuse	2.10	1.30 -3.39	0.0023
Alcohol consumption	3.35	2.04 -5.49	<0.0001
Smoking	2.00	1.27 -3.15	0.003
Suicidal attempt	7.04	4.23-11.73	<0.0001

Multiple logistic regression analysis showed that being Caucasian, having a history of domestic violence, having attempted suicide and consuming alcohol were predictors of self-mutilation. The model included age, gender, parents physical abuse, peer bullying, sexual abuse, parents substance abuse, and smoking as independent variables. Self-mutilation occurred 2.57 times more when domestic violence was experienced. Having attempted suicide increased the risk of self-mutilation 6.14 times. Sensitivity analysis was

performed in Caucasian and in non-Caucasian. Thus a previous suicide attempt was the only independent predictor of self-mutilation (OR=3.11, 95%CI=1.35-7.18) when being Black-African or Coloured. In addition, after adjustment for all independent variables, being Caucasian, the use of alcohol (OR=14.18, 95%CI=4.85-41.55), domestic violence (OR=2.89, 95%CI=1.24-6.69) and suicide attempt (OR=5.76, 95%CI=2.51-13.21) increased the risk of self-mutilation.

Table 3.10 Multiple Logistic Regression analysis of self-mutilation

	Adjusted Odds Ratio	**95% Confidence Interval**	***P*-value**
Race (Non-Caucasian)	0.15	0.08-0.27	<0.0001
Domestic violence	2.01	1.04-3.91	0.038
Alcohol	3.50	1.87-6.57	<0.0001
Suicide attempt	6.14	3.89-11.12	<0.0001

CHAPTER 4

Discussion

4.1 General remarks

Superficial self-mutilation is common in adolescents. Recent studies showed an increased prevalence among a clinical population of adolescents (36-39). The present study investigated the prevalence, nature and correlates of self-mutilation among hospitalised adolescents and to the best of my knowledge, this study is the first of its kind in South Africa. The current hospital was chosen as it is the only one among the University Hospitals that has an Adolescent and Eating Disorder Unit which serves a general population of over twelve million (103).

4.2 Interpretation and relevance of findings

The prevalence of self-mutilation in this sample was 54.8%. This prevalence rate is consistent with recent research in hospitalised adolescents (35-40), although some studies have found higher rates (37), while others found a much lower rate (42). The discrepancy might be related to the different ways in which self-mutilation was defined and assessed.

The mean age of onset in this sample was 13 years and 8 months. Similar findings were documented in previously published studies that investigated community or in-hospital samples of adolescent self-mutilators (19, 22, 23, 25, 32-39).

Self-mutilation is behaviour of a very private nature and concerns were raised in the literature that this phenomenon was under-reported (6, 12-16). The private nature of this behaviour in community samples might have diminished parental awareness. Conversely, in the majority of the cases in this study, self-mutilation was reported on admission by the child and the parents, showing increased parental awareness.

A possible explanation could be that admitted patients were sicker and at higher risk to themselves; therefore, the parents were more aware of their child's problem in comparison to the parents of adolescents in community samples.

In agreement with former publications the adolescents in this sample harmed themselves more than once (12-16, 23, 25, 27, 29, 33, 37, 41, 45-50), highlighting the repetitive, chronic nature of the studied behaviour.

In addition, self-harm was more prevalent among female inpatients (35-41, 44-49). Similarly it was found that being a male decreased the risk of self-mutilation by 60%.

Most of the adolescents who self-mutilated were Caucasian females, however the ones of English ethnicity were more prone to self-harm than their Afrikaans peers.

As in studies from other countries with mixed racial populations, African adolescents do not utilise self-mutilating behaviour as often as Caucasians do, which might be explained by the protective role of cultural factors (49, 50).

Favazza, et al., found that most of the self-mutilating adolescents were Christians, or not practicing any religion and the current study supports this finding (5,49).This, however could be a reflection of demographic characteristics in the country; 79.8% of South Africans are Christians and 9.5% are not practicing any religion. Further research might be needed to explore the relationship between the two.

Of note is the fact that most of the admitted adolescents who self-mutilate attended mainstream schools. This is in agreement with previously published studies which looked at community samples of adolescents (16, 18, 24, 29).

Many studies have demonstrated the role of adverse family circumstances in the behaviour of self-mutilation. Self-harmers were more likely to come from a one-parent family (5, 14, 16, 24, 25). Hawton, et al., (63, 64) reported that a two-parent family was a protective factor for self-mutilation. Most of the hospitalised adolescents came from one-parent families, but this was not associated with self-mutilation. This finding could be a

reflection of the high prevalence rate of single-parent families in the country (103). Furthermore, adopted children and children with no parents did not self-mutilate more than adolescents living with both their parents.

In agreement with the literature, self-mutilation was more prevalent among adolescents who have a step-parent (14, 39, 43). Other studies have presumed that children with psychological problems have more antagonistic relationships with their step-parents as a result of behavioural problems, adding to the risk of self-harm (39).

A history of substance abuse and mental illness in parents was strongly linked with self-mutilating behaviour in their offspring (12-14, 18, 45-49), which corresponds to the findings of this study.

Physical illness in parents could not be identified as a risk factor for self-mutilation, however only two studies in a mixed sample of adolescents and adults found an association between physical illness in parents and increased risk of self-mutilation in their offspring (46, 49).

The literature showed repeatedly that the prevalence of self-mutilation is higher among adolescents coming from more disadvantaged backgrounds (49, 50, 56, 57). Poverty, unemployment and lack of support increased the risk of self-mutilation among adolescents (12-14, 23, 25, 27, 29-32, 56, 57). In the current study, low social support and unemployment were not found to contribute to self-mutilation. This could be explained by the fact that the adolescents in the sample came from more privileged backgrounds and have easier access to inpatient hospital care.

In agreement with the literature, a history of sexual abuse was significantly higher among self-mutilators (3, 5, 12-16, 19-25, 29-33, 57, 58, 6267, 70). In the present study, a strong association between sexual abuse and self-mutilation was found. However, it could not be ascertained whether the sexual abuse preceded or followed the self-harming incident. In

the majority of the cases in our sample, sexual abuse involved penetration and the perpetrator knew the victim (a parent or family member). The sexual abuse was of a more repetitive and violent nature among the self-mutilators, involving full genital penetration in females and anal penetration in males.
No conclusive data was found in the literature regarding the different methods of sexual abuse and the identity of the perpetrator.

Supporting earlier reports (13, 19, 23, 24, 26-32, 38-40, 62, 68-71), this study found that physical abuse was more frequent in self-mutilators. Hitting, punching and beating with a belt were the most common methods used by the perpetrators. Self-mutilators were hit more and were exposed to punishment, involving the use of a belt, more frequently than non-self-mutilators. The literature had not examined the different methods of physical abuse. Although research provided evidence that abuse of any kind was prevalent in families of self-mutilators, increased frequency, severity and more violent forms of physical and sexual abuse could be an additional factor that perpetuates the self-mutilating behaviour in the adolescents admitted to the ward.
In addition, this study confirmed that not only experiencing, but witnessing family violence was more prevalent among self-harming adolescents. Witnessing family violence only, increases the risk of self-mutilation more than two times. This alarming finding should stimulate further research in childhood traumatic experiences and encourage the development of policies aimed at protecting youth.

It is of note that academic problems, peer relationship problems and bullying were not found to be more prevalent among self-mutilators in this study. However, a tendency that peer problems could contribute to self-mutilation was noted and univariate logistic regression analysis showed that bullying was associated with self-mutilation.The findings here are in disagreement with most of the previous publications (13, 14, 52, 81, 83) and a

possible explanation for this could be that the child and parent interview forms did not include specific details about school-and peer-related problems, therefore reducing the report rate.

Regarding suicide attempts, 138 of the adolescents had attempted suicide prior to their admission and of those 111 were self-mutilators. Consistent with most of the publications, self-mutilators presented more often with a baseline history of previous suicide attempts (14, 25-37, 48, 50, 54, 55, 60, 63, 64, 67, 69). In this study having attempted suicide, increased the risk of self-mutilation six times and further sensitivity analysis showed that a history of previous suicide attempt was the only independent predictor of self-harm among non-Caucasian adolescents. In addition, more frequent attempts and more violent methods of suicidal behaviour were utilized by the adolescents who self-harmed. Among them, 31.6% had attempted suicide once, 34.2% had attempted twice and 34.2% had done so between three and five times. In agreement with other studies, the female self-mutilators presented with more suicide attempts than their male counterparts (44, 45, 48, 65, 68, 84, 85). The most preferred method was chemical overdose (88.3%), followed by poisoning (21.6%) and strangulation (21.6%). These findings hold important implications for professionals in adolescent mental health services, alerting them to the continuum between superficial self-mutilation and more violent suicide attempts. The higher rate of previous suicide attempts among self-harming adolescents should prompt clinicians to evaluate these active suicidal thoughts and behaviours as the two can often co-occur in this population.

A drug-induced state may trigger self-mutilation because it impairs pain perception and judgment, which might stimulate aggressive behaviour. Almost all published studies have concluded that there is a strong association between alcohol and other illicit substance abuse, and self-mutilating behaviour (12-16, 19-28, 30-32, 38-42, 52-55, 63-66, 77). In

line with previous research findings, this study confirmed the strong links between self-mutilation, alcohol use and smoking. The rate of self-mutilation increased 3.3 times if one had consumed alcohol. Alcohol use was a strong predictor for self-harming behaviour among both genders, but being a female increased the risk further. In the current study, smoking was more prevalent among self-harming than non-self-harming adolescents, thus supporting the findings by Briere, et al., (18) and Hawton, et al., (28). Surprisingly, no association could be found between cannabis use and self-mutilation in our sample, which is in disagreement with previous publications (16, 24, 25, 27). A possible explanation for that could be an information bias and a fear of disclosure or the fact that most of the admitted adolescents were females, who tended to use less cannabis than males.

The more recent literature has repeatedly shown that students who had been worried about their sexual orientation or realised that they were homosexual had higher rates of self-mutilation than their peers who were attracted to the opposite sex (18, 25, 42, 71-76).In this study, 81% of the adolescents were heterosexual, which is in agreement with previous publications, showing that the majority of the youth is attracted to the opposite sex (12, 22, 24, 29-31). Only 3.3% were homosexual and 12.7% did not have a preference for either of the sexes. Self-mutilation was not found to be more prevalent among adolescents who were attracted to the same sex, which is in line with a study by Hawton, et al., (28). It should be noted that in this sample, we relied mainly on interviews or self-reports of participants to measure a sensitive topic of sexuality. Some might have feared stigmatisation or guilt and this could have had an impact on disclosure.

Superficial cutting was by far the most common type of self-mutilation, reported by 93.0% of the adolescents in this sample, which is in line with findings of previously published studies (13-16, 23-25, 33, 35-39, 48, 52-54, 66, 68, 69, 70, 71, 77, 80-85). Skin burning

was practiced by 15.0% and interference with wound healing by 14.0% of the admitted adolescents. A paucity of data with regard to the last two methods precludes the comparison with other studies. A possible reason for the lack of data could be that these methods were underreported in other countries or might have not been addressed.

In contrast to Laye-Gindhu, et al., results in the present study did not find significant differences between the preferred methods of self-mutilation among male and female adolescents (19). However, an unexpected finding was that needle sticking was practiced more often than scratching and head banging by both sexes. One possible explanation could be that this method was under investigated in other studies or is of a less socially unacceptable nature and therefore easily missed.

As described in the literature, the wrist and arms were the preferred location by both genders (13, 15, 35, 38, 42, 44, 46, 49). Six different locations were investigated in the present study, but the only finding of significance was that the abdominal area was more preferred by females. This could be a reflection of the fact that females are more sensitive to body scarring than males. Therefore, they try to conceal the scars by inflicting them on more private locations.

Sadness was the most common precipitating factor for self-mutilation (58.9%), which is in agreement with publications from other countries (12, 13, 18, 19, 23, 30, 38, 39, 42, 45). The second most common cause was anger, which validated the importance of negative emotions preceding the act of self-mutilation in most cases. However, in this study, conflict with parents was a precursor to self-harm more among female adolescents. This could indicate that females show more vigorous emotional responses to parent-child relationship problems and experience greater difficulty to self-regulate. It may also suggest that female adolescents are more vulnerable to affective disorders and, as reported in other studies, this could increase the risk for self-harming (18-21, 81, 85, 86-90, 92). It should also be considered that females show earlier symptoms of emerging

personality traits that are often associated with self-mutilation (89, 90, 96-99, 101).

Most of the previously published studies have documented relief after self-injury, which explains the repetitive nature of this behaviour (1-3, 5, 12, 15, 37-40, 79, 80, 84, 87). In this study, a common response to self-mutilation was pain (35.5%) and relief (34.4%). From the remaining sample, 13.7% experienced no change and 15.9% were unsure about their response. No difference in the responses between the two genders was found. This could be explained by the fact that more psychiatrically ill adolescents got admitted to the hospital, while relief is more likely to be observed among adolescents presenting with symptoms of emerging PD.

It was found that only 13.7% of the adolescents self-harmed in the ward with no difference between the two genders. One could speculate that self-mutilating behaviour can decrease dramatically after removal of the perpetuating factors in their environment. Another explanation could be that effective treatment of the underlying psychiatric pathology reduces the urge to self-harm significantly. No precipitating factors for the perpetuating self-harming behaviour in the ward were documented in the files; therefore no conclusions could be drawn. It is unclear if the self-mutilation in the ward had an element of contagious nature or not.

Mood Disorders were the most prevalent diagnoses on discharge between self-mutilators and non-self-mutilators with no difference between the two groups. The literature has repeatedly documented that Depressive Disorder is more commonly observed among self-mutilators; however our findings are in disagreement (13-15, 23, 25-32, 39, 42, 49, 86-94). The retrospective nature of the study hampers further investigation in this sample; therefore this finding should be interpreted with reservation.

Interestingly, DBD were more prevalent among self-mutilators. In addition, they were more prevalent than Mood Disorders, Anxiety Disorders and ED in this group. Although

some of the previous studies acknowledged the presence of CD among male self-mutilators, no study so far has reported a significant difference between the two groups. However Kirkcaldy, et al., found that adolescents with DBD self-harmed more (95). This finding could be explained by the fact that adolescents with these conditions are generally more impulsive and struggle to regulate their emotions effectively; therefore they might be more prone to use self-destructive ways of coping. In addition, adolescents with DBD are at higher risk for developing Mood Disorders and Anxiety Disorders, which further increased the risk for self-harming. In youth with DBD the focus of parents, educators and clinicians is mainly on the challenging behaviour and as a result the accompanying affective disorders are often undiagnosed and untreated, which can lead to perpetuation of self-mutilation among this particular population.

In agreement with the literature, the present study found that Psychotic Disorders were more prevalent among non-self-mutilators (5, 6, 12, 23, 33-39, 55, 86-90). This adds more evidence that superficial self-harm is rare among psychotic patients.

Most of the published studies focused on the main diagnosis (23, 24, 35, 39, 60, 90, 91). To the best of my knowledge, no study examined the relationship between self-mutilation, main psychiatric diagnosis and the comorbid conditions, although few studies attempted to list some commonly observed comorbidities (86, 89). Comorbidity is a rule in Child and Adolescent Psychiatry, therefore we thought that it might increase the risk for self-harm. The majority of the adolescents in this study had one comorbidity (38.0%) and 21.3% had two or more comorbidities. It was found that females with one or more comorbidities self-harm more than males with the same numbers of comorbidities. A possible explanation could be that more females self-mutilate than their male counterparts. Adolescents with an increasing number of comorbidities did not self-harm more if they did not have an emerging PD.

As reported previously, self-mutilation was more prevalent among patients with PD (89-91, 96-102). In addition, emerging Personality Disorders are more easily diagnosed

among female adolescents. Analysis by sex showed that male adolescents with emerging PD did not self-mutilate, which suggests that male gender could be a protective factor. Furthermore, one could speculate that emerging PD increases the risk for self-mutilation in females only, which implies that other factors, rather than the psychopathology alone, might play a role. However, more research is needed to explore the above findings.

Limitations

To the best of my knowledge, this is the first study conducted in South Africa on self-mutilation in clinical population of adolescents and although it contributes to the understanding of this distressing behaviour, several limitations must be acknowledged.

1) This is a retrospective, cross sectional study and the researcher had to rely on information documented in patient files. The initial interview forms were completed by health professionals (registrars, intern psychologists and psychologists) who were not experts in the field and were gathering information for clinical and not for research purposes. 2) The retrospective and cross-sectional nature of the study precludes the understanding about temporal sequence or factors that drive the repetitive nature of this behaviour. 3) During some of the interviews a translator was used, mainly a nurse from the ward and the accuracy of the translation could not be fully guaranteed. 4) Factors like self-mutilation in parents, siblings and friends, communal self-mutilation, low verbal IQ and the impact of the media could not be explored and their validity could not be assessed, as they were not documented in the files. 5) Certain terms used in the files like ‘sadness’ are poorly defined and subjective, which might weaken the emotional experience in relation to self-mutilation. 6) This study relied solely on information from patient files; therefore one could not assess the emotional state of the adolescents before, during or after the act. The significance of the precipitating factors and the response to self-mutilation could not be precisely evaluated. This

shortcoming could be avoided in prospective studies. 7) Risk factors for self-mutilation in the ward like length of stay, number of admissions and the contagious nature of self-mutilation could not be explored in this study as there was no information in the files. In the multivariable analysis diagnosis and comorbidities were not included as the study was not statistically powered for this. 8) As far as the diagnosis is concerned the findings should be interpreted with caution. This is a retrospective study and the accuracy of the primary diagnosis and the numbers of the comorbid conditions could not be ascertained (or guaranteed). 9) This study looked at a clinical sample and not a community sample of adolescents. Therefore, the results cannot be applied to all adolescents and general conclusions could not be made.

CHAPTER 5

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Self-mutilation is an increasingly common behaviour among adolescents. The prevalence of self-mutilation in the study was 54.8%. The mean age of the self-mutilators was 15.8± 1.3 years. In 66.7% the self-mutilation was reported by the adolescent *and* the parent, meaning that the parents were well aware of this behaviour in their children.

The study showed that female adolescents self-harm more than male adolescents. Most of the self-mutilators were Caucasians (79.2%) and only 17.5% were Africans. The majority of the self-mutilators were Christians. Self-mutilators came more often from a step-parent family and they tended to have parents who abused substances or had mental illnesses.

Self-mutilators were more exposed to domestic violence and not only were they repeatedly physically and sexually abused, but more violent methods of abuse were used.

Most of adolescents attended mainstream school. No difference was found between self-mutilators and non-self-mutilators regarding academic problems and bullying, however a tendency towards more peer problems in self-mutilators was noted.

Self-mutilators were found to attempt suicide more frequently and they used more lethal methods.

Alcohol abuse and cigarette smoking were more prevalent among adolescents who self-mutilated. Most of the adolescents were heterosexual. Self-mutilating behaviour was the same in homosexual, bisexual or unsure about their sexuality adolescents.

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Self-mutilating behaviour has a repetitive nature and most of the self-mutilators did it more

than five times, however only 13.7% of the self-mutilators succumbed to this behaviour in the ward.

The most preferred method of self-mutilation was cutting, followed by burning and interference with wound healing. Although adolescents used more than one location for self-mutilation, the most used site was the wrist, followed by arm, thigh and forearm. No significant difference between the genders was found but more females self-mutilated their abdomen than males.

Sadness was the most common precipitating factor, followed by anger. Fighting with parents preceded the self-harming behaviour in females more, than in males.
The majority of the self-mutilators experienced pain (35.5%) or a relief (34.4%).
In this sample Mood Disorders were the most prevalent diagnosis on discharge. However DBD were diagnosed more among self-mutilators on discharge. In female adolescents only, increased number of comorbidities was noted among self-mutilators. Emerging PD in females, but not in males increased the risk of self-mutilation.
In the present study it was found that being Caucasian, having a history of suicide attempts, consuming alcohol and having experienced domestic violence increases significantly the risk of self-mutilation.

This is the first study in RSA that explores self-mutilation among adolescents admitted for inpatient hospital treatment. The strength of the study is that there was a large sample size, representing adolescents from different ethnic groups, religions and socio-economic status. The use of a control group (non-self-mutilators) strengthens the findings in this study, despite its retrospective nature.
No study was found that compares self-mutilators and non-self-mutilators in a clinical sample of adolescents admitted for inpatient hospital treatment.

5.2 Recommendations

Despite its limitations, this study suggests significant implications for the assessment of self-mutilation.

Considering the prevalence of self-mutilation in this clinical population, adolescents should be more regularly screened for this type of behaviour by mental health clinicians. Self-mutilators should be screened for other health-compromising behaviours like substance abuse, mental illness, suicidal thoughts, previous attempted suicides and suicidal tendencies.

Detailed assessment of the risk factors on admission (by a questionnaire) could help to identify adolescents who are more likely to self-mutilate during their stay in the hospital. By close monitoring of those at risk the incidents of self-mutilation in the ward could be reduced.

Improved knowledge about the risk factors for self-mutilation is of paramount importance for the staff in the adolescent inpatient unit. This could be used for the development of inpatient treatment programmes aiming at decreasing self-harming among adolescents.

It would be useful to search for protective cultural factors among adolescents with low support who come from a disadvantaged background.

Developing programmes to improve parental understanding of self-mutilation could decrease parental anger and parent-child conflict which could further decrease the repetition of self-mutilation after discharge from hospital.

Prospective and longitudinal studies need to be done in order to examine the causal link between social, psychological and behavioural factors with regards to self-mutilation. The

findings in this study support the need for similar studies in a larger community sample.

Knowledge of the gender-specific and country-specific profile of adolescents in different communities who engage in self-mutilation could assist in developing prevention strategies and aid in the identification of those at risk.

Future research could specifically consider the emerging Personality Disorder (PD) in adolescents that might include uncertainty about sexual orientation and explore weather the association of self-mutilation with PD is not much stronger than the association between self-mutilation and sexual orientation per se.

There is concern that self-mutilation could be observed in much younger children, as such future research in a younger than 13 years old students could be useful.

A further step would be to educate the community about risk factors and consequences of self-mutilation. Development of school-based programmes for the promotion of mental health and school counselling services are potential actions that could be investigated as a resource to decrease this type of behaviour among youth.

Since there is a link between repeated self-mutilation and suicide, research targeting this field would be of the utmost importance with a focus on those identified risk factors that can be modified.

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APPENDIX 1

DATA COLLECTION SHEET Date:

Demographic data

Initials: Study number:

Age:

Sex:

Race:

Religion:

Ethnicity:

Language of preference:

Mainstream/special education school:

Family background

Both parents:

Single parent family:

Step-parent family:

Adopted child:

Foster parent:

No parents:

Children's home:

Employment of parents:

One parent employed:

Both parents employed:

None:

Physical disorder in parents:

One parent:

Both parents:

None:

Mental disorder in parents:

One parent:

Both parents:

None:

Substance abuse in parent:

One parent:

Both parents;

None:

Low social support: YES NO

Domestic violence: YES NO

School

Academic problems: YES NO

Peer problems: YES NO

Bullying: YES NO

Sexual abuse: YES NO

Perpetrator:

Frequency:

Method:

Physical abuse: YES NO

Perpetrator:

Frequency:

Method:

More than one form of abuse:

Previous parasuicides: YES NO

Frequency:

Method:

Substance use: YES NO

Cigarettes:

Alcohol:

Cannabis:

Other illicit drugs:

Sexual preference:

Heterosexual:

Homosexual:

Bisexual:

Not differentiated:

Not sure:

Self-mutilation: YES NO

Age of onset:

Frequency:

Method of self-mutilation:

Cutting:

Burning:

Interference with wound healing:

Needle sticking:

Head banging:

Scratching:

Other:

Frequency:

Location of self-mutilation:

Abdomen:

Arm:

Forearm:

Thigh:

Wrist:

Wrist:

Other:

Precipitating Factors for self-mutilation:

Anger:

Fight with parents:

Sadness:

Other:

Response to self-mutilation:

Pain:

Relief:

Not sure:

No change:

Other:

Self-mutilation in the ward: YES: NO

Psychiatric diagnosis on discharge (primary):

Comorbidities on discharge:

1.

2.

3.

4.

5.

APPENDIX 2

M110307M110307

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Venera Petkova Stancheva

CLEARANCE CERTIFICATE	**M110307**
PROJECT	Self-Mutilation in Adolescents Admitted to Tara Psychiatric Hospital: Prevalence and Characteristics
INVESTIGATORS	Dr Venera Petkova Stancheva.
DEPARTMENT	Department of Psychiatry
DATE CONSIDERED	25/03/2011
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr L Albertyn

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

APPENDIX 3

health and social development
Department: Health and Social Development
GAUTENG PROVINCE

Umyango Wezempilo no Kuthuthukiswa Komphakathi
Lefapha La Maphelo le Tshebeletso le Ntshetsopele ya Sechaba
Department of Health and Social Development
Departmente van Gesondheid en Maatskaplike Ontwikkelig

To: Dr Motlana and Dr Otieno

Clinical Head and CEO Tara Hospital

7 March 2011

Dear Drs

Re: Approval Request to conduct Research

I hereby request permission for the following researcher, Dr Venera Stancheva to conduct research at Tara. She is a psychiatric registrar who intends to do a retrospective record review in wards 1&2. The title of her research is, **"Self- mutilation in adolescents admitted to Tara Psychiatric Hospital: prevalence and characteristics"**.

Attached is the application letter and proposal. She requires our permission in order to apply for Wits Ethics approval.

Yours sincerely

..... Date: 12/4/2011

Dr Jow'hara Chundra

Secretary- Tara research Committee

Recommended/Not Recommended

..... Date: 13/4/2011

Dr Mashadi Motlana

Clinical Head

Approved/ Not Approved

..... Date: 26/4/11

Dr Florence Otieno

CEO

1