



Patients' opinions about referral from a tertiary specialist psychiatric hospital to primary healthcare



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Background: Referral of patients from tertiary specialist psychiatric hospitals to primary healthcare settings is a worldwide goal. This is of particular importance in South Africa with its considerable burden of mental disorders and limited resources. However, patients are often reluctant to be referred and studies have shown that patients may prefer a dedicated psychiatric service over an integrated primary healthcare service.

Aim: This study explored the opinions of patients receiving care at a tertiary psychiatric hospital's outpatient department (OPD) about referral to a primary healthcare clinic (PHCC).

Setting: The study was conducted at Weskoppies Psychiatric Hospital OPD.

Methods: This was a qualitative study based on grounded theory. Participants were recruited through purposive-theoretical sampling. Data were collected by means of individual interviews and mini-essays.

Results: From the 80 participants, 18 had individual interviews and 62 wrote mini-essays. Thirty-nine participants had previously attended a PHCC, while 41 had not. Perceived advantages of referral to PHCCs included: close proximity to participants' homes, resulting in saving on travelling time and transport costs, as well as the convenience of receiving psychiatric and other medical treatment at the same healthcare facility. Perceived disadvantages of PHCCs included: unavailability of treatment; lack of doctor-based care; lack of specialised care; loss of established relationships with hospital healthcare workers; mistreatment by PHCC nursing staff; longer waiting times; more stigmatisation.

Conclusion: The perceived disadvantages of referral from a tertiary psychiatric hospital to a PHCC outweighed the perceived advantages. Nonetheless, participants expressed willingness for such a referral if their concerns were addressed.

Introduction

It is a worldwide goal to shift from centralised mental healthcare services (provided by specialist psychiatric hospitals) to integrated, community-based services.^{1,2} This goal is very relevant to mental healthcare in South Africa, with its high prevalence of mental disorders and limited resources.^{3,4,5} In the most recent World Health Organization (WHO) Mental Health Atlas country profile, the burden of mental disorders in South Africa is estimated at 3.191 disability-adjusted life years per 100 000 population. South Africans suffering from mental disorders are served by an estimated 0.4 psychiatrists per 100 000 of the population.⁶ There are only 63 specialist tertiary healthcare institutions.⁶ Although specialist services are needed, research indicates that the most cost-effective interventions involve incorporating mental healthcare into primary healthcare.^{1,2,3,7}

Referral of patients from tertiary specialist psychiatric hospitals to primary healthcare settings is advocated not only by WHO guidelines^{1,2} but also by South African legislation and policies.^{3,8,9,10,11} Doing so is based on the following presumed advantages: patients can access mental health services closer to their homes (thus avoiding costs associated with seeking specialist care in distant locations); moreover, mental health services delivered in primary care may minimise stigmatisation and discrimination and ensure holistic treatment that addresses both physical and mental healthcare needs.^{1,2}

This model of care acknowledges that patients may at times require secondary- and tertiary-level psychiatric interventions but advocates the subsequent referral to primary level care for ongoing management.^{2,5}

However, decentralisation of mental healthcare requires the public health sector to ensure that primary healthcare clinics (PHCCs) have adequate infrastructure, staff, expertise and resources to

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provide the necessary care for patients.^{1,2} The National Mental Health Policy, the South African Society of Psychiatrists, various patient advocacy groups, researchers and other stakeholders have expressed concerns about the lack of development of adequate primary healthcare services in concurrence with downscaling of hospital-based care.^{3,12,13,14,15}

Furthermore, there are studies that show that in South Africa mental health patients are often reluctant to be referred to a primary health facility. Such studies show that patients prefer a dedicated psychiatric service over an integrated service at primary healthcare level.^{4,16,17}

Both the WHO and the South African government promote the active involvement of patients in the reorganisation, delivery, evaluation and monitoring of mental health services, so that care and treatment can become more responsive to patient needs.^{1,2,3}

Consequently, going forward, research on patients' opinions and experiences are essential to inform decision-makers on policies and the provision of mental healthcare within the general healthcare system. Unfortunately, despite the need for it, such research is scarce.

Research methods and design

Study design

A qualitative study design based on grounded theory was followed.^{18,19}

Setting

Weskoppies Hospital (WKH) is a tertiary specialist psychiatric hospital situated in Pretoria West, Gauteng, South Africa. It forms part of the public healthcare system and is affiliated to the University of Pretoria, Sefako Makgatho Health Sciences University and Nursing Colleges. With its general adult psychiatry units, a substance rehabilitation unit, child and adolescent unit, forensic psychiatry unit and daily outpatient clinics, WKH serves Tshwane, Metsweding, Thembisa and Mpumalanga Province.

Study population and sampling

Participants were selected by following a qualitative process-evaluation design with purposive-theoretical sampling.¹⁸ Consequently, every consentable outpatient who attended WKH outpatient department (OPD) between October and December 2016, who was willing to participate and who met the inclusion criteria of the study, was included. For inclusion in the study, participants had to be (1) 18 years or older, (2) able to communicate in Afrikaans or English, and (3) able and willing to give informed consent.

Data collection

Participants could choose to participate in individual interviews or to write a mini-essay. A semi-structured guide

was followed for conducting individual interviews (guide available from authors on request). Participants were allowed to elaborate freely on every question. Interviews were recorded in MP3 format and later transcribed into written format. Participants who chose the mini-essays were guided by open-ended questions similar to the questions of the individual interviews to which they could respond in their own way. Data were captured from the transcribed MP3 recordings of interviews, the researcher's field notes and the mini-essays written by participants.

Data analysis

Data analysis was guided by grounded theory, using a thematic content analysis. A coding scheme was used to identify the themes evident from the data.^{13,18} The first author extracted the information from the data sources. Similar themes were allocated to a specific category that captured the same idea. These categories were compared and further allocated to overall categories. To increase validity, the second author scrutinised the extracted information and themes. The authors then discussed the findings. After reaching consensus regarding themes and categories, they were then categorised into two overall categories that emerged from the data, namely advantages and disadvantages of referral to a PHCC.

Ethical consideration

Ethical approval to conduct this study was obtained from the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria (No. 59/2015). Participation in the study was voluntary and participants were informed that they could withdraw from the study at any point. An information leaflet about the study's objectives was provided to all the participants in Afrikaans and English.

Results

Eighty participants were recruited into the study. Thirty-nine of them had experience of referral to a PHCC, whereas the remaining 41 had not. Eighteen participants chose to do individual interviews, while 62 chose to write mini-essays.

Data analysis revealed two main overall categories that had been grounded in participant responses: *perceived advantages* and *perceived disadvantages* of referral to a PHCC. There was also a third, smaller, but nonetheless significant category, namely *willingness to be referred to a PHCC if concerns are resolved*.

Perceived advantages of referral

Two categories contributed to the overall category of perceived advantages of referral to a PHCC, namely that PHCCs are closer to patients' homes and that it is convenient to receive psychiatric and medical treatment at one service delivery point.

Saving on time and money

Primary healthcare clinics (PHCC) are in the community and thus closer to participants' homes. It therefore comes as no surprise that participants generally thought that referral to a PHCC would save time and money:

'I think it is good to be referred to a clinic for treatment because it will help you to save the money that you use when coming to hospital. It will benefit me because I can walk to the nearest clinic to collect my treatment.' (Participant 29, mini-essay)

The convenience of receiving psychiatric and medical treatment at one service delivery point

Participants with comorbid medical illnesses expressed the desire to get all their treatment at one service delivery point. Because only psychiatric treatment is dispensed at WKH OPD, patients need to attend a PHCC for their medical treatment. Thus, attending a PHCC could be advantageous, because:

'I can only get my psychiatric treatment here [WKH]. So, I need to go to my clinic for my diabetes medication. It would be much better if I could get all my treatment at the same place at the same time.' (Participant 2, individual interview)

Perceived disadvantages of referral to a primary healthcare clinic

Six categories contributed to the overall category of perceived disadvantages of referral to a PHCC. They are concerns regarding the availability of medicines at PHCCs, the availability of medical practitioners and specialists at primary healthcare level, losing established relationships with hospital healthcare workers in a familiar setting, waiting times at PHCCs, mistreatment by nursing staff at PHCCs, and concerns regarding stigmatisation and lack of confidentiality at local clinics.

Concerns regarding the availability of medicines at primary healthcare clinics

Participants were in general very concerned about medicines frequently being unavailable at PHCCs. It happened that some participants experienced adverse outcomes as a result of medicines not being available. One participant lamented:

'One month I'll receive the correct medication at the clinic, the next month all my medication is out of stock so I am not given any treatment, and the following month they put me on different medication because my medication is still not available.' (Participant 56, mini-essay)

Another participant complained:

'I was once without my treatment for 5 months because they had no stock at the clinic. As a result I relapsed and had to be re-admitted [to hospital].' (Participant 5, individual interview)

Another participant remarked:

'Sometimes they told me to come back another day and then, when you arrive, you are told that they are still waiting for stock. You then have no other choice than turning to alcohol to ease

your depression, tension and stress.' (Participant 11, individual interview)

As a last example, a participant, who reported being lucky to be back at WKH, said:

'They told me that I will have to buy my treatment from a private pharmacy. I had to pay out of my own pocket and my medication is extremely expensive. Patients like me that only receive a [disability] grant can't afford to buy treatment privately. Luckily I am now back at WKH and receiving my monthly medication.' (Participant 1, individual interview)

Concerns regarding medical practitioners and specialists at primary healthcare clinics

Participants reported that at some PHCCs there are no medical practitioners. Consequently patients are treated by nursing staff. Many participants held the view that medical practitioners are better equipped to manage mental disorders than nursing staff. According to one participant:

'I think that coming to WKH is a good thing unlike going to the clinic where you will only be seen by a nurse ... the nurses won't be able to help you like the doctors in the hospital [WKH].' (Participant 51, mini-essay)

Other participants were concerned that medical practitioners at some PHCCs can only be consulted on an appointment basis. This was a concern, because treatment might need urgent adjustment. For example:

'At my clinic the doctor is not available every day, you can only see him on an appointment basis ... when you feel unwell you can't just see the doctor, you have to wait for your appointment. Sometimes he also just didn't pitch for appointments. Then they [nursing staff] just repeated my same treatment for another month. I prefer to follow up here [WKH], it's much better for me than going to my clinic where I never know when the doctor will be available.' (Participant 13, individual interview)

Many participants were very concerned about the fact that they would not be treated by a specialist at the PHCC. In their view, mental healthcare should be rendered by healthcare workers with the necessary training, experience and skills, and consequently an institution like WKH is preferred:

'... if there are problems with my treatment I can immediately discuss it with my psychiatrist at WKH ... I think the training of the nurses and doctors at local clinics are not adequate to manage people with psychiatric problems. I don't think that they have the necessary experience.' (Participant 55, mini-essay)

The comments of some participants indicated a real unwillingness to be referred to a PHCC, because of the reported absence of specialists in mental health:

'WKH is a specific institution that renders a service for a particular illness which need[s] critical attention at all times ... the service rendered here at WKH cannot be compared to that of my local clinic. As a result my mental health will be at risk ... if I had the power to stop referral I would exercise it.' (Participant 7, mini-essay)

Concerns regarding loss of established relationships with hospital healthcare workers in a familiar setting

Participants valued the trusting relationships that they had formed with healthcare workers at WKH. They were of the opinion that it would be difficult and distressing to start over in a different, unfamiliar setting. For example:

'I have built a trusting relationship with my doctors and the staff [at WKH] ... trusting people with your problems is a major issue. Therefore, being referred could adversely influence my recovery. I would have to build new relationships in order to gain trust – this will slow down my recovery. I feel more comfortable and relaxed here [at WKH] ...' (Participant 8, individual interview)

Sometimes a clear fear of the unknown (the PHCC) surfaced: 'I am used to the setting [at WKH] ... it will be too stressful and difficult to change to a new place' (Participant 17, mini-essay).

Concerns regarding waiting times at primary healthcare clinics

Waiting times at PHCCs seem to be an issue, because 'you have to wait long to be seen at the clinic ...' (Participant 32, mini-essay).

Sometimes: '... you wait the whole day until the clinic closes at 4 o'clock and you are told to come back the next day' (Participant 13, individual interview).

Participants were of the opinion that the reason for these delays is '... there are just too many people at the clinic' (Participant 11, individual interview).

Concerns regarding poor treatment by nursing staff at primary healthcare clinics

It was disconcerting to learn that, from the participants' point of view:

'The way the staff at the clinics treat you makes you really feel as if you are worth nothing ... they have a very hostile attitude towards patients ... there is a big problem, they should really do something about that ... they treat you really badly.' (Participant 14, individual interview)

This in turn led participants to report: 'The staff at the clinic treats me in a negative manner and they are not helpful ... I prefer to rather travel to WKH for treatment' (Participant 26, mini-essay).

Concerns regarding stigmatisation and lack of confidentiality at local clinics

For some participants stigmatisation is a sensitive issue. Consequently:

'I know people in my community that attend my local clinic, if they see me at the clinic they will ask me what I am doing there. What will they think of me if they hear that I am receiving treatment for mental illness? I will have to carry the stigma. I can't bear that.' (Participant 49, mini-essay)

Also:

'When they think about mental illness they start thinking that you are crazy and they start treating you as if you are crazy ... They start talking behind your back about how crazy you are.' (Participant 4, individual interview)

This sensitivity about stigmatisation is sometimes compounded when there is a perceived lack of confidentiality. This happens when '[the nurses] will start talking about the fact that you are taking medication for a mental problem. They gossip about it' (Participant 3, individual interview).

In contrast to the perceived stigmatisation at clinics, at WKH, there '... is no stigmatisation [of patients] by staff'. Also, 'at WKH the patients all suffer from mental illness. They don't judge each other' (Participant 10, mini-essay).

Willingness to be referred if concerns are addressed

Many participants were willing to be referred to PHCCs if their concerns were addressed:

'We would love to be able to receive service [mental healthcare] at our clinic, but then there has to be a psychiatrist, a wide range of psychiatric medications and the guarantee that our medication will be in stock each month.' (Participant 16, mini-essay)

Another participant mentioned:

'referral can be very advantageous if some prerequisites are met ... the clinic must make sure that I get the correct treatment every month ... I will also need to be able to see a doctor regularly ... they have to be better organised to reduce waiting times.' (Participant 31, mini-essay)

A participant who was previously referred to a PHCC expressed willingness to retry referral if 'the clinic can promise me that they will have my treatment in stock every month' (Participant 23, mini-essay).

Discussion

Participants were mostly of the opinion that the perceived disadvantages of referral to a PHCC outweighed the perceived advantages. Most participants were opposed to being referred because of the following reasons: unavailability of medicines, lack of doctor-based care, lack of specialised care, loss of established relationships with familiar healthcare workers at WKH, mistreatment by nursing staff at PHCCs, longer waiting times and higher levels of stigmatisation. Concerns regarding mistreatment and stigmatisation are serious: this would be in direct violation of mental healthcare users' rights as enshrined in the *Mental Health Care Act*, No. 17 of 2002, specifically Sections 8 and 10. Section 8 is about respect, human dignity and privacy, while Section 10 addresses unfair discrimination.⁹ The importance of these two sections and how they were disregarded regarding institutionalised mental healthcare users was recently highlighted by the Office of the Health Ombud, in 'The Report into the Circumstances Surrounding the Deaths of Mentally Ill Patients: Gauteng Province'.¹⁹

This negative view about referral to a PHCC is of concern, because, in South Africa, mental healthcare was planned to be integrated into the whole package of healthcare services delivered at a primary healthcare level. This model is promulgated to be a people-orientated healthcare system.^{3,9} Ironically, participants in this research were of the opinion that their opinions, or specific healthcare needs, were not being taken into account.

Instead of welcoming the possible advantages of referral to a PHCC, which were recognised by participants, referral to a PHCC was generally viewed as something negative that may even adversely affect a participant's mental health, for example, by relapsing or turning to substances for relief.

The South African Primary Healthcare Level Standard Treatment Guidelines and Essential Medicines List^{3,20} makes provision for a limited range of psychiatric drugs for primary healthcare. It may be so that some patients are referred to a PHCC from a secondary or tertiary healthcare facility without due consideration for the drugs available at a PHCC, but whether that is so is not answered by this study. Yet it emerged that participants complained about drugs that should have been available but that had not been available.

In the primary healthcare model, nursing staff is largely responsible for the management of patients' care.^{2,3} Participants tended to prefer treatment by a specialist at a service delivery point that focuses exclusively on the management of persons suffering from mental disorders. That was so not only for the skill level of mental healthcare workers but also to avoid stigmatisation at a generalist PHCC. The latter is a somewhat surprising counter claim to what the WHO claims, namely that integration into primary healthcare reduces stigmatisation.²

Not only did participants have an issue with the skills of primary healthcare workers and stigmatisation at PHCC, they also alleged that PHCC nursing staff treated them badly. Being ill-treated is not only unpleasant but unsettles the therapeutic relationship, which in turn is important for compliance to treatment.²¹ If there is a perception of uncaring treatment of mental health patients by PHCC staff, it will compound a fear that may already be present: that is, as expressed by participants, the loss of follow-up treatment in a familiar hospital environment perceived as being caring.

Despite the perceived disadvantages, participants were not blind to the possible advantages. It is important to note that participants were not completely set against being referred to a PHCC. They expressed a clear willingness to be referred if their concerns regarding the care they receive at PHCC level were addressed.

There are a number of limitations to this study. Firstly, these findings pertain to, and are limited to, patients attending WKH and are therefore not generalisable to other settings. Secondly, the study was not about any specific PHCC.

Consequently, the negative opinions expressed by participants cannot be generalised to any specific clinic or group of clinics. Thirdly, the views are those of the participants only – the study did not seek to clarify related views by healthcare workers. Even so the opinions of the study participants should not be discarded but remedied as would be appropriate. Lastly, all participants in this study were patients following up at WKH, and consequently they may have been disinclined to express negative opinions about their current healthcare providers.

Conclusion

The findings of this study contribute to a better understanding of patients' opinions about, and experience of, referral. The successful integration of mental healthcare into primary healthcare in South Africa will only be possible if more attention is given to the opinions and concerns of the users of these healthcare services. Thus, there is a need for more research in this area in order to elucidate more accurately the discrepancies between policy imperatives and the actual level of care received. Such research may build on this research by using a qualitative approach or may use research like the present one to develop quantitative tools for future quality assurance and research.

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Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

Author(s) contributions

R.H. was the principal investigator and P.M.J. was the co-investigator. R.H. was responsible for data collection. Both authors were involved in the project design, data analysis and writing of the manuscript.





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Social anxiety disorder and childhood trauma in the context of anxiety (behavioural inhibition), impulsivity (behavioural activation) and quality of life

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Background: Social anxiety disorder (SAD) is one of the most prevalent psychiatric disorders in South Africa. Previous studies have linked childhood trauma with the development of SAD. The behavioural inhibition system (BIS) and the behavioural activation system (BAS), two dimensions of personality related to anxiety and impulsivity, respectively, are said to influence the development of psychopathology, including SAD. Both SAD and childhood trauma have an impact on quality of life. This study investigated the relationship between BIS, BAS and quality of life in patients with SAD with and without exposure to childhood trauma, compared to healthy controls.

Method: Data were collected for 102 adults. A total of 76 participants met SAD criteria, of which 51 were exposed to childhood trauma and 25 were not. The remaining 26 participants were demographically matched healthy controls. Measures of anxiety, impulsivity and quality of life were obtained by administering Carver and White's BIS/BAS scales and the Quality of Life Enjoyment and Satisfaction Questionnaire – Self Report.

Results: A positive correlation was found between the severity of SAD symptoms and the amount of childhood trauma exposure. No significant differences in impulsivity were found across the three groups. Healthy controls reported significantly lower anxiety and a better quality of life than both groups with SAD, while no differences were found between patients with SAD and childhood trauma and those without childhood trauma.

Conclusion: More childhood trauma exposure appears to be associated with greater SAD severity. The lack of differences in BIS, BAS and quality of life in patients with SAD with or without childhood trauma requires further investigation.

Introduction

With a lifetime prevalence of 15.8%, anxiety disorders are the most prevalent class of psychiatric disorders among South Africans, closely followed by substance use disorders (13.3%) and mood disorders (9.9%). The lifetime prevalence of social anxiety disorder (SAD) in adults is 2.8%.¹ According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), characteristic symptoms of SAD include intense fear of embarrassment, humiliation and negative evaluation when in the company of unfamiliar people or when exposed to possible scrutiny by others in social situations. This usually leads to avoidance of these feared situations, which can, in turn, interfere with social and career functioning.²

Childhood trauma is associated with increased risk of developing psychopathology later in life. Swain et al.³ recently found a positive correlation between post-traumatic stress symptoms (related to childhood trauma) and anxiety in young adolescents. They concluded that childhood trauma may lead to social and emotional consequences later in life. Simon et al.⁴ found that childhood trauma, in particular emotional neglect, was associated with greater symptom severity in a population with SAD. In addition, exposure to childhood trauma had a significant negative effect on functioning, resilience and quality of life.

Research suggests that childhood trauma, in the context of SAD specifically, has desensitising effects on cortisol reactivity.^{5,6,7,8} Maeda et al.⁶ suggest that deficits in cortisol reactivity result in avoidance behaviours, leading to persistent fear responses, which, in turn, may play a crucial role in the psychopathology of social anxiety. Furthermore, Keyes et al.⁹ found an association between

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childhood trauma and an underlying liability to experience internalising (e.g. major depression and social phobia) or externalising (e.g. antisocial personality disorder and substance use) disorders. When this association was accounted for, the statistical significance of the association between specific traumatic events and any psychopathology was lost. Prevention of childhood trauma may, therefore, be critical in reducing the incidence of many common psychiatric disorders.⁹

Gray¹⁰ proposed two basic dimensions of personality: anxiety and impulsivity. Firstly, he described a behavioural inhibition system (BIS) which is sensitive to punishment, non-reward and novel stimuli. When the BIS is activated, it causes inhibition of goal-directed behaviour that is thought to be linked to higher anxiety. Secondly, he described a behavioural activation system (BAS) which is sensitive to non-punishment, reward and escape from punishment. When the BAS is activated, it causes goal-directed behaviour that is thought to be linked to higher impulsivity. There has been much investigation on both systems in relation to different forms of psychopathology. For example, Kasch et al.¹¹ examined the relationship between major depressive disorder and the BIS and BAS, and found that patients who were depressed had lower BAS and higher BIS scores compared to healthy controls (HCs). Also, across the depressed group, lower BAS scores were associated with greater symptom severity and worse outcomes. Meyer et al.¹² found a link between the BIS and depressive symptoms, but not between the BAS and manic symptoms, in patients with bipolar I disorder. Furthermore, Gomez et al.¹³ found that patients with generalised anxiety disorder had significantly higher anxiety scores (BIS), and significantly lower extraversion scores (BAS), compared to HCs.

Behavioural inhibition appears to constitute a specific marker of risk for social phobia in middle childhood or adolescence; however, longer term follow-up is needed to elucidate the full spectrum of risk conferred by behavioural inhibition in adulthood.¹⁴ A meta-analysis of longitudinal studies of children with behavioural inhibition found a more than sevenfold increased risk of developing SAD in later childhood and during adolescence.¹⁵ However, only a few studies to date have investigated the BIS and BAS in relation to SAD in adults. One of these studies, by Morgan et al.,¹⁶ investigated the role of approach and withdrawal in psychopathology. The authors presented 23 patients with SAD and 48 HCs with the Carver and White's BIS/BAS scales¹⁷ and found that patients with SAD had higher BIS scores than controls. However, they found no significant group difference in total BAS scores. They concluded that these findings corresponded with Gray's model of high BIS activity underlying anxiety and avoidant behaviour.¹⁶ A study by Lochner et al.¹⁸ investigated the influence of personality traits, as measured by the Temperament and Character Inventory,¹⁹ in patients with SAD. They compared 33 patients with SAD with 76 HCs and found that patients with SAD had significantly higher scores on harm avoidance, but significantly lower scores on novelty seeking and self-directedness, compared to HCs.

To date, no investigation has been conducted on anxiety and impulsivity in patients with SAD in the context of childhood trauma.

Social anxiety disorder also impacts quality of life. Safren et al.²⁰ found a significantly lower mean quality of life score in 44 patients with SAD, compared to the normative sample of Frisch et al.,²¹ as measured by the Quality of Life Inventory.²² A study conducted by Wittchen et al.²³ found that 23.1% of 65 patients with SAD had their quality of life severely impaired and 24.6% were categorised as being markedly impaired in comparison to only 4.6% of either severely or markedly impaired in the HC group of the same number of subjects. Rapaport et al.²⁴ found a similar rate of about 21.0% of 358 patients with SAD who had severe impairment in their quality of life. This finding was not as striking as their finding that 63.0% of 366 patients with major depressive disorder had quality of life impairment.

This study investigated the relationship between SAD and childhood trauma with regard to the BIS and BAS and quality of life. Firstly, we hypothesised that there would be a positive correlation between the level of exposure to childhood trauma and the severity of SAD symptoms. Secondly, we hypothesised that participants with SAD and childhood trauma would have higher BIS activity and lower BAS activity compared to individuals with SAD without childhood trauma, who we expected to have higher BIS activity compared to HCs. Thirdly, we hypothesised that participants with SAD and childhood trauma would report the lowest quality of life, followed by participants with SAD without childhood trauma and HCs, respectively.

Methods

Participants

A total of 102 participants were included in the study, of which 51 met criteria for SAD and childhood trauma (SAD+), 25 met criteria for SAD but not for childhood trauma (SAD-) and 26 participants were age- and gender-matched HCs.

Procedure

After clearance was obtained, participants were recruited through referrals from psychiatrists and psychologists in the Western Cape (contact details of clinicians were provided by the Mental Health Group database at Tygerberg Campus, Stellenbosch University). Furthermore, the Cape Town Trauma Centre and the South African Depression and Anxiety Group (SADAG) assisted in recruitment through placement of advertisements in their monthly newsletters and contact with potential participants with SAD through their databases and support groups. Further recruitment methods consisted of convenience sampling through plasma screen advertisements and local anxiety disorder support groups in the Cape Town area. Contact information of individuals who showed an interest in participating was forwarded to a research assistant telephonically or through an email. All interested individuals were contacted by a

research assistant via telephone or email and were screened with a standardised screening questionnaire. A consultation was scheduled for all eligible participants during which informed consent was obtained and a full diagnostic assessment using the Mini International Neuropsychiatric Interview²⁵ was undertaken. Exclusion criteria were as follows: any personality disorder or intellectual disability, a previous diagnosis of any neurological disorder or any psychotic disorder according to DSM-5 criteria,² and reported substance abuse or dependence (drug, alcohol, prescription and/or other). Cannabis users were included if they were completely abstinent for at least 2 weeks prior to study entry.

Materials

Once the diagnostic assessment was completed, the participants were assessed for SAD, childhood trauma, impulsivity and anxiety (BIS and BAS) and quality of life with the following instruments:

1. **Liebowitz Social Anxiety Scale:**²⁶ The Liebowitz Social Anxiety Scale (LSAS) is designed to assess the presence of SAD through 24 items that describe social situations that could cause anxiety. All items are assessed on two components, both rated on a scale of 0–3: fear or anxiety ('none' to 'severe') and avoidance ('never, 0%' to 'usually, 67.0% – 100.0%'). To distinguish between SAD and HCs, a cut-off score of 60 was used. The LSAS has been found to be a reliable, valid and treatment-sensitive tool.²⁷ The Cronbach's alphas in the current sample were $\alpha = 0.94$ for fear or anxiety, $\alpha = 0.92$ for avoidance and $\alpha = 0.96$ for the total scale.
2. **Childhood Trauma Questionnaire – Short Form:**²⁸ The Childhood Trauma Questionnaire – Short Form (CTQ-SF) consists of 28 questions assessing five dimensions of childhood maltreatment: physical abuse, emotional abuse, sexual abuse, physical neglect and emotional neglect. Each question is answered on a Likert scale of 1 ('never true') to 5 ('very often true'). Of the 28 items, three make up a minimisation or denial scale that is designed to detect false-negative trauma reports. A score of 0–1 on this scale is acceptable, whereas a score of 2–3 is indicative of response bias and results in exclusion.²⁹ For categorisation according to severity, Bernstein et al.³⁰ suggested the following cut-offs based on the total score: none to minimal trauma (25–36), low to moderate trauma (41–51), moderate to severe trauma (56–68) and severe to extreme trauma (73–125).²⁹ For the purpose of this study, participants with scores between 25 and 40 were categorised as non-traumatised and participants with scores between 46 and 125 were categorised as traumatised. To be able to make a clear distinction between the two groups, participants scoring in the intermediate range (41–45) were also excluded. The Cronbach's alphas in the current sample were $\alpha = 0.83$ for physical abuse, $\alpha = 0.88$ for emotional abuse, $\alpha = 0.92$ for sexual abuse, $\alpha = 0.67$ for physical neglect, $\alpha = 0.88$ for emotional neglect and $\alpha = 0.92$ for the total score, excluding the minimisation or denial scale.
3. **Carver and White's BIS/BAS Scales:**¹⁷ This scale consists of 24 items divided into the BIS and BAS scales. The BAS scale is subdivided into three factors: drive, fun seeking and reward responsiveness.¹⁰ Each question is answered on a Likert scale of 0 ('very true') to 4 ('very false'). The Cronbach's alphas in the current sample were $\alpha = 0.77$ for BIS, $\alpha = 0.86$ for BAS, $\alpha = 0.79$ for BAS drive, $\alpha = 0.74$ for BAS fun seeking, $\alpha = 0.70$ for BAS reward responsiveness and $\alpha = 0.75$ for the total scale, excluding the filler items. Poythress et al.³¹ and Vandeweghe et al.³² found similar Cronbach's alphas in a sample of 1515 offenders.
4. **Quality of Life Enjoyment and Satisfaction Questionnaire – Self Report:**³³ The Quality of Life Enjoyment and Satisfaction Questionnaire – Self Report (QLESQ-SR) consists of eight categories: physical health or activities, feelings, work, household duties, school or course work, leisure time activities, social relations and general activities. Each category has several statements that are assessed on a Likert scale of 1 ('not at all') to 5 ('frequently or all of the time'), except for the last category that is answered in terms of satisfaction (1 = 'very poor' to 5 = 'very good'). For the categories work, household duties and school or course work, a score of 0 indicates 'does not apply'. The Cronbach's alphas in the current sample were $\alpha = 0.93$ for physical health or activities, $\alpha = 0.94$ for feelings, $\alpha = 0.99$ for work, $\alpha = 0.96$ for household duties, $\alpha = 0.99$ for school or course work, $\alpha = 0.88$ for leisure time activities, $\alpha = 0.90$ for social relations, $\alpha = 0.89$ for general activities and $\alpha = 0.97$ for the total score. Ritsner et al.³⁴ found Cronbach's alphas in roughly the same range.

Statistical analysis

Firstly, missing values were imputed by calculating the participants' mean score on the corresponding (subscales of the) questionnaire. Imputing missing values made all data complete, except for one scale of the QLESQ-SR, which was not answered by one participant. This participant was excluded from analyses involving the QLESQ-SR.

Patient characteristics are reported as appropriate. To examine any differences between groups (HC, SAD- and SAD+), chi-square tests (Monte Carlo adjusted Fisher's exact tests, because of unequal groups, large contingency tables and sparse distribution of frequencies) with a two-tailed confidence interval of the *p*-value of 99.0% were used. The significance level was set at *p* (two-tailed) = 0.05. Correlations were calculated using Pearson's correlations.

Multivariate analyses of variance (MANOVAs) were used to compare the BIS/BAS scale and BAS factors (drive, fun seeking and reward responsiveness), respectively, between groups (HC, SAD- and SAD+), with Bonferroni adjusted post-hoc test. Univariate analyses of variance (ANOVAs) were used to compare quality of life between groups (HC, SAD- and SAD+), for the eight-scale total of the QLESQ-SR and a five-scale total (excluding participants for whom work,

household duties and/or school or course work did not apply). All data were analysed using SPSS version 24.0 for Windows.

Ethical consideration

Permission to conduct the study and ethical clearance were obtained from the University of Stellenbosch Health Research Ethics Committee at Tygerberg Campus.

Results

Patient characteristics

All participants were between 20 and 72 years of age, with an average age of 34.25 years (standard deviation [s.d.] = 11.17), and an average of 14.74 years of education (s.d. = 3.08). There were 46 men (45.1%).

There were no significant group differences for patients with SAD and childhood trauma, patients with SAD without childhood trauma or HCs on the following variables: age ($F_{2,99} = 2.49, p = 0.089$), gender ($\chi^2 = 0.21, p = 0.965$), ethnicity ($\chi^2 = 12.57, p = 0.061$), marital status ($\chi^2 = 5.54, p = 0.709$), living arrangements ($\chi^2 = 3.85, p = 0.714$),

employment ($\chi^2 = 1.19, p = 0.562$), being the breadwinner ($\chi^2 = 0.11, p > 0.999$) or yearly household income ($\chi^2 = 10.07, p = 0.595$). Next, there was no significant difference in comorbid anxiety disorders ($\chi^2 = 0.75, p = 0.449$) or mood disorders ($\chi^2 = 0.67, p = 0.446$) in patients with SAD with childhood trauma and those without childhood trauma. There was, however, a significant group difference for education ($F_{2,99} = 3.96, p = 0.022$) and post-hoc tests showed that HCs had significantly more years of education than patients with SAD and childhood trauma ($M_{diff} = 1.89, p = 0.031$; Table 1). All of the analyses that follow were therefore controlled for education.

Social anxiety disorder and childhood trauma

The severity of SAD symptoms was significantly correlated with the level of reported childhood trauma ($r = 0.42, p < 0.001$).

Social anxiety disorder and behavioural inhibition or behavioural activation

A significant main effect of group on total BIS and total BAS scores was revealed ($\lambda = 0.64, F_{4,19} = 12.36, p < 0.001$). Tests of between-subject effects revealed a significant effect for BIS

TABLE 1: Demographic data of the total sample and per patient group.

Variables	Total (N = 102)		SAD- (n = 25)		SAD+ (n = 51)		HC (n = 26)		p
	n	%	n	%	n	%	n	%	
Mean age in years (s.d.)	34.25	11.17	34.64	10.67	36.12	12.39	30.23	7.96	0.089
Mean education (s.d.)	14.74	3.08	15.28	3.54	13.92	2.51	15.81	3.31	0.022*
Gender									0.965
Female	56	54.9	13	52.0	28	54.9	15	57.7	
Male	46	45.1	12	48.0	23	45.1	11	42.3	
Ethnicity									0.061
Black	10	9.8	-	-	7	13.7	3	11.5	
Mixed race	21	20.6	3	12.0	15	29.4	3	11.5	
White	68	66.7	22	88.0	27	52.9	19	73.1	
Asian	1	1.0	-	-	1	2.0	-	-	
Other	2	2.0	-	-	1	2.0	1	3.8	
Marital status									0.709
Single	57	55.9	13	52.0	28	54.9	16	61.5	
Married	26	25.5	7	28.0	13	25.5	6	23.1	
With a partner	10	9.8	2	8.0	4	7.8	4	15.4	
Divorced	7	6.9	3	12.0	4	7.8	-	-	
Widowed	2	2.0	-	-	2	3.9	-	-	
Living arrangements									0.714
Alone	25	24.5	6	24.0	14	27.5	5	19.2	
With family	43	42.2	8	32.0	24	47.1	11	42.3	
With friends	12	11.8	4	16.0	5	9.8	3	11.5	
With spouse or partner	22	21.6	7	28.0	8	15.7	7	26.9	
Employed (yes, %)	67	65.7	17	68.0	31	60.8	19	73.1	0.562
Breadwinner (yes, %)	43	42.2	11	44.0	21	41.2	11	42.3	0.999
Yearly household income									0.595
Less than R10 000	8	7.8	3	12.0	3	5.9	2	7.7	
R10 000 – R20 000	3	2.9	-	-	2	3.9	1	3.8	
R20 000 – R40 000	4	3.9	1	4.0	2	3.9	1	3.8	
R40 000 – R60 000	8	7.8	-	-	7	13.7	1	3.8	
R60 000 – R100 000	12	11.8	2	8.0	8	15.7	2	7.7	
More than R100 000	66	64.7	19	76.0	28	54.9	19	73.1	

s.d., standard deviation; SAD-, patients with social anxiety disorder without childhood trauma exposure; SAD+, patients with social anxiety disorder and childhood trauma exposure; HC, age- and gender-matched healthy controls; *, HC > SAD+.

($F_{3,98} = 19.20, p < 0.001$), but not for BAS ($F_{3,98} = 2.56, p = 0.059$). Post-hoc tests further showed that HCs scored lower on the BIS than both patients with SAD without childhood trauma ($M_{diff} = 5.16, p < 0.001$), and patients with SAD and childhood trauma ($M_{diff} = 4.80, p < 0.001$). The difference between patients with SAD and childhood trauma and those without childhood trauma were not significant ($M_{diff} = 0.37, p > 0.999$). For the BAS, none of the differences were significant (HC vs. SAD-: $M_{diff} = 4.41, p = 0.065$; HC vs. SAD+: $M_{diff} = 2.41, p = 0.462$; SAD- vs. SAD+: $M_{diff} = 2.00, p = 0.703$). No significant main effect of group on the BAS factors was revealed ($F = 0.94, F_{6,19} = 0.98, p = 0.438$).

Social anxiety disorder and quality of life

A significant effect of group on quality of life was found ($F_{3,97} = 30.85, p < 0.001$), and post-hoc tests further showed that HCs reported a significantly better quality of life than both patient groups (HC vs. SAD+: $M_{diff} = 107.08, p < 0.001$; HC vs. SAD-: $M_{diff} = 98.04, p < 0.001$). The difference between patients with SAD and childhood trauma and those without childhood trauma was not significant ($M_{diff} = 9.04, p > 0.999$).

To control for participants for whom work, household duties and/or school or course work did not apply, the same analysis was repeated without these scales. The main effect of group remained significant ($F_{3,97} = 37.34, p < 0.001$), and post-hoc tests did not differ much from the previous analysis. HCs still reported a significantly better quality of life than both patients with SAD without childhood trauma ($M_{diff} = 61.71, p < 0.001$) and those with childhood trauma ($M_{diff} = 70.68, p < 0.001$), and the difference between both patient groups was still not significant ($M_{diff} = 8.97, p = 0.639$).

Conclusion and discussion

Little is known about SAD in the context of early childhood trauma. The literature shows that childhood trauma can have a great impact on the future of a child's life.^{4,5,9} This study investigated the potential relationship between SAD and childhood trauma with regard to behavioural inhibition, behavioural activation and quality of life. In line with the literature, we found a strong positive relationship between SAD symptom severity and the extent of reported childhood trauma.^{3,4,9,27,35}

With regard to behavioural inhibition, we hypothesised that patients with SAD and childhood trauma would score higher than patients with SAD without childhood trauma, and that HCs would report the lowest scores. Our findings replicate the findings of Morgan et al.¹⁶ in that our HCs had significantly lower BIS scores than patients with SAD with and without childhood trauma. Unexpectedly, we found no significant differences in BIS scores between patients with SAD and childhood trauma and those without childhood trauma. The lack of a statistically significant difference in BIS between the SAD groups suggests that early risk factors other than

childhood abuse and neglect per se may be at play. One study found that exposure to early maternal stress, which was also partially mediated by childhood cortisol levels, predicted higher and more chronic inhibition and was associated with the development of SAD in adolescence.³⁶ While the CTQ-SF measures a broad range of abuse and neglect experiences, it does not measure maternal stress. As such, early maternal stress, which may set children on a trajectory of high inhibition and evolution to SAD, was not evaluated here. Further research incorporating more broad-based measures of early adversities and stressors is needed to better understand the link between trauma, SAD and behavioural inhibition. As for behavioural activation, we hypothesised that patients with SAD and childhood trauma would score lower than patients with SAD without childhood trauma. In our data, we found no differences among these groups, suggesting that levels of impulsivity are not affected by SAD or childhood trauma.

In terms of perceived quality of life, both patients with SAD and childhood trauma and those without childhood trauma rated their quality of life significantly lower than HCs. These findings are in line with research by Safren et al.²⁰ However, the lack of difference in quality of life scores between patients with SAD and childhood trauma and those without childhood trauma contradicts the findings of Simon et al.⁴ who found that childhood trauma had a negative effect on quality of life. Rapaport et al.²⁴ mentioned a possible confounding factor in their study that may also be at play in the current study, namely that the early onset of SAD may have altered a patient's view or belief about what is a normal quality of life. As such, patients with SAD may not have perceived their quality of life as compromised.

Limitations of the study include the presence of comorbidity, which may have confounded the findings. Participants with other psychiatric disorders (e.g. post-traumatic stress disorder, major depressive disorder or lifetime substance use disorder) were included, provided that SAD was the primary diagnosis. Yoon et al.³⁷ examined the effects of comorbidity on cortisol stress reactivity in SAD and indicated that SAD is associated with increased cortisol stress reactivity, which is dampened by comorbid depression. This finding emphasises the need to consider participants' comorbidity statuses and highlights the importance of clearly describing the characteristics of the samples used in research while reporting results. On the other hand, the exclusion of secondary comorbid disorders could also result in the exclusion of a significant number of psychiatric patients who have experienced childhood trauma. The literature shows that significant physical, emotional and sexual abuse and neglect in childhood can lead to the development of psychopathology (including anxiety disorders) later in life.^{38,39} Secondly, there is reason to believe that non-significant group findings may be a function of the small group sizes and other confounding factors in non-treatment-seeking individuals. It is likely that non-treatment-seeking individuals are better functioning

than treatment-seeking individuals, accounting for fewer and less pronounced deficits.⁴⁰

This was the first study to examine the contribution of childhood trauma to behavioural inhibition, behavioural activation and quality of life in patients with SAD. There is a clear and profound relationship between SAD symptom severity and childhood trauma exposure. Furthermore, anxiety, or behavioural inhibition, is more pronounced in patients with SAD compared to HCs; however, impulsivity, or behavioural activation, is not. Not surprisingly, HCs report a significantly better quality of life than individuals suffering from SAD, although patients with SAD who endured childhood trauma reported a slightly better quality of life than patients with SAD who were not exposed to childhood trauma, albeit non-significantly. It is possible that childhood trauma desensitises a child to what is 'normal' in life. Another possibility is that these individuals may have perceived their lives as being of better quality now compared to when they were children exposed to trauma. In conclusion, our research suggests that there is a relationship between SAD, an individual's perceived quality of life and the level of experienced anxiety. The occurrence of childhood trauma in SAD did not significantly differ in impact on these aspects. This is not to say that childhood trauma does not pervasively impact SAD and other psychopathology – its prevention may be critical in reducing the incidence of many common psychiatric disorders, including SAD.⁹

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Competing interests

The authors declare that they have no conflict of interests. Furthermore, the authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Authors' contributions

C.J.W.H.B. made substantial contributions to the study conception and design; acquisition, analysis and interpretation of data; and drafting of the manuscript and its critical revision for important intellectual content. S.Y.Y. and M.M. made substantial contributions to the conception and design, acquisition and interpretation of data, and critical revision of the manuscript for important intellectual content. S.S. made substantial contributions to the conception and design, analysis and interpretation of data, and drafting of the manuscript and its critical revision for important intellectual content and provided final approval of the version to be published. All authors have read and approved the final manuscript.

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The relationship between locus of control and depression: A cross-sectional survey with university students in Botswana



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Background: Research has consistently revealed a positive association between external locus of control and depression. Little, if any, research has investigated locus of control and depression in the sociocultural context of Botswana.

Aim: To explore the relationship between locus of control and depression among undergraduate students in Botswana and to determine the impact of age and gender on this relationship.

Setting: University of Botswana.

Methods: A sample of 272 students was surveyed through a self-administered questionnaire, which included the Levenson's multidimensional locus of control scale, the Beck Depression Inventory-II and demographic questions. Data analysis utilised descriptive statistics, correlation analysis, independent samples *t*-tests and standard multiple regression analysis.

Results: Of the 272 participants, 47.3% scored low (minimal) levels of depression, 23.4% scored mild levels, 18.0% scored moderate levels and 11.3% scored severe levels of depression. Students who believed that they were in control of events in their lives were less likely to present with depressive symptoms ($r = -0.29, p = 0.000$), while students who believed that chance ($r = 0.45, p = 0.000$) or powerful others ($r = 0.40, p = 0.000$) controlled their lives were more likely to have high depression scores. Both internal and external locus of control, together with age, explained 31% of the variance in depression scores; gender made no significant contribution to levels of depression.

Conclusion: The study results draw attention to locus of control as one of the cognitive variables associated with depression. Further research is needed to determine how locus of control can be addressed in the treatment and prevention of depression in university contexts.

Introduction

Mental health problems among university students have been widely studied.¹ University life can be straining for students owing to potential stressors such as having to adjust to a new environment, being away from the familiarity and support of the parental home, having to live on a tight budget, having to complete assignments within limited time frames and/or having to cope with fluctuations in romantic relationships.² While for some students the challenges of university life might be an opportunity for personal growth, for others these challenges may prompt mental health problems such as depression.^{3,4} Whether or not university life contributes to students developing depression will depend on various genetic, neurobiological and psycho-social factors,^{5,6} but may also be influenced by students' beliefs that they have little or no control over events occurring in their lives. Such beliefs are referred to as 'locus of control'.

The construct of locus of control was introduced by Julian Rotter as part of his social learning theory.⁷ Locus of control refers to individuals' generalised expectancy or belief as to whether events in their lives are controlled by their behaviour and abilities (internal locus of control) or by external forces such as powerful others, chance, fate or luck (external locus of control). Although the extent to which people expect events to be controlled by themselves or by external factors may vary between situations and events, people tend to display a more generalised locus of control when interpreting events in their life.⁷

Some studies have established a relationship between locus of control and depression.^{8,9} Peterson¹⁰ predicted that people with internal locus of control would be more likely to present with higher levels of depression as depressed people tend to blame themselves for failure.¹¹ Contrary to such

prediction, research consistently has shown that external locus of control (and not internal locus of control) was positively associated with depression.^{12,13,14} Associations between locus of control and depression were also established in student samples from various parts of the world. For example, an American study found that college students who displayed internal locus of control had lower depression scores than students with external locus of control.¹⁵ In a more recent study with American undergraduate students, external locus of control predicted the variance in depression scores while internal locus of control did not.¹⁶ A study with female college students in India found that depression was negatively associated with internal locus of control, whereas it was positively associated with students' beliefs that powerful others and chance would control events.¹⁷ Similarly, a study with undergraduate students in Jordan established a negative relationship between depression and internal locus of control, whereas the belief that events would be controlled by chance was positively associated with depression.⁴ A South African study with local and international graduate students found that high levels of external locus of control were associated with low levels of general well-being.¹⁸ While it may be assumed that cultural differences would moderate the effect of locus of control on depression, a meta-analysis of various locus of control research established that studies conducted in collectivist societies revealed as much a positive association between external locus of control and depression as did studies conducted in the so-called individualistic societies.¹⁴

The theory of locus of control helps to explain, at least to some extent, why some students are able to successfully adapt to the demands of university life while others become vulnerable to depression. When faced with challenges, students who believe to a large extent that they are in control of events in their lives will feel encouraged to become proactive. Students who believe that they have little control and that the control lies with powerful others or chance are likely to experience emotional distress and become passive in their behaviour. It appears that the belief that one has little or no control over events that happen in one's life affects a person in a similar way as actual lack of control does, that is, it causes feelings of helplessness, passivity, loss of interest and feelings of hopelessness,¹⁹ all of which could make a person vulnerable to developing depression.

The literature search did not reveal any research that had investigated the relationship between locus of control and depression in the sociocultural context of Botswana. While no official statistics about the prevalence and distribution of depression are available for Botswana, previous studies identified relatively high prevalence of depression among university students.^{3,20} The study aimed to explore the association between locus of control and depression in a sample of undergraduate students in Botswana. The study followed Levenson's²¹ proposition to consider internal and external locus of control as two separate variables and to pay attention to the extent to which people believe that events in their lives are controlled by themselves or external forces.

With regard to the latter, Levenson²¹ further proposed to differentiate between beliefs in powerful others and beliefs in chance. It was hypothesised that higher levels of internal locus of control would be associated with lower levels of depression and that higher levels of external locus of control referring to both powerful others and chance would be associated with higher levels of depression. Considering that the literature reports that women are more prone to depression than men²² and that in some developing countries younger people are less depressed than older people,²² the study also hypothesised that locus of control together with gender and age would predict levels of depression. The study contributes towards knowledge about the role of cognitive factors in the development of depressive symptoms, with particular reference to the social ecology of Botswana.

Method

Study design

A cross-sectional survey was conducted within the quantitative research paradigm.

Participants and procedure

Applying convenience sampling method, the researchers distributed a self-administered questionnaire in classes attended by undergraduate students from various disciplines within the University of Botswana. The participants completed the questionnaires individually in the lecture venues and returned them to the researchers in the class. In total, 335 questionnaires were distributed, of which 303 questionnaires were returned. Twenty-four questionnaires were excluded from data analysis because they were incomplete over large parts; seven questionnaires were not considered because the respondents were below the age of 18 years and no informed consent was obtained from their parents. Thus, the final sample comprised 272 participants.

Instruments

The self-administered questionnaire contained two scales assessing locus of control and depression, respectively, and questions to determine participants' gender and age. In order to describe characteristics of the sample, additional questions were asked about participants' year of study, faculty enrolment and parents' level of education as an indicator of participants' socio-economic background.

Locus of control was assessed using Levenson's multidimensional locus of control scale.²³ This scale was chosen because it measures locus of control as a multidimensional construct unlike the Rotter scale that measures locus of control as a one-dimensional construct. The Levenson scale measures the extent to which people believe that events in their lives are controlled by themselves (internal locus of control), or by chance and by powerful others (external locus of control). This scale contains 24 items that are divided into three subscales (eight items each), one measuring internal locus of control, one measuring the

'chance' dimension of external locus of control and the third one measuring the 'powerful others' dimension of external locus of control. Each item has six response categories and is scored on a scale ranging from 'strongly disagree' (scored as -3) to 'strongly agree' (scored as +3). To avoid negative total scores, 24 scores per subscale are added to the scores obtained from the responses; total scores can range from 0 to 48 scores per subscale. Levenson reported good convergent validities for the scale and reliability values ranging between mid 0.60s and mid 0.70s.²³

Depression was measured with the Beck Depression Inventory-II (BDI-II).²⁴ This inventory is suitable for use in a non-psychiatric population including university students²⁵ and screens for symptoms of depression during a period of 2 weeks prior to and including the day of administration. The BDI-II contains 21 symptoms (e.g. sadness) and each of them is presented with four statements scored on a scale from 0 (e.g. I do not feel sad) to 3 (e.g. I am so sad or unhappy that I can't stand it). Total scores can range from 0 to 63, indicating the severity of the depression. Scores ranging from 0 to 13 indicate minimal depression, 14 to 19 mild depression, 20 to 28 moderate depression and 29 to 63 severe depression.²⁴ High convergent and discriminant validities and a strong reliability of alpha = 0.93 for non-clinical samples have been reported for the BDI-II.²⁴ The BDI-II has been employed before in the Southern African context²⁶ as well as in the Botswana context^{3,20} and was, therefore, regarded as appropriate for the present study.

Data analysis

Data were analysed utilising descriptive statistics, independent samples *t*-tests (to determine gender differences), Pearson's product-moment correlation coefficient (to determine associations between locus of control, age and depression) and standard multiple regression analysis (to determine whether internal and external locus of control [powerful others, chance], gender and age predicted depression).

Ethical consideration

Participation in the study was anonymous and voluntary and participants were assured that they could withdraw from filling out the questionnaire at any time. Ethical clearance was obtained from the Department of Psychology Ethics Board for Student Research at the University of Botswana. Considering possible distressing effects of filling out the BDI on the students, the researchers debriefed all participants and offered them information about where they could seek psychological help if they felt that the questionnaire had evoked some emotional distress. Although the researchers had announced in classes that students under the age of 18 years should not participate in the study, seven under-aged students filled out the questionnaire. Owing to the anonymity of the participants, the researchers were not able to identify these seven students in order to provide them with additional assistance. However, the seven participants were part of the debriefing about where to obtain psychological help.

Results

The study included a total of 272 participants. Their average age was 20.10 years (mean; standard deviation [s.d.] = 2.84) and most of them were female students (80.2%). Participants were first-year (42.5%), second-year (30.8%), third-year (12.8%) and fourth-year (13.9%) undergraduate students enrolled in the Faculties of Social Sciences (69.9%), Business (23.8%), Humanities (2.2%), Education (2.2%), Health Sciences (1.5%) and Science (0.4%). Almost half of the participants' mothers or female guardians (45.7%) had completed tertiary level education; 44.9% reported the same for their fathers or male guardians.

In the study, internal consistency reliability was low for the internal locus of control subscale ($\alpha = 0.44$) but acceptable for the subscales measuring the 'chance' dimension ($\alpha = 0.69$) and the 'powerful others' dimension of external locus of control ($\alpha = 0.70$). A Cronbach's alpha of 0.90 was obtained for the BDI-II, suggesting a strong internal consistency reliability.

Table 1 presents average locus of control and depression scores by gender and age. A mean score of 34.85 (s.d. = 6.69) was obtained for internal locus of control. For external locus of control, the mean scores were 18.33 (s.d. = 9.77) for locus of control (chance) and 20.23 (s.d. = 8.93) for locus of control (powerful others).

The mean score for depression was 15.23 (s.d. = 10.42); the percentage of participants who scored at minimal level of depression was 47.3% and 23.4% at mild depression, 18.0% at moderate depression and 11.3% at severe level of depression.

Gender and age made no difference in participants' locus of control scores. Gender also made no difference in participant's depression scores. However, age had a weak but statistically significant negative association with depression. Younger participants were more likely to have higher depression scores ($r = -0.20, p = 0.001$; Table 1).

Table 2 presents associations between locus of control and depression. The results show that the correlation between internal locus of control and depression was negative though weak ($r = -0.29, p = 0.000$), while both external locus of control (chance) and external locus of control (powerful others) were positively associated with depression; the correlations were moderate ($r = 0.45, p = 0.000$; $r = 0.40, p = 0.000$).

TABLE 1: Average locus of control and depression scores by gender and age.

Variable	Mean	s.d.	Gender		Age	
			<i>t</i>	<i>p</i>	<i>r</i>	<i>p</i>
Internal locus of control	34.85	6.69	0.430	0.667	-0.04	0.549
External locus of control (chance)	18.33	9.77	1.104	0.273	-0.07	0.265
External locus of control (powerful others)	20.23	8.93	0.138	0.890	0.08	0.220
Depression	15.23	10.42	1.380	0.169	-0.20	0.001

s.d., standard deviation.

TABLE 2: Associations between locus of control and depression.

Dimensions of locus of control	Depression	
	R	p
Internal locus of control	-0.29	0.000
External locus of control: chance	0.45	0.000
External locus of control: powerful others	0.40	0.000

TABLE 3: Locus of control, gender and age as predictors of depression.

Variable	R ²	Adjusted R ²	Beta	F	df	p
Model	0.307	0.285	-	18.19	5.211	0.000
Internal locus of control	-	-	-0.25*	-	-	-
External locus of control (chance)	-	-	0.28*	-	-	-
External locus of control (powerful others)	-	-	0.20*	-	-	-
Gender	-	-	-0.07	-	-	-
Age	-	-	-0.17*	-	-	-

* $p \leq 0.05$

To determine whether or not locus of control predicted depression, standard multiple regression analysis was performed. A model was tested that included (1) internal locus of control, (2) external locus of control (chance), (3) external locus of control (powerful others), (4) gender and (5) age as predictor variables (Table 3). This model explained 30.7% of the variances in depression scores ($R^2 = 0.307$, adjusted $R^2 = 0.285$, $F[5, 211] = 18.19$, $p = 0.000$). External locus of control (chance) made the largest unique contribution (beta = 0.28). External locus of control (powerful others) (beta = 0.20), internal locus of control (beta = -0.25) and age (beta = -0.17) also made significant contributions, while gender did not significantly contribute to depression.

Discussion

This study aimed to explore the relationship between locus of control and depression in a sample of university students in Botswana. The results revealed that internal locus of control was negatively associated with depression. The two dimensions of external locus of control (chance and powerful others) were positively associated with depression. The associations between locus of control and depression were moderate and lower for internal locus of control than for the two dimensions of external locus of control.

Both low internal and high external locus of control predicted depression; together with age they explained about 31.0% of the variances in the participants' depression scores. These results are consistent with findings from various other studies.^{12,13,14}

While there are various genetic, neurobiological and psychosocial factors contributing to depression, the results draw attention to locus of control as one of the cognitive variables playing a significant role in depression. The results suggest that when students believe that they are in control over events in their lives they are less likely to present with depressive symptoms. One can assume that such belief encourages students to address stressful events proactively, which prevents them from engaging in negative thoughts

about themselves, the world and the future¹¹ as well as feeling helpless, and becoming passive and indecisive. For students with high internal locus of control, events and challenges that are typically encountered in university life may become an opportunity for personal growth instead of triggering or activating depression. Many university students are constantly exposed to a variety of academic, financial and relational challenges. The challenges include submitting assignments on time, worrying about passing tests and examinations, the adequacy of a monthly stipend, the ability to afford a desirable lifestyle and coping with break-ups in their romantic relationships.² While not all challenges are within the personal control of students, a student's perception of whether or not these challenges and stressors are within his or her control is likely to influence whether he or she is likely to proactively approach the challenges or not.

In this study, the belief that 'chance' would control events in one's life was slightly more strongly associated with depression than the belief that 'powerful others' would control events in one's life. This result differs from findings in other studies where the belief in 'powerful others' produced slightly stronger associations with depression than the belief in 'chance'.¹² Research would have to explore factors contributing to individuals believing in events in their lives being controlled by chance or by powerful others. Research would also have to explore whom the 'powerful others' are said to be. It could be that sociocultural differences determine the strength of the association between beliefs in chance or in powerful others and depression. In a study of Jordanian students, Zawawi and Hamaideh,⁴ for example, established a significant association between depression and the belief in chance, but not between depression and the belief in powerful others. According to Levenson:²¹

[P]eople who believe that the world is unordered (chance) would behave and think differently than people who believe that the world is ordered but that powerful others are in control. (p. 398)

Beliefs in chance could potentially result in more feelings of helplessness and produce more depressive symptoms as chance is basically not controllable, whereas powerful others, depending on who they are, could, in principle, be influenced. According to Levenson,²¹ the expectation that chance will control events in one's life also includes the belief in fate. In the Botswana context where, for example, traditional beliefs in mystical powers, witchcraft and evil spirits are apparently quite existent,²⁷ such beliefs could nurture an external locus of control and a fatalistic attitude, leading to feelings of helplessness, passivity and giving-up behaviour. More in-depth research is required to explore how sociocultural factors and belief systems in Botswana contribute to some people approaching life predominantly with an internal locus of control while others approach life predominantly with an external locus of control.

In this study, 18.0% of the participants scored a moderate level of depression and 11.3% scored a severe level of depression. These percentages are within the range of

depression prevalence found in other studies with university students in the region,^{3,28,29} although the results vary widely. Younger students had higher depression scores than older students, which suggests that for some students the beginning of their student life was already overshadowed by depressive symptoms, which were likely to affect their academic performance³⁰ and which could result in them dropping out before completing their studies.

While the prevalence of depression in this sample does not permit us to draw conclusions about its representativeness in the larger student community, it nevertheless calls for psychological and psychiatric interventions. The results also indicate a need for preventative strategies that attend to students with external locus of control before they present with depressive symptoms. Rotter⁷ asserted that locus of control is learnt. As one develops and gains experience, a person learns to differentiate between events that are a consequence of his or her behaviour and events that are controlled by external forces. Student counselling centres could offer prevention programmes that sensitise students and empower them psychologically to modify their locus of control where appropriate. Such programmes should take into account the difference between personal and systemic (structural) circumstances to avoid depressing a student who is facing stressors that are beyond his or her control. It would be important for students to become sensitised to the adequacy of an internal or external locus of control taking into account the situational circumstances. In this way, students would be better equipped to maintain their mental health and to cope proactively with stressful events that characterise university life.

Limitations

The study had a few limitations. Firstly, the sampling method does not allow for the generalisation of the results to other populations or other university students. Secondly, the reliability of the study could have been impacted negatively by the use of self-report measures. Thirdly, the study did not consider mediating and moderating variables that could have influenced the association between locus of control and depression. More research is necessary to address these limitations.

Conclusion

This study aimed at exploring the relationship between locus of control and depression among undergraduate students in Botswana. The results draw attention to locus of control as one of the cognitive variables that play a significant role in depression. The results suggest that students who display internal locus of control are less likely to be depressed, whereas students who display external locus of control are more likely to present with depressive symptoms. Depression has negative implications for students' academic success, future employment, future relationships and their happiness in life. It is worthwhile to consider locus of control as one of the significant variables when addressing depression as a

mental health problem among university students. Further research is needed to determine how locus of control can be addressed successfully in the treatment and prevention of depression within university contexts.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Disclaimer

The views expressed in this article are the authors' own and not an official position of the institution.

Authors' contributions

T.K. was responsible for the research idea, literature review, data collection, data analysis and writing of the article. I.E.P. supervised the study and contributed to project design, literature review, data analysis and writing of the article.

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The psycho-social and clinical profile of women referred for psycho-legal evaluation to forensic mental health units in South Africa



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Background: There is a paucity of research on women offenders in the South African context, particularly those referred for forensic psychiatric observation. Little is known about their life histories, the nature of their offences or the psycho-social contexts that enable, or are antecedents to, women's criminal offending.

Aims: This research study, the largest of its kind in South Africa, examined the psycho-social contexts within which women offenders referred for psychiatric evaluation come to commit offences. The profiles of both offenders and victims, as well as reasons for referral and forensic mental health outcomes, were investigated.

Methods: A retrospective record review of 573 cases, spanning a 12-year review period, from six different forensic psychiatric units in South Africa, was conducted.

Results: The findings describe a population of women offenders who come from backgrounds of socio-demographic and socio-economic adversity, with relatively high pre-offence incidences of being victims of abuse themselves, with significant levels of mental ill-health and alcohol abuse permeating their life histories. The majority of index offences which led to court-ordered forensic evaluations were for violent offences against the person, with murder being the single most common index offence in the sample. Most victims of violence were known to the accused. There were also relatively high rates of psychotic and mood-spectrum disorders present, with relatively low rates of personality disorders. The majority of women were deemed to be trial competent and criminally responsible in relation to their index offences.

Conclusion: It is recommended that more standardised and gender-sensitive forensic mental health assessment approaches, documentation and reporting be employed throughout the country. Future research should compare male and female offending patterns and forensic mental health profiles.

Background

Empirically, female offenders have received little attention in comparison with male offenders, but the few South African studies that do exist have shown that women's pathways to imprisonment are characterised by prior sexual and physical victimisation, parental neglect, stressful life events, substance abuse and mental health issues.^{1,2,3,4} These studies also reflect findings in international research on women in prison, which has found a number of childhood, psycho-social and familial criminogenic risk factors associated with offending behaviour, including early onset impulsivity and conduct disorder, low educational and occupational attainment, adverse early life experiences, poor child-rearing practices, single parenting, large and chaotic family environments, parental (especially paternal) criminality, substance misuse and socio-economic deprivation.^{5,6,7,8} Studies from both the United Kingdom and the United States also reveal a consistent picture with respect to mental ill-health of female detainees: female prisoners are around twice as likely as their male counterparts to have a psychiatric diagnosis.^{9,10,11} Women prisoners present with particularly high rates of self-injurious behaviour, suicidal tendencies, substance misuse, personality disorders, intellectual disability, depressive and anxiety disorders, and HIV.^{6,12,13,14,15}

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With the exception of Offen,¹⁶ whose study showed indications that gender and ethnicity played a role in the process of court referrals, and more recently, Khoele et al.¹⁷ who specifically examined the forensic clinical records of 32 women charged with murder or attempted murder of minors referred to Weskoppies Hospital (in Pretoria, South Africa), there remains scant data on women in forensic mental health facilities, or those referred for psychiatric assessment under the *South African Criminal Procedure Act (CPA)* of 1977, and its amendments.^{18,19} Other published studies that have been previously conducted in South Africa on offenders referred by courts for psycho-legal evaluation under the CPA have either been confined to single sites, with relatively small sample sizes, or have focused primarily or exclusively on male offenders.^{20,21,22,23,24,25}

Aims

This cross-facility, national study examined the socio-demographic profile, court referral data and forensic mental health characteristics of accused women referred for psychiatric evaluation, under the CPA,^{18,19} to forensic mental health units in South Africa. The primary aim of the study was to document a detailed description of the psycho-social, clinical and forensic mental health profile of these women. In addition, the study also sought to focus particularly on women accused of violent offences, by exploring the possible motives, victim profiles and broader forensic mental health context of such violence.

Methods

A retrospective study of clinical records of all accused women referred by the South African courts to all large forensic mental health units for observation under the CPA was conducted. The following institutions were included in the study: Fort England Hospital (Eastern Cape), Valkenberg and Lentegeur Hospitals (Western Cape), Weskoppies and Sterkfontein Hospitals (Gauteng), Fort Napier Hospital (Kwazulu-Natal), and the Free State Psychiatric Complex (Free State), respectively. Data were collected from the clinical forensic records of 573 women referred by courts for psycho-legal evaluation over a 12-year period (1998–2010), including information on psychiatric assessments, psychological tests, physical examinations, laboratory tests and clinical observations by multidisciplinary teams. Data were captured from clinical records, using a standardised data collection sheet across all participating sites. Specific information on the socio-demographic, criminological, clinical and forensic mental health profiles of the accused women was collected, collated and analysed. Descriptive analysis was computed on SPSS statistical software.

Ethical consideration

Walter Sisulu University (Ref. No. 026/012); University of Cape Town (Ref. No. 278/2012); University of the Witwatersrand (Ref. No. R14/49); University of Pretoria (Ref. No. 109/2012); and University of Kwazulu-Natal

(Ref. No. HRK M66/14). Formal ethics clearances from respective institutions were obtained from the managers of all participating forensic mental health units and through each affiliated University Human Research Ethics Committee, respectively. Investigators at each site signed a Declaration of Confidentiality and were responsible for ensuring the anonymity, confidentiality and security of data obtained at each site. Individual informed consent was not required, as this was a records-based study and permission to access records was obtained from the Head of Health Establishment at each institution. The views expressed in this article are those of the authors and do not represent the official position of any affiliated institutions or funders.

Results

Socio-demographics

The majority of the female offenders were aged between 21 and 50 years of age (82.0%), with the largest percentage being in the 21–30 years age group (33.2%). The majority of women (67.5%) were mothers, with almost half (46.2%) having more than one child, and almost 20.0% having more than three children. More than half of the sample were single at the time of observation (56.0%) and 3.7% were in common-law partnerships. A minority (13.6%) were divorced or separated. Regarding living arrangements prior to arrest: only 19.7% of the offenders lived with their partners or spouse, whilst 38.6% of the sample lived with their immediate family. Approximately 41.0% of the sample, whose income source was recorded, relied upon their immediate family to support them financially, with 78.0% of the sample, whose employment history was recorded, being unemployed prior to arrest. Despite this high rate of unemployment, only 23.0% were reliant on social grants for income, with the remaining unemployed offenders reliant on family, spouses and other sources. In terms of educational qualifications, only 6.1% of the sample were identified as having no formal education, with a further 4.4% of the sample with no educational level recorded. A high percentage of offenders had attained a Grade 8–12 education (49.0%), whilst only 8.5% had tertiary qualifications.

Medical and psychiatric history

Women offenders who had a known prior medical history (43.7% of the sample) showed a disproportionately high rate of epilepsy ($n = 64$ or 11.2% of the whole sample, and 28.0% of those whose medical history was recorded). Only 2.8% (16/573) had evidence of prior traumatic brain injury, and 5.0% (29/573) were known to be HIV-positive. Forty-four per cent ($n = 251$) denied any prior substance abuse, whilst 38.3% ($n = 220$) of women disclosed and/or confirmed a history of alcohol abuse (i.e. reported this upon enquiry during clinical interviews and/or confirmed with collateral sources to this effect, respectively) during the course of the psycho-legal assessment. Alcohol was the most common with regard to substance abuse, accounting for almost 70.0% of those who disclosed prior substance abuse, followed by

'other' substances – used by less than 7.0% of the sample – including cannabis, heroin, nicotine, methamphetamine and prescription drugs. Substance abuse was a prevalent factor in offences committed against children, ($n = 116$ or 20%), with 32.0% of those who committed crimes against their own children reporting prior use of alcohol.

A prior psychiatric history was documented in almost half (48.9%; $n = 280$) of the women. In those whose previous psychiatric diagnosis was known, 12.2% were diagnosed with bipolar disorders, 11.9% with psychotic disorders and 10.8% with depressive disorders (Table 1). In addition, 25.0% ($n = 141$) of the women offenders had a documented history of mental illness in a family member.

Of those women who had been convicted of crimes against their own child or children ($n = 116$), 54.3% had disclosed a previous psychiatric illness. A closer analysis of this sub-sample reveals a relatively higher rate of depressive disorders (21.1%) and similar rates of psychotic disorders (11.2%) in comparison to the total sample.

History of abuse experiences

Almost a third (30.8%) of the women offenders had disclosed a history of being abused. Of the 177 women who reported previous abuse experiences, 48.6% had a history of being abused as adults, 34.4% during childhood and 12.0% had experienced abuse both during childhood and adulthood (the remaining 5.0% reported abuse but the timing was unspecified). Of those in whom the type of childhood abuse was specified (65/573), 66.0% reported physical abuse, whilst 23.0% were sexually abused. For those who experienced abuse as adults, the most common type reported was physical abuse (75.0%). Sexual abuse was reported by 5.7% of these women, and 15.3% indicated they had been subjected to both sexual and physical abuse. A history of abuse was reported by almost one-third (28.6%) of women who committed violent offences.

Criminal history

Historical offences were categorised using an adaptation of Snyman's classification of offences for South Africa.²⁶ There was no prior criminal history in over 60.0% of the sample (although a history of prior convictions was unknown or

unspecified in a further 23.0%). Of those with documented prior convictions ($n = 81$), 60.0% were property offences (e.g. crimes relating to appropriation of property, financial crimes and damage to property). Almost 32.0% had prior convictions for violence against the person (e.g. murder, attempted murder, assault and assault with intent to do grievous bodily harm). Only 6.0% had previously committed 'crimes against the community', which includes a range of offences, many of them of a serious nature (e.g. crimes against the family, drug offences and concealment of birth). The most common convictions for specific prior offences committed were for assault (22.0%) and theft (23.0%), respectively, with only three cases of prior homicide.

Offence profile

Index offences, which formed the basis of court-ordered referral for psycho-legal evaluation, were also categorised using an adaptation of Snyman's classification,²⁶ as follows: (1) *crimes against the State* (e.g. public violence, contempt of court, escape from custody); (2) *crimes against the community* (e.g. sexual crimes, abduction, corruption, drug offences, concealment of birth); (3) *crimes against a person*, which includes *crimes against life* (e.g. murder, attempted murder, culpable homicide, exposing an infant), *crimes against bodily integrity* (e.g. common assault, assault with intent to do grievous bodily harm, intimidation) and *crimes against dignity, reputation or freedom of movement* (e.g. defamation, kidnapping); and (4) *crimes against property* (e.g. theft, robbery, fraud, malicious injury to property, arson, housebreaking, trespass), respectively.

The most prevalent categories of offences were those against life (34.2%), property (30.2%) and bodily integrity (25.1%), respectively. The most prevalent specific index offences are set out in Table 2.

In total, 55 (68.0%) of those with previous convictions were accused of violent index offences. Of those who had committed non-violent crimes on first offence, two-thirds went on to commit violent crimes; for example, 35 out of the 81 women with prior convictions went on to commit a murder or attempted murder.

Apparent motives of offence

The motives for committing the offence against adult victims were recorded as being unknown/unspecified in 67.7% of the sample ($n = 388$). Of those in whom motives were specified ($n = 185$), psychopathology was cited as a significant factor in driving behaviour in 39.4% ($n = 73$), 37.2% ($n = 69$) committed

TABLE 1: Psychiatric history prior to arrest ($n = 573$).

Psychiatric history	Frequency	%
Unknown/unspecified	293	51.1
Bipolar disorders	70	12.2
Psychotic disorders	68	11.9
Depressive disorders	62	10.8
Other mental disorders	46	8.0
Substance-related disorders	18	3.1
Anxiety disorders	7	1.2
Neurodevelopmental disorders	6	1.0
Personality disorders	2	0.3
Neurocognitive disorders	1	0.2
Total	573	100.0

TABLE 2: Five most prevalent index offences.

Type of offence	Frequency	%
1. Murder	169	29.5
2. Assault with intent to do grievous bodily harm	95	16.6
3. Theft	73	12.7
4. Fraud	29	5.1
5. Attempted murder	26	4.5

the offence as a form of retaliation/revenge, 13.0% ($n = 24$) of the offences were motivated by self-defence and the remaining 10.4% ($n = 19$) were recorded as having 'other' motives (e.g. for financial gain, intoxication or sexual exploitation). With regard to those crimes which were motivated by psychopathology ($n = 73$), the prevailing mental state during the offence was recorded as being psychotic in 29.0% ($n = 21$) of the cases, with a further 10.8% experiencing a manic or major depressive episode at the time.

With regard to crimes committed against children, the likely motives were classified using an adaptation of the typology of D'Orban²⁷ and, as illustrated in Table 3, active psychopathology at the time of offending accounted for the majority of cases (33.6%).

Similar to the finding with adult victims, the most common form of psychopathology at the time of offending was psychosis (29.7%), with a further 8.5% experiencing a manic or major depressive episode. Of note, a large proportion (32.6%) were considered to have normal mental states (i.e. devoid of active psychopathology) during the commission of offences against children.

Victim profiles

Adult victims

A total of 398 adult victims were reported across the sample (although in some cases, a single offender targeted more than one victim). Of these, 27.3% ($n = 109$) were in respect of crimes against life (e.g. murder, attempted murder), 29.0% ($n = 115$) were property-related crimes and 16.5% ($n = 66$) were categorised as crimes against bodily integrity (e.g. assault and assault with intent to do grievous bodily harm). More specifically, 94 out of the 398 crimes against adults were murders, which equates to 23.6% of the crimes of the whole sample ($n = 573$). Of those offenders who committed crimes against adults, only 58.0% ($n = 230$) of the records specified the offenders' relationship with the adult victim. Of those relationships which were identified in the records: 29.0% ($n = 66$) of the victims were acquaintances or friends of the accused, 22.0% ($n = 50$) were relatives, 18.6% ($n = 43$) were intimate partners, 14.3% parents and 16.0% were strangers to the offender. Overall, of all the violent crimes ($n = 360$) that were committed, 9.2% were perpetrated against a partner, with a combined total of 31.7% of all violent crimes targeting

adult victims known to the offender (including partners, family members, acquaintances and friends).

Child victims

In total, there were 175 crimes committed against children, with 66.3% ($n = 116$) of victims being the biological children of perpetrators. The age of the child victim was recorded in 129 (74.0%) of all cases, as illustrated in Table 4. Almost a third of all child victims (31.0%; $n = 54$) were aged under 1 year at the time when the crime was committed against them. For cases of offenders committing crimes against their *own* children ($n = 116$), children aged 1 year were frequently targeted (38%; $n = 44$), with the first month of life being a particularly vulnerable age (18.0%; $n = 21$).

Of the 175 child victims in whom the gender was specified/known, 29.1% were female ($n = 51$), 18.6% were male ($n = 33$), with 4.6% of the crimes committed against multiple victims of both sexes ($n = 8$). Regarding the gender of biological child victims in whom this was specified/known ($n = 116$), 24.0% were female, 19.0% were male and 3.4% were of both sexes.

Where cases involved violent offences against children, the majority (69.8%) were against biological children ($n = 81$ out of 116 cases were violent crimes). With regard to the offences against life against their *own* children: 34.4% of these crimes were murders (accounting for 24.0% of all murders [$n = 40$ out of 169] in the whole sample) and 4.3% ($n = 5$) of these were attempted murder (17.0% of all attempted murders within the whole sample). Important factors in relation to child deaths relate to the history of psychiatric illness in the female offender's family and her own previous psychiatric history. Of those 175 women who committed crimes against children, 6.2% ($n = 11$) identified their mothers as having had a previous history of psychiatric illness. Out of those 11 women, four had murdered or attempted to murder a child. Regarding the offenders' own history of psychiatric illnesses, 52.0% ($n = 90$ out of the 175 women) had disclosed a prior psychiatric illness, and of these 90 women, 30.0% had murdered a child.

Psycho-legal referral

The most common reasons for being referred by courts for psychiatric observation include clinically related referrals in 45.0% of cases (e.g. prior psychiatric or neuropsychiatric history, or upon recommendation of a health professional)

TABLE 3: Motive for offences against offenders' own child ($n = 116$).

Motive	Frequency	%
Psychopathology of accused	39	33.6
Unknown ^a	37	31.9
Unwanted child	14	12.1
Not recorded ^b	10	8.6
Retaliation/revenge	7	6.0
Impulsive	5	4.3
Other ^c	4	3.4
Total	116	100.0

a, 'Unknown' refers to cases in which the motive was truly unknown to the clinical team; b, 'Not recorded' refers to cases in which clinical records information did not document the motive; c, 'Other' refers to recorded motives which did not fit any other category.

TABLE 4: Age distribution of child victims ($n = 175$).

Age category	Biological child victims		All child victims	
	Frequency	%	Frequency	%
0–1 month old	21	18.1	28	16.0
2–11 months	23	19.8	26	14.9
1–4 years	21	18.1	34	19.4
5–8 years	13	11.2	23	13.1
9–12 years	5	4.3	11	6.3
13–16 years	3	2.6	7	4.0
Unknown/unspecified	30	25.9	46	26.3
Total	116	100.0	175	100.0

and criminal justice referrals comprised 28.0% of the sample (e.g. unusual offence characteristics, difficulties with lawyers consulting with accused women and unusual behaviour in court). The remainder were for other, unspecified or unknown reasons.

Diagnostic outcomes

The final diagnostic outcomes following psycho-legal evaluation are illustrated in Table 5. Almost one-third (29.0%; $n = 164$) had no mental disorder. With respect to violent crimes in particular ($n = 360$): 21.9% were diagnosed with a psychotic disorder, 9.7% with bipolar disorder and 5.3% with a depressive disorder.

Of the 127 offenders with a diagnosed psychotic disorder, 26.0% had committed murder or attempted murder, and 32.8% had committed common assault or assault with intent to cause grievous bodily harm. Interestingly, whilst 48.0% of those with depressive disorders had also committed a high number of crimes against life (i.e. murder or attempted murder) (13 out of the 27 offenders), this is notably lower than the absolute number of offenders diagnosed as having no mental disorder, of whom 73 of 166 women had also committed murder or attempted murder.

Trial competence and criminal responsibility

Conclusions on both trial competence and criminal responsibility were specified in only 511 reports. Table 6 illustrates that the majority of women were deemed to be trial competent (61.4%; $n = 314$) and criminally responsible for the crimes (52.2%; $n = 267$), with over half the female offenders reported as *both* trial competent and criminally responsible (50.8%; $n = 260$). Of the female offenders who committed violent crimes ($n = 360$), 61.7% were declared trial competent. Of those who committed crimes against children, 58.9% were deemed trial competent. This increased slightly to 61.2% amongst those women who committed

crimes against their own children ($n = 116$), with full criminal responsibility present in 45.7% of cases.

Final recommendations to court were specified in 502 court reports. In the majority (61.0%) of cases, this was for the law to take its course. The remainder were recommended for referral to mental health services for clinical treatment and/or rehabilitation: to general mental health services in 18.1% ($n = 91$) in cases of non-violent index offences; and forensic mental health services in 20.9% ($n = 105$) in cases of violent index offences, respectively.

Discussion

The clinical records of 573 women offenders referred by courts for psycho-legal evaluation under the CPA to the six South African participating forensic mental health units were examined.

Pre-arrest profile

From this study, the 'typical' female offender is a single mother, aged between 21 and 30 years, with one or more dependent children. She would have attained a Grade 8–12 school education, would be unemployed prior to the offence and living with her immediate family, upon whom she would be reliant for financial and other forms of support. Almost a third of women disclosed a pre-arrest history of having experienced abuse themselves, both during childhood and adulthood, in keeping with the body of evidence that women are more likely than male offenders to report extensive histories of physical, sexual and emotional abuse.²⁸

TABLE 6: Trial competence and criminal responsibility ($n = 511$).

Criminal responsibility	Trial competence					
	Fit		Not fit		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Responsible	260	82.8	7	3.6	267	52.2
Not responsible	54	17.2	190	96.4	244	47.8
Total	314	100.0	197	100.0	511	100.0

TABLE 5: Diagnostic groups and the nature of offences ($n = 565$).^a

Diagnostic group ^b	Violent and non-violent crimes				Total	
	Violent		Non-violent		<i>N</i>	%
	<i>N</i>	%	<i>N</i>	%		
No mental disorder	108	30.0	56	27.3	164	29.0
Schizophrenia and other psychotic disorders	79	21.9	48	23.4	127	22.4
Comorbidity	34	9.4	35	17.1	69	12.2
Bipolar and related disorders	35	9.7	21	10.2	56	9.9
Other mental disorders	20	5.5	7	3.4	27	4.8
Personality disorders	19	5.3	9	4.4	28	5.0
Depressive disorders	19	5.3	8	3.9	27	4.8
Substance-related and addictive disorders	12	3.3	10	4.9	22	3.9
Neurocognitive disorders	16	4.4	2	1.0	18	3.2
Neurodevelopmental disorders	11	3.1	6	2.9	17	3.0
Trauma and stressor-related disorders	5	1.4	3	1.5	8	1.4
Anxiety disorders	2	0.6	0	0.0	2	0.4
Total	360	100.0	205	100.0	565	100.0

a, The eight 'Unknown' cases have been excluded from the table and the calculations above; b, Diagnostic grouping aligned with DSM-5 (diagnostic and statistical manual); the 'Comorbidity' group includes cases with two or more discrete psychiatric diagnoses made on court reports following psycho-legal assessment; the 'Other Mental Disorders' group includes cases with diagnoses in categories other than the Diagnostic Groups indicated.

Rivera and Widom demonstrated that any type of childhood abuse serves as a predictor for being arrested for a violent crime during adulthood.²⁹ The predictive element of early trauma is not only connected to criminal behaviour but also to the subsequent development of mental disorders, including substance-related problems. It is unsurprising then that the majority of women in the sample had a documented psychiatric history, most commonly suffering from mood or psychotic disorders, and that almost 40% of the women disclosed a prior history of alcohol abuse. Most of the women sampled were first-time offenders with no prior criminal history. In those with prior convictions, the majority were for minor, non-violent property-related offences, whilst a small but notable proportion had prior violent offending histories. This pre-arrest profile, and the associated pathways to offending, is congruent with that described in the international literature.^{2,6,10,12,13,14}

Index offence profile

The most prevalent offences that led to court-referred forensic psychiatric evaluations were for violent index offence categories: offences against life (e.g. attempted murder and murder) and against bodily integrity (e.g. assault and assault with intention to do grievous bodily harm). In fact, murder was the single most common index offence. Women who were first-time offenders were more likely to commit non-violent index offences, and those with a prior criminal history (of any kind) were more likely to engage in violent index offences. Psychopathological factors were also cited as a significant factor associated with violent index offending, cited in over one-third of the cases. This relatively large proportion of violent offending (historical and related to the index offence) in South African female offenders, especially in the context of mental health problems, confirms the conclusions of other published research abroad.^{12,13,14,30,31}

Overall, the study demonstrated that victims of violent offending were predominantly situated within the women's immediate family and their direct inner social circle. Adult victims of violent offences were known to the offender in over 80.0% of cases, as a family member, intimate partner, friend or acquaintance. Intimate partners were the single largest group of victims of homicidal offences, which includes murder and attempted murder (comprising 25.0% of cases, as compared with only 8.0% of such cases being unknown to the perpetrator), confirming the evidence in the literature on violent female offenders and their victims, especially in the context of intimate partner violence (IPV). As an example, a large Swedish study of the court judgements of women who killed their intimate partners by Moen, Nygren and Edin³² reported that the homicidal act often occurred on the background of prior violent abuse of the women themselves at the hands of their victims. Female-perpetrated IPV has been linked to defensive reactions related to chronic prior abuse.³³ South African women, like women elsewhere, are more likely to be victims than perpetrators of IPV: it is estimated that at least 31.0% – 55.0% of women in

South Africa have experienced IPV.³⁴ Breet, Seedat and Kagee³⁵ articulate that poor mental health is a crucial risk factor for the perpetration of IPV in South Africa and recommended that IPV can only be tackled if gender-sensitive interventions consider co-occurring symptoms of mental ill-health, especially depressive and anxiety syndromes.³⁵

Outcomes with respect to child victims in the current study also confirm the patterns described in the literature: biological children in their first year of life are a particularly vulnerable group, especially in cases where maternal perpetrators are likely to be suffering from mental ill-health.^{36,37,38}

Forensic mental health profile

The fact that severe mental disorder was present in a relatively high proportion of cases suggest that mental ill-health confers a disproportionate risk of offending in women in our sample (especially violent offending in the presence of psychotic-spectrum disorders), a conclusion consistent with those of most other large studies in the published literature.⁹ Despite the presence of a psychiatric diagnosis in two-thirds of women offenders, approximately half (51.0%) were deemed to be trial competent and criminally responsible for their actions. The psychiatric disorder may have been in remission at the time of offence (in relation to criminal responsibility) and/or following arrest, that is, at the time of forensic psychiatric evaluation itself (in relation to trial competence). Another possibility is that, even if these disorders were not in remission at the time of trial or offence, the symptoms of the disorder did not sufficiently impact on the forensic parameters of trial competence and/or criminal responsibility as to deflect the law from taking its course in the usual manner.

Conclusion

There are a number of limitations to this research study, including the retrospective nature of the study, site-differences in the quality of clinical records documentation and information to hand, and the lack of male offender comparative data. There are further limitations regarding the generalisability of results and outcomes to women in other settings or populations, for example, women in the community, or convicted women serving sentences in prison. Nonetheless, this is the largest and most comprehensive survey of the clinical and forensic mental health of women offenders in South Africa (and, to our knowledge, on the African continent as a whole) to date, and a number of broad conclusions can be drawn. Most women offenders sampled come from a background of socio-demographic and socio-economic adversity, with a relatively high pre-offence incidence of mental ill-health, alcohol abuse and being victims of abuse themselves. Whilst the majority of women were first-time offenders, the majority of index offences which led to their court-ordered forensic evaluation were for violent offences against the person, with murder being the single most common index offence. Most victims of such

violence were known to the perpetrators as family members, intimate partners or biological children. There were relatively high rates of psychotic and mood-spectrum disorders present in the sample, and relatively low rates of personality disorders. The majority of women were deemed to be trial competent and criminally responsible in relation to their index offences. Further research, especially in the context of developing countries, is necessary to confirm the outcomes of this study, and to expand sampling to male offenders in order to generate gender-based comparisons. In addition, it is recommended that more standardised and gender-sensitive forensic mental health assessment approaches, documentation and reporting be employed throughout the country.

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Competing interests

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this article.

Authors' contributions

All authors contributed to the research design and data collection. M.N., L.A. and A.H. conceptualised and developed the initial draft. M.N., L.A., A.H. and U.S. analysed the data and interpreted the results. All authors critically reviewed and approved the final draft of the article.



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Fine motor deficits and attention deficit hyperactivity disorder in primary school children

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Background: Many children with attention deficit hyperactivity disorder (ADHD) display motor deficiencies during their daily routine, which may have impact on their developmental course. Children with ADHD who experience motor deficiencies often display deficits in tasks requiring movements, such as handwriting.

Aim: This study investigated deficiencies in fine motor skills in primary school children with ADHD. The study further sought to establish whether ADHD subtypes differ in deficiencies of fine motor performance, recorded for both the dominant and non-dominant hands.

Methods: The Disruptive Behavior Disorders Rating Scale, completed by educators and parents, was used to screen for ADHD symptoms. Researchers confirmed the diagnosis of ADHD. Motor functioning was assessed using the Grooved Pegboard and Maze Coordination. The children diagnosed with ADHD were matched for age and gender with controls without ADHD. The sample consisted of an ADHD group (160) and control group (160) of primary school children from the Moletjie area.

Results: Children with ADHD (predominantly inattentive subtype) and ADHD (combined subtype) performed significantly more poorly than the control group on the Grooved Pegboard ($p < 0.05$) with both the dominant and non-dominant hand. No significant difference between the hyperactivity and impulsiveness subtype and the controls were found. There was no difference on the Maze Coordination Task ($p > 0.05$) between the ADHD subtypes and the controls.

Conclusion: Difficulties in fine motor skills are prevalent in children with ADHD, particularly in the ADHD-PI and ADHD-C. Problems are encountered in distal, complex, speeded tasks. The effect may lead to poor handwriting and academic performance.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a common, long-lasting, manageable childhood psychiatric disorder, characterised by a pattern of developmentally inappropriate inattention, motor restlessness and impulsiveness.¹ It affects approximately 3% – 7% of school-aged children worldwide¹ and is characterised by symptoms of severe inattention, impulsiveness and overactivity.² Poor motor coordination or motor performance is another common coexisting difficulty in children with ADHD, though it has received less attention in research.³ Children with ADHD who experience motor difficulties often display deficits in tasks requiring coordination of complex movements, such as handwriting. Such children often appear clumsy and uncoordinated.^{4,5} Motor coordination problems have previously been labelled ‘clumsy child syndrome’, ‘non-cerebral-palsy motor-perception dysfunction’, ‘minor neurological dysfunction’ or ‘dyspraxia of childhood’.⁶

Motor skills are actions carried out when the brain, nervous system and muscles work together. It is a function that involves the precise movement of muscles with the intent to perform a specific act. They are categorised into two groups: gross motor skills and fine motor skills. Gross motor skills are involved in movement and coordination of the arms and legs and actions such as running, crawling and swimming.⁷ Fine motor skills are required in smaller movements that occur in the wrists, hands, fingers, feet and toes and include more precise actions such as picking up objects between the thumb and finger and writing carefully.⁸ Poor fine motor skills can make cognitive learning and performance more difficult because of the involvement of fine motor skills in cognitive activities.^{5,8}

Since 1994, the use of the term ‘developmental coordination disorder’ (DCD) has predominated in the literature. In the Scandinavian countries, the combination of ADHD and motor coordination problems is known as ‘deficits of attention and motor perception’ (DAMP).^{9,10} Recently it was

suggested that the name 'DAMP' be changed to 'DCD plus'.¹¹ Developmental coordination disorder is diagnosed if the impairment in motor skills significantly interferes with the performance of, or participation in, daily activities in family, social, school or community life.² Developmental coordination disorder does not have separate classifications; however, individuals may be impaired predominantly in either gross or fine motor skills, including handwriting skills. The core characteristic of DCD involves a marked impairment in the performance of motor skills. This impairment has a negative impact on activities of daily life such as dressing, feeding and riding a bicycle or academic achievement through poor handwriting skills. DCD is found in up to 50% of the children with ADHD.^{3,12}

Many of the differences found in the neural systems between ADHD and neurotypical comparisons are present in the areas responsible for motor control.^{13,14} Kaiser et al.¹⁵ argue that individuals with DCD and ADHD may fall, bump into things or knock things over; this may not be because of distractibility and impulsiveness but rather because of motor impairment. Children with ADHD tend to show persistent motor skill impairment, which might meet the diagnostic criteria of DCD as a comorbid disorder.¹⁵

The prevalence of motor problems in children with ADHD ranges from 30% to 52%, depending on the method of measurement.^{16,17} A study by Pitcher et al.¹⁸ found that 58% of children with ADHD (predominantly inattentive subtype, (ADHD-PI), 49% with ADHD combined (ADHD-C) and 47% with ADHD hyperactivity and impulsiveness (ADHD-HI) had motor problems. In clinical practice, less attention is paid to motor problems in children with ADHD.¹⁹

Most studies show a strong association between ADHD and fine motor problems.^{18,20} Kadesjö and Gillberg⁹ and Piek et al.²¹ affirm that inattentive symptoms relate mostly to motor coordination problems, though a relationship between hyperactive and impulsive symptoms and motor coordination problems has also been reported. Motor problems lead to difficulties in everyday living, including academic performance, sport, play and self-esteem.^{1,21,22,23} Motor problems severely affect children's daily lives and are an active predictor of a child's popularity and self-esteem.²⁴ These deficits may have an intense effect on children's development, leading to difficulty with written communication, inhibited social interaction and poor performance in sports activities.

Several studies have identified dopamine as the key neurotransmitter in the brain in ADHD. Three pathways, namely the mesocortical, mesolimbic and nigrostriatal, have been shown to be dysfunctional and consequently cause deficiencies in the cortical areas, resulting in symptoms typical to ADHD: inattention, hyperactivity and impulsiveness.^{25,26,27} The nigrostriatal dopaminergic pathway is involved in the coordination of movement. Sagvolden et al.²⁶ assert that a hypofunctioning nigrostriatal dopamine

branch causes impaired modulation of motor functions and deficient non-declarative habit learning and memory. The altered dopaminergic function and hypofunctioning nigrostriatal dopamine will give rise to clumsiness and problems with gait, balance and laterality, as well as gross and fine motor control.²⁶ Difficulties with motor inhibition may be associated with disturbances in the orbital prefrontal circuit system, which also plays a central role in executive functions.²⁸ This view is further supported by Berquin et al.,²⁹ who suggest that cerebellar-prefrontal circuit dysfunction may underlie the motor control, inhibition and executive function deficits encountered in ADHD.

Motor problems are not usually part of assessments for ADHD and are not included in intervention programmes^{10,30} despite the estimate that 30% – 50% of children with ADHD exhibit motor problems.³ This study aimed to investigate fine motor difficulties in a sample of primary school children diagnosed with ADHD in Limpopo Province, South Africa. The study further sought to establish whether ADHD subtypes or presentations differ in motor performance deficiencies, whether this is true for both the dominant and non-dominant hand, and whether gender and age influence performance. Understanding the defects in fine motor skills and how the ADHD subtypes are affected will enable clinicians, educators and parents to devise appropriate intervention methods in the treatment of children with ADHD. The results will also help them to better understand the nature of fine motor deficits in children with ADHD to inform and guide future treatment and therapy for these children.

Research methods and design

Study design

The study was conducted in primary schools in the Moletjie area, Limpopo, in 2016. A quantitative, case-control experimental design was used. In order to establish whether children with ADHD are deficient in fine motor skills, the sample was divided into participants diagnosed with ADHD and those without ADHD.

Setting

The study was conducted with primary school children in the Moletjie area in Limpopo Province, South Africa. The selected regions were in a rural area in which assessment of this nature is very rare. The areas were selected based on the remoteness of the regions so that the community could benefit from such research.

Study population and sampling strategy

Four thousand two hundred children completed the Disruptive Behavior Disorders (DBD) Rating Scale. A total of 320 primary school children were screened; 160 with ADHD (80 boys and 80 girls) were matched for gender and age with 160 children without ADHD symptomatology (80 boys and 80 girls), who formed the control group. They were all Sepedi speaking, Grade 1 to Grade 7 learners, between the ages of 6

and 14 years, and were recruited from six schools in the Moletjie area, Limpopo Province, South Africa. The DBD, completed by educators and parents, was used to screen the children for ADHD.^{31,32} Learners who met the criteria for ADHD were assigned by the researcher as follows: Participants with scores ≥ 17 on the hyperactivity and impulsiveness scale were classified as ADHD-HI subtype and those having a score ≥ 20 on the inattention scale were classified as ADHD-PI subtype, based on the epidemiological study by Meyer and colleagues.³³ Participants who met the criteria on both scales were categorised as ADHD-C subtype. The cut-off point for the neurotypical control group (non-ADHD) was set at the 85th percentile or below to decrease the risk for false positives in this group.³³ Thus, children with scores of less than 15 on the hyperactivity and impulsiveness scale and the inattention scale, matched for gender and age, were selected as controls.

Children with a history of neurological problems (e.g. head injuries, epilepsy, cerebral palsy, etc.) or severe psychiatric disorders, as reported by the parents on the demographic questionnaire, were excluded from the study. None of the children were on psychostimulant medication at the time of testing.

Data collection

The principals of the schools were approached prior to commencing with the assessment. Following consent from parents, the study was explained to all participating children, and their assent was obtained. The return rate of the questionnaires was 100%. The data was collected from primary school children within the Moletjie area in Limpopo Province during 2016. The assessment was done during school hours at the participants' respective schools. The testing procedure for each child lasted 30 min and was conducted by a clinical psychologist and five research assistants (who held bachelor degrees in psychology), who were fluent in the child's home language.

Instruments

Screening instruments: Disruptive Behavior Disorders Rating Scale

The DBD Rating Scale^{31,32} was used to screen for ADHD symptoms. The scale is standardised and normed for all language and population groups in Limpopo Province, South Africa.³³ The DBD assesses the presence and the degree of ADHD-related symptoms (inattention and hyperactivity/impulsiveness), oppositional defiant disorder and conduct disorder.³⁴ The DBD consists of 42 items based on the diagnostic statistical manual of mental disorder (DSM-IV) diagnostic criteria,³⁵ of which 18 measure ADHD. All 42 items were administered. Respondents were asked to rate the behaviour on a four-point scale: not at all (0); just a little (1), pretty much (2) and very much (3). The scores were summed to produce a total score, and a 95th-percentile cut-off score is considered clinically significant.²⁸ Those participants scoring below the 85th percentile formed the control group.

The Cronbach's alpha for the DBD for the targeted population was calculated at 0.90 for the hyperactivity and impulsiveness scale and 0.92 for the inattention scale.³³

Assessment of motor functions

The Grooved Pegboard, measuring distal, complex fine motor coordination and psychomotor speed, was administered first, followed by the Maze Coordination Task, which evaluates tactual motor coordination skills and motor planning.³⁶

Grooved Pegboard Task

The Grooved Pegboard is a manual dexterity test measuring complex fine motor skills.³⁶ This task consists of a small (10 cm \times 10 cm) metal board that contains a 5 \times 5 set of holes, each with a groove, oriented randomly in different directions. Twenty-five round metal pegs with a ridge running lengthwise have to be rotated to the correct position for insertion into the holes. The participants are instructed to insert the pegs as quickly as possible into the slots in sequence, first with the dominant hand and then with the non-dominant hand. The hand that they use to write was recognised as the dominant hand; the one not being used was recognised as the non-dominant. Pegs are inserted from *left to right with the right hand and vice versa for the left*. The score is the time it takes the participant to complete the task with each hand. The task duration is approximately 5 min.³⁷ The Grooved Pegboard has good test reliability (Cronbach's α 0.91 and 0.85 for right and left hands, respectively). The Grooved Pegboard correlates with the Bruininks-Oseretsky Test at -0.50 to -0.63 and with the Purdue Pegboard at -0.73 to -0.78.³⁸ Studies^{21,39,40} have shown that the Grooved Pegboard could efficiently be used to detect problems with fine motor skills in children with symptoms of ADHD.

Maze Coordination Task

The Maze Coordination Task measures fine motor coordination.³⁹ The Maze is placed at a $\sim 60^\circ$ angle to the table. The child is required to go through the maze with an electric stylus, trying not to touch the sides. The stylus is connected to an electronic clock and a counter, which record the number of contacts the stylus is making with the sides (counter) and the cumulative duration of these contacts (timer). The aim is to move the stylus through the maze without touching the sides. There is no speed requirement, and the test is performed twice with each hand. The total sum of touches and cumulative time of contact of two trials with the same-side hand are the final scores. According to Tichá et al.⁴¹ and Torgesen et al.,⁴² reliabilities range from 0.27 to 0.91.

Data analysis

Statistica (version 10)⁴³ was used to analyse data from the tests mentioned above. Multivariate analysis of variance (MANOVA) models were used to determine differences in performance. A 4 \times 2 \times 3 (ADHD presentation \times gender \times age group) analysis of variance for independent samples for both the dominant and the non-dominant hand were computed to establish between-group differences. Post-hoc tests

TABLE 1: Descriptive statistics and multivariate analysis of variance results for two motor tasks.

Variable	<i>n</i>	%	F	M	Age	Dominant hand	<i>p</i>	Non-dominant hand	<i>p</i>
Pegboard									
ADHD-HI	19	1	13	6	10.68 ± 1.49	91.42 ± 14.46	0.450	98.53 ± 40.67	0.430
ADHD-PI	81	51	40	41	10.40 ± 1.70	93.64 ± 34.49	0.001*	98.24 ± 23.29	0.011*
ADHD-C	60	37	27	33	10.47 ± 2.07	94.93 ± 24.80	0.002*	100.60 ± 23.56	0.004*
Control	160	100	80	80	10.49 ± 1.80	79.53 ± 26.31	-	88.22 ± 22.22	-
Maze									
ADHD-HI	19	12	13	6	10.68 ± 1.49	21.21 ± 12.27	0.330	26.47 ± 10.65	0.210
ADHD-PI	81	51	40	41	10.40 ± 1.70	25.87 ± 15.64	0.850	32.75 ± 22.52	0.960
ADHD-C	60	37	27	33	10.47 ± 2.07	31.28 ± 30.14	0.150	37.33 ± 33.37	0.130
Control	160	100	80	80	10.49 ± 1.80	26.43 ± 22.25	-	32.63 ± 22.47	-

ADHD, attention deficit hyperactivity disorder; HI, hyperactivity and impulsiveness subtype; PI, predominantly inattentive subtype; C, combined subtype; F, female; M, male.

* $p < 0.05$

(Bonferroni) were used to establish within-group differences. The significance value was set at $p < 0.05$.

Ethical consideration

I am enclosing a submission to the *South African Journal of Psychiatry*. The manuscript is the original and was never presented to any other journal and my institution, the University of KwaZulu-Natal, is fully aware of this submission. Ethical approval to conduct the study was obtained (Ethical clearance number: HSS/0702/015D) from the Biomedical Research Ethics Committee of the University of KwaZulu-Natal. The Department of Education provided permission for the study to be conducted at the participating schools, and consent was obtained from the relevant school principals. Written consent was obtained from the parents of the children, and children signed assent forms. Participation in the study was voluntary, and participants were informed that they could withdraw at any stage.

Results

A total of 4200 children completed the DBD, of which 320 children were screened in the study: 160 (50%) males and 160 (50%) females. One hundred sixty children (80 boys and 80 girls) met the criteria for ADHD ($n = 160$) and were matched for age and gender with a control group ($n = 160$) without ADHD symptomatology. The equal numbers in gender was coincidental. There was no statistically significant difference in ages of the ADHD group ($M = 10.52$, $s.d. = 1.76$) and control group ($M = 10.49$, $s.d. = 1.80$, $p = 0.94$).

The grade distribution was as follows: Grade 1 – ADHD = 8, control = 8; Grade 2 – ADHD = 14, control = 13; Grade 3 – ADHD = 26, control = 24; Grade 4 – ADHD = 37, control = 33; Grade 5 – ADHD = 41, control = 39; Grade 6 – ADHD = 21, control = 32; and Grade 7 – ADHD = 13, control = 11.

The participants were classified according to subtype: ADHD-HI ($n = 19$, 12%), ADHD-PI ($n = 81$, 51%) and ADHD-C ($n = 60$, 37%).

Hand dominance: Of the ADHD group 146 (91%) were right-handed, while 14 (9%) were left-handed. The control group consisted of 149 (93%) children who were right-handed and 11 (7%) who were left-handed. The effect of hand dominance

could not be included in the analysis because there were too few left-handers, resulting in empty cells when subtype, age and gender were taken into account. Therefore the results of each hand were analysed separately.

Table 1 presents the descriptive statistics and MANOVA results. The minimum statistical value was set at $p < 0.05$.

On the Grooved Pegboard test, the MANOVA showed no main significant differences or interaction effects for gender and age for either the dominant or the non-dominant hand. Therefore, only the ADHD subtypes were further analysed. There were significant differences between ADHD subtypes in the performance of the dominant hand, $F(2, 297) = 8.48$, $p < 0.001$. Post-hoc analysis revealed a statistically significant difference between the ADHD-PI ($p = 0.001$) and ADHD-C ($p = 0.002$) and the control group only. These groups took longer to complete the task with their dominant hand. There was no statistical difference between ADHD-HI and the control group when using the dominant hand. There were also statistically significant differences in the performance of the non-dominant hand among the ADHD subtypes, $F(2, 297) = 5.93$, ($p < 0.001$). Post-hoc analysis (Bonferroni) further showed that the ADHD-PI ($p = 0.011$) and ADHD-C ($p = 0.004$) subtypes differed significantly from the control group in that the two ADHD groups took significantly longer to complete the task. There was no statistical difference when the ADHD-HI subtype was compared with the control group.

On the Maze Coordination Task, age had an effect on performance with both the dominant and non-dominant hands ($p = 0.004$). There were no effects for gender. The MANOVA indicated significant differences in performance for dominant hand, $F(2, 297) = 6.05$, $p < 0.001$; post-hoc analysis, however, revealed that this was because of the interacting effect of age, with the performance of the younger group significantly poorer than that of the older group. The difference was between the age groups only and not between the subtypes. The difference between the ADHD groups and the controls was not statistically significant, and there was no statistically significant difference between the subtypes in performance of the non-dominant hand, $F(2, 297) = 2.15$, $p = 0.093$.

Discussion

The results of the study show that children with ADHD, especially the ADHD-PI and ADHD-C subtypes, were more impaired on the Grooved Pegboard Task, which measures distal, complex fine motor coordination and psychomotor speed, than on the Maze Coordination Task, which measures tactual coordination skills and motor planning.⁴⁴ The poorer performance on the Grooved Pegboard of the ADHD-PI and ADHD-C subtypes suggest that their eye-hand coordination is impaired when motor speed is required,^{39,45} possibly because of problems with attention as the underlying manifestation of the motor skills deficit.^{18,46} This finding is consistent with most other studies,^{15,39,47} which found that the most pronounced impairment of motor functioning was in children with symptoms of ADHD-PI and ADHD-C subtypes and that inattention may affect motor skills.^{3,48,49} These studies compared motor problems in children with ADHD with neurotypical controls, and the conclusion reached was that difficulties in gross and fine motor skills were all related to symptoms of inattention, not hyperactivity or impulsiveness.

The studies conducted by Ghanizadeh^{48,50} implied that fine motor skills of writing were predicted by the severity of symptoms of inattention. Motor responses require attention to a target and attention during the response. If the target is not properly attended to, it will affect the subsequent motor planning and consequent performance. Additionally, when the target is not noticed in time, it can reduce the time remaining for motor preparation and accordingly affect the performance.¹³ This may explain why the Grooved Pegboard, a timed task, discriminated better between children with ADHD and the neurotypical controls than the Maze Coordination Task, which was not timed and measured only motor planning and executions.

Not all studies on motor deficiencies in ADHD have found fine motor impairment to be limited to inattention. Scharoun et al.⁵¹ reported that all children with ADHD performed fine motor tasks more slowly than children without ADHD. Most studies, however, found that the ADHD-HI subtype was least affected.^{3,39,52} The conclusion drawn by these authors was that, unlike inattention, hyperactivity and impulsiveness was not a good predictor of deficiencies in fine motor performance in children with ADHD.

Our study also showed that age influenced Maze Coordination Task performance with both the dominant and non-dominant hands. These results are similar to the findings of Meyer and Sagvolden,³⁹ who found that age had the most pronounced effect on the Maze Coordination Task, likely because of the maturation effect. Younger children with and without ADHD have poorer motor skills, visual planning and visual perceptual abilities than their older counterparts. Therefore, the task might have been too complicated for the younger participants.³⁹ Meyer and her colleagues in a similar study conducted in 2006 among different cultures in Limpopo had comparable findings to our study. One can debate that a replication was necessary after a decade in an area where

technology and educational facilities have improved. However, the similar results indicate that deficiency in fine motor skills is linked to ADHD symptomatology and is not affected by education and technology that has progressed over the past 10 years.

The cortical-striatal and cortical-cerebellar network is considered to consist of parallel circuits that underlie motor, cognitive and emotional behaviours.⁵³ Therefore, it is evident that the underlying brain mechanisms are interrelated and that ADHD can be regarded as a multisystem developmental disorder with expressions in the cognitive, emotional and motor areas.^{13,53} Houwen et al.⁵⁴ confirmed the relationship between motor performance and executive functions, finding that children who had motor coordination problems also performed poorly on tests of working memory and planning. Therefore, interventions for improving motor deficiencies may lead to improvement in cognitive and emotional functions.¹³

Implication

Problems with attention are the underlying manifestation of the motor skills deficit. Motor problems lead to difficulties in everyday living, including academic performance, sports, play and self-esteem,^{1,21,22,23} and severely impact children's daily lives. Fine motor problems are a strong predictor of a child's popularity and self-esteem.²⁴ Thus, poor motor performance may have an adverse effect on children's self-esteem, anxiety and social functioning.^{22,24} Children with fine motor problems and ADHD are at risk for learning difficulties and deficient psychological adjustment.^{55,56}

As noted by Gillberg et al.¹⁰ and Sergeant et al.,³⁰ motor problems are not usually part of assessments for ADHD or incorporated into intervention programmes. It is vital that fine motor functions be part of evaluations for ADHD and included in general intervention methods for the treatment of children with ADHD and fine motor problems. Early detection of fine motor problems and identification of ADHD subtypes will help clinicians to recognise children at risk, who then can be referred to appropriate mental health workers for pharmacological treatment and/or behavioural modification intervention.

The DSM-5 focuses mainly on DCD as a separate neurodevelopmental disorder, while the fine motor skill deficiencies related to ADHD are not documented in the DSM-5.² More research is needed to establish whether deficiencies in motor skills are usually comorbid with ADHD, or even can be regarded as diagnostic criteria for the disorder, or be considered as co-occurring pure DCD as stipulated in the DSM-5.

Limitations

The sample does not represent the general population of primary school children in Limpopo Province as it was limited to Sepedi-speaking children in a particular municipal area. Owing to the homogeneity of the sample, socio-cultural

differences could not be indicated. Future studies should include Sepedi along with other language groups. Another limitation was the small size of the ADHD-HI group, which may not represent all individuals with ADHD-HI. It may also be a limiting factor to compare 6-year-olds with 14-year-olds, who may already have entered puberty. Future studies should examine groups of children of the same age in regard to fine motor deficits and ADHD subtypes.

Conclusion

Our study showed that children with ADHD have poorer fine motor skills than typically neuro-developing children. The performance of the children with ADHD showed deficiencies in distal, complex, fine motor coordination and psychomotor speed, as measured by the Grooved Pegboard Task. The results suggest that fine motor difficulties affect mainly the predominantly inattentive and combined ADHD presentations. Given the relationship between motor problems, especially handwriting, and academic performance, assessment of fine motor skills should be part of the ADHD diagnostic process. The result of this and other studies show that the Grooved Pegboard Task can be used as a valid instrument to detect motor deficiencies in children with ADHD.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

M.M. made an extensive contribution to the concept and design of the article, collected data and drafted the article, and finalised the version to be published. B.J.P. assisted with overseeing, made substantial remarks on the prepared article, rearranged tables and approved the final version to be published. A.M. provided substantial assistance with data analysis, revised the article and approved the version to be published.

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Maternal alcohol use during pregnancy in a general national population in South Africa



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Objective: Alcohol use in pregnancy is linked with various negative health effects on the infant. The aim of this study was to examine the prevalence of maternal alcohol use during pregnancy and socio-demographic and health correlates.

Methods: Data of ever-pregnant women from the cross-sectional 'South African National Health and Nutrition Examination Survey (SANHANES-1) 2011–2012' were analysed. The sample included 5089 adolescents and adult women aged 15–55 years. They responded to questions on alcohol use, socio-demographic and health indicators.

Results: The results indicated that 3.7% (95.0% confidence interval [CI] = 3.1, 4.5) of South African women had engaged in alcohol use during their pregnancy. In adjusted analysis, being mixed race, not employed, poor self-rated health status, ever been diagnosed with tuberculosis and having partial post-traumatic stress disorder were found to be associated with alcohol use during pregnancy.

Conclusions: The study findings suggest links between socio-demographic and health variables and prenatal alcohol use, which may have public health policy implications.

Introduction

Alcohol use in pregnancy is associated with negative health effects on the infant, such as lifelong disabilities, known as foetal alcohol spectrum disorders.^{1,2} Globally, in the general population, the estimated prevalence of alcohol use during pregnancy was 9.8%,¹ and in Southern Africa this figure was 6.6%, including South Africa (13.2%).³ These estimates are largely based on local surveys, which ranged (e.g. for South Africa) from 3.2%⁴ and 6.5%⁵ to 20.4%⁶ and 42.8%.⁷ There is a lack of national data on alcohol use during pregnancy in South Africa.

Correlates of alcohol use during pregnancy include socio-demographic factors such as women of older age, having a higher income, being employed or unemployed, and ethnicity or population group (mixed race women).^{8,9,10} Moreover, smoking,^{11,12} traumatic experiences,¹³ exposure to violence⁹ and poor physical and mental health^{9,14} have been identified as risk factors for maternal alcohol use during pregnancy. There is a lack of studies investigating physical and mental correlates of maternal alcohol use during pregnancy. Understanding these correlates could lead to the development of more effective prevention strategies for maternal alcohol use.⁹

The aim of this study was to examine the prevalence of maternal alcohol use during pregnancy and socio-demographic and health correlates.

Methods

Sample and procedure

The 'South African National Health and Nutrition Examination Survey (SANHANES-1)' is a cross-sectional and multi-stage population-based household survey conducted in 2011–2012; in more detail it is discussed elsewhere.¹⁵ A total of 25532 participants (92.6%) completed the interview.¹⁵

Measures

Socio-demographic data included age, sex, employment status, population group, province and residential status.

Maternal alcohol use during pregnancy was measured through the following questions: (1) 'During pregnancy, did you ever have a drink containing alcohol?' (yes, no) and (2) 'during

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pregnancy, how many drinks containing alcohol did you have per day?' (Responses ranged from 1 = 1 or 2 per week to 8 = 10 or more per day.)¹⁵ In addition, *risky or hazardous drinking* was assessed with the three-item 'Alcohol Use Disorders Identification Test-Consumption (AUDIT-C)'. Total scores range from 0 to 12, with a score of 3 or more indicating risky or hazardous drinking or active alcohol use disorders¹⁶ (Cronbach's alpha 0.89).

Maternal tobacco use during pregnancy was assessed using the following question: 'during pregnancy, did you ever smoke tobacco or use any tobacco products?' (yes, no). In addition, current daily tobacco use was also assessed.¹⁶

Self-rated health was assessed using the following question: 'in general, how would you rate your health today?'¹⁵ Responses were dichotomised into as having 'good health' (1: very good, or 2: good) and 'poor health' (3: moderate, 4: bad or 5: very bad).

Chronic conditions were measured with the question:

has a doctor, nurse or health worker at a clinic or hospital told you that you have had any of the following conditions: high blood pressure, stroke, heart disease, heart attack or angina (chest pain), high blood cholesterol, high blood sugar or sugar diabetes?¹⁵

In addition, the participants were asked if they ever had been diagnosed with tuberculosis (yes or no).¹⁵

To assess the *experience of trauma events*, the participants were asked the following question:

Have you ever experienced any of the following events (14 events, e.g., 'severe automobile accidents' and 'learned about the sudden, unexpected death of a family member or a close friend')? (yes or no)¹⁵

Post-traumatic stress disorder (PTSD) was measured with the 'Davidson Trauma Scale (DTS)'.¹⁷ Partial PTSD was defined as having at least one PTSD symptom from each of the three PTSD symptom clusters¹⁸ (Cronbach's alpha 0.94).

Insomnia was measured with two items:

1. on the severity of nocturnal sleep problems: overall in the last 30 days, how much of a problem did you have with sleeping, such as falling asleep, waking up frequently during the night, or waking up too early in the morning?
2. and the severity of difficulty with daytime functioning overall in the last 30 days, how much of a problem did you have due to not feeling rested and refreshed during the day (e.g. feeling tired or not having energy)?

Response options ranged from 0 = none to 4 = extreme/cannot do¹⁹ (Cronbach's alpha 0.82). Insomnia symptoms were classified as having total scores of ≥ 4 -8.

Psychological distress was assessed with the 10-item Kessler questionnaire,²⁰ which has been validated in South Africa²¹

(response options: 1 = never to 5 = all the time). Total scores of 30 or more indicate severe psychological distress²⁰ (Cronbach's alpha 0.93).

Data analysis

Data were analysed using STATA software version 13.0 (Stata Corporation, College Station, TX, USA). Pearson's chi-square statistics were used to test the differences in proportions. Multivariable logistic regression was used to compute the odds ratios (with 95.0% confidence interval [CI]) to determine the associations between socio-demographic and health characteristics and maternal alcohol use during pregnancy. Independent variables found significant with the outcome (alcohol use during pregnancy) in bivariate analysis were subsequently included in the multivariable regression model. Current alcohol and tobacco use and tobacco use during pregnancy were excluded because of collinearity. No further collinearity was identified. All models were adjusted for the multi-stage sampling design.

Ethical consideration

Participants provided information on socio-demographic and health variables in face-to-face interviews after their informed consent was obtained. The current study sample is restricted to women who responded that they had ever been pregnant and were 15–55 years old ($N = 5089$). The study was approved by the research ethics committee (REC) of the Human Sciences Research Council (REC 6/16/11/11).

Results

Sample characteristics

The total sample included 5089 women who had been pregnant and were 15 to 55 years old, with a median age of 35.0 years (interquartile range [IQR] = 15) from South Africa. The majority of participants (80.0%) belonged to the black African population group, 39.6% were employed and 63.7% were residing in urban areas. About one in five of the participants (23.3%) rated their health as poor, 25.2% had one or more chronic conditions, 7.0% had ever been diagnosed with tuberculosis, 20.2% had experienced one or more traumatic events and 4.4% had a partial PTSD. In total, 7.4% of participants reported insomnia symptoms, 2.3% reported severe psychological distress, 4.8% told they had been using tobacco during their pregnancy, 9.1% told they were currently using tobacco daily and 11.9% were reported to be hazardous or harmful alcohol users.

Overall, 3.7% had been using alcohol when they were pregnant: 8.4% among the mixed race population group, 7.3% in the Free State, 7.2% in the Northern Cape and 6.1% in the Western Cape province. In bivariate analysis, it was found that the prevalence of alcohol use during pregnancy was higher among unemployed than among employed participants, in participants with poorer self-rated health status, having ever been diagnosed with tuberculosis, having traumatic stress, partial PTSD and psychological distress.

About one in four (26.1%) of prenatal alcohol users had also been using tobacco during pregnancy, and 13.5% of prenatal alcohol users were current daily tobacco users and 19.7% were hazardous or harmful alcohol users (see Table 1).

Among women reporting alcohol use during pregnancy, 59.1% reported consuming alcohol once or twice per week, 23.7% reported three or four times per week, 7.8% reported five or six times per week, 5.4% stated once or twice per day and 4.1% stated three times or more per day.

Associations with maternal alcohol use during pregnancy

In adjusted analysis, being mixed race, unemployed, poor self-rated health status, having ever been diagnosed with TB and having partial PTSD were found to be associated with alcohol use during pregnancy (see Table 2).

Discussion

To our knowledge, this is the first population-based national study assessing the prevalence of maternal alcohol use during pregnancy in South Africa. The study found a prevalence of 3.7% of maternal alcohol use during pregnancy in South Africa, which is lower than previous estimates based on local surveys in South Africa (13.2%), Southern Africa (6.6%) and globally (9.8%).^{1,3}

Compared to this national survey in South Africa, the previously reported higher rate may be attributed to local surveys targeting higher risk groups such as the mixed race population groups. In addition, for this study the reference period for recalling alcohol use during pregnancy was the participants' whole reproductive period, while the other studies recalled alcohol use only during their current pregnancy. A shorter recall reference period may produce a higher prevalence of alcohol use. Furthermore, the study found that the proportion of pregnant women who engaged in binge drinking (three or more drinks per day) during pregnancy out of all pregnant women who consumed any amount of alcohol was 4.3%, which seems similar to previous estimates for South Africa (< 5%) and lower than in 65 of 162 countries (> 25.0%).²² Binge drinking during pregnancy is a direct cause of the foetal alcohol syndrome (FAS) and therefore is of particular concern.²²

In agreement with previous studies,^{8,9,10,11,12,14} this study found that demographic characteristics (e.g. being from the mixed race group and unemployed), tobacco use, poor self-rated health status, having had tuberculosis (TB) and partial PTSD increased the risk of maternal alcohol use during pregnancy. These risk groups should be specifically targeted for preconception alcohol prevention intervention.²² Furthermore, among the nine provinces in South Africa, the study found a particularly high prevalence of maternal alcohol use during pregnancy (6.1% – 7.3%) in three provinces (Free State, Northern Cape and Western Cape). Most of these

TABLE 1: Sample characteristics and weighted prevalence of alcohol use during pregnancy.

Variable	Sample		Alcohol use during pregnancy			Chi-square
	N	%	%	95% CI	p	
Socio-demographic						
Age (years)						
All	5089	-	3.7	3.1	4.5	0.113
15–24	862	15.0	5.2	3.6	7.5	
25–34	1451	32.9	3.2	2.3	4.5	
35–55	2776	52.2	3.6	2.8	4.6	
Population group						
Black African	3457	80.0	3.2	2.5	4.1	0.003
White people	198	8.1	2.2	0.7	6.2	
Mixed race	1036	9.8	8.4	6.2	11.4	
Indian or Asian	343	2.1	4.7	1.2	16.6	
Province						
Western Cape	753	11.7	6.1	4.1	8.9	< 0.001
Eastern Cape	524	11.3	3.2	1.9	5.6	
Northern Cape	332	2.4	7.2	4.3	11.7	
Free State	305	5.4	7.3	4.6	11.2	
KwaZulu-Natal	802	18.5	3.3	2.0	5.5	
North West	619	6.7	3.2	1.8	5.8	
Gauteng	890	25.4	3.3	2.0	5.6	
Mpumalanga	473	8.0	2.0	0.9	4.2	
Limpopo	400	10.4	2.2	1.0	4.8	
Employment status						
Unemployed	3132	60.4	4.6	3.7	5.8	0.005
Employed	1860	39.6	2.2	1.5	3.1	
Residence						
Rural	1656	36.3	2.9	2.0	4.0	0.170
Urban	3132	63.7	4.2	3.3	5.3	
Health variables						
Self-rated health status						
Very good, good	3856	76.7	3.0	2.4	3.9	< 0.001
Moderate, bad, very bad	1173	23.3	5.8	4.3	7.8	
Chronic conditions						
None	3515	74.8	3.3	2.6	4.2	0.223
One or more	1300	25.2	5.0	3.7	6.6	
Ever diagnosed with TB						
No	4636	93.0	3.4	2.8	4.3	< 0.001
Yes	343	7.0	7.0	4.5	10.7	
Traumatic stress						
None	4021	79.8	3.2	2.5	4.0	0.009
One or more	899	20.2	6.0	4.2	8.4	
PTSD						
None	4824	95.6	3.5	2.8	4.2	< 0.001
Partial	197	4.4	9.6	6.0	15.1	
Insomnia						
0–3	4647	92.6	3.5	2.8	4.2	0.128
4–8	359	7.4	6.2	3.4	11.0	
Psychological distress						
< 30	4808	97.7	3.5	2.9	4.3	0.006
30 or more	127	2.3	11.5	6.2	20.4	
Tobacco use during pregnancy						
No	4638	95.2	2.7	2.1	3.4	< 0.001
Yes	419	4.8	26.1	20.5	32.6	
Current tobacco use						
None < daily	4331	90.9	2.8	2.2	3.6	< 0.001
Daily	660	9.1	13.5	10.3	17.4	
Current alcohol use						
Not hazardous or harmful	4328	88.1	1.5	1.1	2.0	< 0.001
Hazardous or harmful	679	11.9	19.7	15.8	24.3	

CI, confidence interval; PTSD, post-traumatic stress disorder; TB, tuberculosis.

TABLE 2: Multivariable logistic regression on alcohol use during pregnancy.

Variable	AOR (95% CI)	<i>P</i>
Socio-demographic		
Population group		
Black African	1 (Reference)	
White people	1.64 (0.71, 3.78)	0.246
Mixed race	2.91 (1.94, 4.36)	<0.001
Indian or Asian	1.21 (0.34, 4.31)	0.763
Employment status		
Employed	1 (Reference)	
Not formally employed	1.78 (1.15, 2.74)	0.009
Health variables		
Self-rated health status		
Very good, good	1 (Reference)	
Moderate, bad, very bad	1.61 (1.09, 2.39)	0.017
Ever diagnosed with TB		
No	1 (Reference)	
Yes	1.94 (1.20, 3.14)	0.007
Traumatic stress		
None	1 (Reference)	
One or more	1.32 (0.83, 2.09)	0.245
PTSD		
None	1 (Reference)	
Partial	2.02 (1.12, 3.66)	0.020
Psychological distress		
< 30	1 (Reference)	
30 or more	1.64 (0.77, 3.47)	0.198

AOR, adjusted odds ratio; CI, confidence interval; PTSD, post-traumatic stress disorder; TB, tuberculosis.

three provinces have the highest proportion of mixed race population groups in South Africa, emphasising the need to target the mixed race female population with preconception alcohol prevention intervention.

The co-occurrence between tobacco and alcohol use is well established.⁹ The fact that both substances (alcohol and tobacco) can have negative effects on the foetus; therefore, it is of great importance to consider both in the assessment and intervention strategies.⁹ The association found between poor mental health (partial PTSD, and psychological distress in bivariate analysis) and prenatal alcohol use may be explained by the comorbidity with common mental disorders such as anxiety and depression,⁹ whereby self-medication with alcohol use may be one of the mechanisms.⁹ The association between TB and alcohol use in general has been established, with the latter being a risk factor for the former.²³ As this study could not determine the direction of the relationships because of its cross-sectional nature, longitudinal studies are needed to clarify this.

Study limitations

The study variables of maternal alcohol use during pregnancy were assessed retrospectively over possibly long periods, which may have introduced a recall bias. The self-report of prenatal alcohol use is probably a large underestimate.²⁴ Furthermore, the cross-sectional nature of the study limits our ability to establish causality.

Conclusion

This study found a prevalence rate of 3.7% of maternal alcohol use during pregnancy. The risk factors identified

(being mixed race, unemployed, poor self-rated health status, having had TB and partial PTSD) can help in identifying appropriate interventions.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced in writing this article.

Authors' contributions


K.P. and S.P. designed the study. K.P. analysed the data and wrote the draft article. Both authors read and approved the final manuscript.

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A hermeneutic analysis of delusion content from the casebooks of the Grahamstown Lunatic Asylum, 1890–1907

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Background and objectives: This study sought to investigate the content of the delusions recorded in the casebooks of the Grahamstown Lunatic Asylum as a means to explore how the colonial context shaped or influenced psychopathology. To this end, the study aimed to (1) identify the sociopolitical events of the time period that were reflected in the delusion content presented by the patients and (2) pinpoint discernible patterns in the delusion content based on the race and gender of the patient. The study was delimited to the period of Dr T.D. Greenlees' tenure as medical superintendent, 1890–1907.

Methodology: The study sampled the casebook records of 400 patients. A qualitative analysis of the casebooks was followed by adopting a Gadamerian approach to hermeneutics. The analysis drew upon the clearly articulated method and step-by-step approach for Gadamerian hermeneutics outlined by Fleming, Gaidys and Robb.

Results: The sociocultural and political events of South Africa during the turn of the 20th century had a marked influence on the content of the patients' delusions. The South African War (1899–1902), the rinderpest epidemic of 1896–1898, diamond mining in Kimberley and the discovery of gold in the Witwatersrand were common features in the delusion content. Moreover, there is evidence of discernible patterns in the content of the delusions based on the race and gender of the patients.

Conclusion: The study identified how the colonial context influenced the delusional content presented by the patients of the Grahamstown Lunatic Asylum. Of key significance is the fact that the study retrieved themes in the delusional content presented by black subjects that were silenced, omitted or censored from psychiatric texts published during colonialism.

Introduction

In exploring the history of psychopathology in South Africa, Sally Swartz¹ is interested in two key pivots:

On the one hand, this ... [is] a history of disordered states of mind, and their recurring patterns over time, in South Africa. Thus, it is a history of the ways in which historical contexts enfold, shape and make insanity. On the other hand, it is a history of a science, of the men and women who defined, described and treated insanity. A history such as this also touches upon the madness of the state itself, the 'something rotten' of governments and their institutions. Hence, this is a history that must also touch on colonialism and the rifts and cracks of institutionalised racism. (p. 261)

In terms of the latter pivot, a wealth of scholarship has explored how the Cape Colony of the 19th century consisted of a network of psychiatric institutions that were underpinned by policies and practices of racial discrimination and segregation.² One expression thereof was the building of separate institutions for black patients and white patients. This included Valkenberg Asylum (1891), which was established solely for white patients (by 1916 the asylum admitted black male patients and in 1919 black female patients),³ and Fort Beaufort Asylum (1894), which was reserved exclusively for black patients. Asylums that cared for white patients were allocated more resources. In contrast, the Fort Beaufort Asylum was primarily considered as an institution for cheap custodial care of black patients. For scholars like Sukeri, Betancourt and Emsley,⁴ historical studies of mental health care in the former Cape Colony are instrumental in revealing how the colonial and apartheid past laid a foundation for the 'inequitable distribution of mental health services' in the present-day Eastern Cape province of South Africa.

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While the colonial history of psychiatric institutions has received much attention, Swartz's former point, the investigation of how the colonial context shaped or influenced psychopathology, is still in its infancy.

Analysing the content of the delusions contained in the casebooks of psychiatric institutions offers a means to embark upon such an investigation as 'delusions amplify social, political, economic and religious concerns and desires'.⁵

A growing body of contemporary scholarship in the history of psychiatry has not only established how the content of delusions is reflective of the sociopolitical context and the zeitgeist of the time but also how the content is influenced by a patient's gender and race.^{6,7,8,9,10,11,12,13,14} For example, in David Wright's¹⁴ analysis of the patients admitted to the Buckinghamshire Lunatic Asylum in Victorian England, he found that the content of women's delusions:

tended to be associated with kinship, family and household, and personal health, a function of the cultural importance of these aspects to the changing social circumstances in which women's social role became increasingly associated with the domestic sphere. Male delusions, by contrast were most often associated with work, status and property. Thus, the changing social and sexual role expectations of Victorian women and men mad were reflected and distorted in the content of their own false beliefs. (p. 153)

This article seeks to contribute to the aforementioned body of scholarship by analysing the content of the delusions recorded in the casebooks of the Grahamstown Lunatic Asylum (GLA), from 1890 to 1907. The analysis aims to (1) identify the sociopolitical events of the time period that were reflected in the content of the delusions presented by the patients and (2) pinpoint discernible patterns in the delusion content based on the race and gender of the patient.

The GLA (presently known as the Fort England Hospital) was established in 1875 in Makhanda, formerly known as Grahamstown. From 1875 to 1890, Dr Robert Hullah was the superintendent of the GLA.

Thereafter, Dr Thomas Duncan Greenlees (1858–1929) was appointed as the medical superintendent from 1890 to 1907. Greenlees wrote a considerable number of scientific articles, which were published in leading journals of the time, including the *South African Medical Record* (now known as the *South African Medical Journal*), the *Journal of Mental Science* (now known as *The British Journal of Psychiatry*) and the *American Journal of Insanity* (now known as the *American Journal of Psychiatry*). In addition, Greenlees published a number of articles in the newspapers that circulated in the town, and he was prolific in the talks and speeches that he delivered to the medical community and the general public of the town.¹⁵ This study is delimited to the period of Greenlees's tenure for two primary reasons. Firstly, no casebooks were kept during Hullah's tenure. Secondly, not only did Greenlees keep copious casebook records during his time of office, but the patient body of the GLA consisted

of black and white subjects. By 1908, the GLA was reserved for white patients only. Thus, by locating the study to the period of Greenlees's tenure, the content of delusions for black and white patients can be analysed for the presence of discernible patterns.

Research methods

Design and data collection

The study was a qualitative investigation of the delusions recorded in the casebooks of the GLA. The casebooks are archived at the Western Cape Archives and Record Service (WCARS). Permission to access the casebooks was obtained from the head of the WCARS.

Setting

Over the period of investigation, the GLA admitted patients from across the reaches of the Cape Colony.

Thus, the content of the asylum's casebooks features the broader cultural, social, political and economic backdrop of the Colony.

Study population and sampling strategy

The GLA admitted, in terms of race and gender, a heterogeneous patient body that totalled, from 1890 to 1906, 2241 patients.¹⁶ In an effort to offer a representative casebook sample of the heterogeneous patient body of the GLA, purposive sampling was employed.¹⁷ A total of 400 cases were sampled for the study.

Data analysis

The sampled casebooks were analysed by adopting a Gadamerian approach to hermeneutics.¹⁸ The analysis drew upon the clearly articulated method and step-by-step approach for Gadamerian hermeneutics outlined by Fleming, Gaidys and Robb.¹⁹ Very briefly, this entailed investigating every sentence of the casebooks to develop a meaningful understanding of the subject matter and the identification of themes and patterns in the delusional content. Once the themes and patterns were identified, the casebooks were repeatedly read to offer a rich and detailed interpretation of the delusional content. To this end, the analysis engaged in a hermeneutic circle in which the movement or interplay between the corpus of sampled casebooks to the records of individual patients allowed for the expansion of understanding as well as the contextualisation and comprehension of the themes and patterns.

Ethical consideration

This article reports on the findings of a larger study¹⁶ that obtained ethics approval from the University of Pretoria's Faculty of Health Sciences Research Ethics Committee. The article retains the anonymity of the Grahamstown Lunatic Asylum's patients by using pseudonyms; however, in an effort to humanise the subjects, the patients are provided

with full names rather than being identified by initials. In the article, a patient's pseudonym is followed by an HGM citation that indicates the volume and page number of the relevant casebook accessed from the Western Cape Archives and Record Service.

The terminology used during the period under exploration permeates the article so as to convey the prevailing sentiments of the time, even though some terms are, or have become, demeaning and even derogatory in contemporary times.

Results

Sociopolitical events reflected in the delusional content

The sociopolitical events of South Africa during the turn of the 20th century had a marked influence on the content of the patients' delusions. The South African War (1899–1902) (also referred to as the Second Boer War), the rinderpest epidemic of 1896–1898,²⁰ diamond mining in Kimberley, the discovery of gold in the Witwatersrand, as well as the introduction and extension of electrification and telecommunication schemes across the Colony were common features in the delusional content of the patients.

To expand upon one of the events, the South African War weighed on the minds of the patients and punctuated the content of their delusions. There are numerous cases where the Colony's civilian subjects were prey to delusions of guilt and persecution. Sean Fraser (HGM 7, p. 57), a farrier, considered himself 'the cause of the Boer War', as well as 'the cause of all the trouble in S. Africa'. The homemaker Natalie Conroy (HGM 21, p. 37) was convinced that she was the cause of the war and all the 'ills of the world'.

Kelebogile Sewela (HGM 5, p. 180), a 21-year-old from Beaufort West, was 'certain that the Dutch wish to destroy the railways, and wants to prevent them'. For the interest that he professed in wanting to secure the railways, he believed that he was being watched by spies. A few casebooks illustrate the pain, suffering and anguish of individuals caught in the bloodstained battlefields and concentration camps of the war. Joseph Woodrow (HGM 7, p. 151) was a staff officer throughout the war. His medical certificates portray an individual who was exposed to the 'hardships of active service': he was unable to sleep at night, he appeared terribly thin and he was beset by a desire to take his own life. He laboured under a delusion that he was to be court-martialled, and that he was to be 'shot or otherwise punished'. Kierin van Aarde (HGM 21, p. 88), an Afrikaner from Burgersdorp, was an inmate of a concentration camp. While incarcerated at the camp, two of her children died, which led to the onset of her mental affliction. At the end of the war, when she returned home, her distress did not abate, and her husband reported that she was violent towards him and would wander into the veld (open grasslands). On arrival at the asylum, the casebook indicates that she presented a delusion that while she was in the concentration camp, the wardens tried to poison her with 'sheep dip'.

Patterns in the delusional content

In the ensuing discussion, the study foregrounds how the delusions of grandeur presented by the GLA patients provide not only an index of how the colonial context influenced the content of delusions but also reveal the marked presence of a discernible pattern based on the race and gender of the patient.

Accordingly, the discussion explores how the race-gender profile of the patients yielded distinctive patterns in the delusional content.

Delusions presented by black subjects

For black patients, delusions of grandeur took two primary forms. In the first form, the delusions were based on or set in an African worldview.²¹ For black male patients, this was expressed in terms of professing vast tracts of land or plentiful stock of sheep, goats and cattle, and for some, wealth and importance was claimed by having 'at least 1000 children' (HGM 13, p. 109) or being a chief who has '24 wives and 50 children' (HGM 4, p. 88). A recurrent theme in the delusions of grandeur presented by black women is a belief in either being pregnant or having given birth to an unconscionable number of children. Nomasomi Bila (HGM 17, p. 68) believed that she was a great personage and had 100 children, while Patricia Hanekom (HGM 20, p. 21) held that she was 'better than other women' and had 1000 children. Thandiwe Lebelo (HGM 18, p. 39) laboured under the delusion that she was advanced in pregnancy, and that Queen Victoria was to attend to her.

In the second form, there are multiple instances where the delusions of grandeur presented by black subjects featured the content and figures of the imperial and colonial context. For instance, Tinashe Dlodlu (HGM 5, p. 172) was emphatic that he was 'going to breakfast with the Queen and Oom Paul' (the nickname of Paul Kruger who was president of the Zuid-Afrikaansche Republiek from 1883 to 1900), Sinalo Dandalo (HGM 18, p. 223) maintained that 'she is Queen Wilhelmina' (Wilhelmina Helena Pauline Maria was queen of the Netherlands from 1890 to 1948) and Lefika Gama (HGM 15, p. 14) proudly declared that his father was God, and that his mother was Queen Victoria.

A prominent theme in the content of the delusions of grandeur were black subjects believing themselves to be white. The black subjects' claims to being white could be regarded as a desire for wealth, status and stature.³ The labourer Elias Manamela (HGM 15, p. 37) was convinced that he 'is a white man' who 'has a large estate and lots of money'. The peasant Ican Makgabo (HGM 15, p. 82) informed the assistant medical officer, Dr Leslie, that he 'is a white man', and the general servant Marinda le Grange (HGM 16, p. 243), a woman of mixed race originally from the island of St Helena, asserted that 'she is white having been painted black'.

A focal point in some of the cases where patients contended that they were white was not a desire for wealth but a

disturbing contempt and scorn for black identity. The middle-aged housewife Anri Pretorius of mixed race (HGM 20, p. 32) declared that she was 'going to beat all black people white'. Nqobile Zozo (HGM 15, p. 56), a general servant, called himself an Englishman and took on the name of his former employer, Mr Purdon. On admission to the GLA, he declared that 'he is Mr Purdon and that he will never be a [black] again'.

As a tentative attempt to understand and interpret the anti-black sentiments of Anri and Nqobile, I turn to Frantz Fanon's theory outlined in *Black Skin, White Masks*.²² Fanon identifies that a black subject's 'wish to be white' is symptomatic of a racist society that 'proclaims the superiority of one race'.²² In the contours of such a society, Fanon²² delineates that:

I begin to suffer from not being a white man to the degree that the white man imposes discrimination on me, makes me a colonized native, robs me of all worth, all individuality, tells me that I am a parasite on the world, that I must bring myself as quickly as possible into step with the white world [...] Then I will quite simply try to make myself white: that is, I will compel the white man to acknowledge that I am human. (p. 73)

In this quote, Fanon contends that the racist suppression of black people into servitude and disseminating discourses of their inferiority to whiteness, leads black subjects to suffer feelings of 'insignificance'.²² The 'only way out' of such feelings is for the black subject to emulate white people.²² Such a quest steers black subjects to become obsessed with 'attracting the attention of the white man', and to concerns 'with being powerful like the white man'.²² Thus, a black subject is confronted with a dilemma, namely, to *turn white or disappear* (italics in original).²² It is this dilemma that Fanon, over the course of his book, seeks to dismantle.

By adopting a Fanonian reading, which seeks to examine the trauma and dehumanisation engendered by colonialism and racism,²³ the sentiments professed by Anri and Nqobile can be understood in terms of how their lives were subjugated by colonial regimes and how their personhood was abased by colonial discourses that propagated their perceived inferiority, weakness and deficiency. Such acts of dehumanisation, racism and psychic suffering inflicted by colonial domination possibly resulted in their renunciation of a black identity, and efforts to imagine or make themselves and others white people.

In contrast to the delusions where black subjects imagined themselves as white, the casebooks also contain several cases where a black subject's delusions express a passionate condemnation of white supremacy, as well as a simmering anger at colonial policies. Shima Thamae (HGM 5, p. 191) declared that he was sent by God to preach to black people to repent of their sins and to 'keep out of the white man's clutches'. In an indictment against the Colony's forced dispossession of black subjects from their land, Vuyo Sondiyazi (HGM 5, p. 122) fervently voiced that 'he is the Chief Sandile sent down from Heaven to claim land taken from him by Government'.

Illuminating in Vuyo's statement is his reference to Chief Mgolombane Sandile Ngqika (1820–1878). Chief Sandile led the Xhosa armies in several of the Cape Frontier Wars (fought between 1779 and 1879).²⁴ He was respected by his people, gained a reputation as a hero and was revered by the other Xhosa chiefs.²⁵ In this way, the content of Vuyo's delusion reveals that he was conversant in the biographies of black leaders who had stood up to the injustices of colonialism, and who refused to submit to claims regarding the superiority of white rule. Thus, it may be plausible to suggest that Vuyo's invoking of Chief Sandile spoke against the oppression and subjugation of black subjects that the colonial project engaged in.

Delusions presented by white subjects

For white men, delusions of grandeur took the form of possessing great wealth, being successful in business ventures and believing in their elevated importance, by being bestowed with ranks and titles, as well being elected into exclusive fraternities and societies. While most white men professed to being royalty, in particular the King of England, there was also a significant number of men that professed to being some of the influential figures that dominated the political and financial spheres of the 19th century Cape Colony. One such figure that takes centre stage in the delusional content of several patients is Cecil John Rhodes.

To understand and interpret this phenomenon, I turn to the work of Laure Murat.²⁶ In the Parisian asylums of the 19th century, Murat identifies that the figure of Napoleon came to dominate the content of the delusions presented by the patients. This observation leads Murat to ask, 'why and in what way did the image of Napoleon lend itself more willingly to megalomania than the figure of, say, Charlemagne or Louis XIV?'²⁶ After embarking on an insightful and thorough investigation, Murat offers the following conclusion:

If any role is going to be adopted, it may as well be that of the most powerful, most feared figure – who also happened to be the most recent one. Napoleon was the image par excellence of a superman, the very symbol of modern omnipotence and domination. Fair enough. Yet the singularity of this case also rests on another feature that sets Napoleon apart from every monarch who preceded or followed him. Compared with kings who incarnated the dynastic past of an age-old monarchy based on divine right, Napoleon was the Usurper, the little corporal from Corsica who came to rule Europe all on his own. His legitimacy was not *inherited* but *won* through political genius and armed might. Whereas a king was crowned by the grace of God and the luck of birth, Napoleon assumed his crown on his own authority [...]. It matters little whether he was a savior or a dictator, adored or hated: in the eyes of his contemporaries, Napoleon represented the unique case of an adventurer who climbed to the head of a country all on his own. In the end, he was a perfect example of the American ideal of a self-made man. (p. 132, [italics in original])²⁶

Drawing on Murat's hypothesis, I suggest that Rhodes' success encapsulated the myths and tropes of colonialism for

white immigrants and settlers. Rhodes (1853–1902) was the son of a vicar and grew up in Hertfordshire, England. As he was a sickly child, his family sent him to South Africa in the hope that his health would improve. He arrived in South Africa at the age of 17. A year later, he entered the diamond trade of Kimberley. In the decades to follow, he became an ‘African Colossus’,²⁷ who rapaciously seized 2.6 million square kilometers of Africa and brought it under imperial rule, and after gaining near control of the world’s diamond market, was described as ‘the first of the new Dynasty of Money Kings [who are] the real rulers of the Modern World’.²⁷ Rhodes, without a royal lineage, entered the Colony and became a self-made man, whose reach, influence and image extended around the globe.

For recent immigrants to the Colony and settlers alike, Rhodes must have encapsulated the promises and potential of life in the Colony. For example, Conor Walsh (HGM 8, p. 91), a recent Irish immigrant to the Colony and engaged as a diamond miner in Kimberley, was remanded in custody following a violent and abusive outburst. During his detention, he was certified to be insane and arrived at the GLA claiming to be Cecil Rhodes. For some of the male patients at the asylum, like Conor, their humble beginnings in the British Isles and their immigration to the Colony was similar to Rhodes’s background, and thus they may have revered and mythologised the image of Rhodes and aspired to his success.

Professing to be a queen and of noble lineage was an intriguingly dominant theme in the delusions of grandeur presented by white women. Kate Willis’ (HGM 16, p. 117) medical certificates indicate that she claimed that she was the Queen of England. On admission to the asylum, Kate declared that she was the Queen of Cape Town. The domestic servant Hannah Baron (HGM 21, p. 111) believed that she had ‘blue blood’, and she would often ‘treat others with contempt’. A peculiar feature that can be observed in a portion of the delusions of grandeur was the women insisting that they were pregnant.¹²

In the delusions of grandeur presented by women, there is an absence of the content that predominated in white male delusions: success, status and importance achieved by business ventures, membership of elite fraternities and claims of being influential figures in the Colony’s political affairs. In this sense, the delusional content presented by white women remains fixed to the valuations of female success in the Victorian era. To elucidate, the pregnancy content within the delusions of grandeur is a mirror of the dominant views of patriarchal culture that valued women in the roles of maternity and motherhood and restricted them to the confines of the domestic realm. A chance to envisage life beyond such a realm was possibly encapsulated in the lives of noble birth and being crowned a queen. Thus, the content of the women’s delusions echoed Victorian gender roles, rather than expressing an alternative worldview, one where dominant patriarchal norms were dislodged and women

claimed success by conceiving inventions, amassing great wealth on the stock market and, without the benefit of noble birth, becoming a self-made woman.

Discussion

Roy Porter²⁸ astutely observes that ‘there is no more splendid cache of psychopathological material than the delusions recorded over the centuries by the insane’. Yet, it is important to acknowledge that the lines of enquiry offered to the researcher are shaped by the medium in which the delusions were recorded. Delusions recorded by patients in their letters and diaries offer the researcher with insight into the voice of the patient and their personal account of psychosis.^{7,29,30} In contrast, the delusions recorded in the casebooks of psychiatric institutions are often only curt entries logged by the doctor. Although casebooks offer the researcher only an epigrammatic vignette of the content of delusions, once the individual vignettes are strung together, shared patterns based on the race-gender profile of the patients become discernible. Thus, in the exploration of the GLA’s casebooks, by seeking to string together the vignettes from the same demographic profile of patients, the study provides a portrait of the shared tropes, patterns and motifs in the delusional content.

In the delusions of grandeur presented by white men, a significant number of men professed to be some of the influential political figures that dominated in the Cape Colony, including Cecil Rhodes. For white women, there is a surprising paucity of references to imaginings of being successful in business and claims of being one of the prominent political leaders of the Colony. Instead, their delusions were characterised by achievements confined to the domestic sphere, triumphs of pregnancy and birth, and royal status. Catharine Coleborne¹⁰ insightfully asserts that the content of delusions ‘can provide more information about gender and behaviour, along with ideas about colonial life’. Following this line of reasoning, the delusions presented by the women of the GLA may offer some perspective on the extent to which the patriarchal society of the Colony had scoured their consciousness of ambitions, visions, thoughts and ideas that departed from maternal and marital modes of existence.

The delusions of grandeur presented by black subjects took two primary forms. In the first form, the content of the delusions was based on the markers that African societies of the 19th century held to be indicative of wealth, status and achievement. The delusions referred to abundant animal stocks, being a chief and having multiple wives and children. In the second form, the delusions abounded with content from the colonial context. While some black subjects imagined forms of grandeur, by either dining with royalty or being the progeny of Queen Victoria, others claimed eminence and wealth by believing they were white individuals with large sums of money. In some instances, a black subject’s desire to be white was linked to an abhorrence of black identity. For these black subjects, a Fanonian reading of their desire to be

white while simultaneously rejecting black identity foregrounds the way colonial rules, practices and discourses had enchaind their lives to feelings of insignificance. Yet, there were also delusions that were a protest against colonial rule. In particular, Vuyo Sondiyazi's (HGM 5, p. 122) passionate assertion that 'he is the Chief Sandile sent down from Heaven to claim land taken from him by Government' can be read as a bold act of voicing detestation and scorn for the colonial policies that dispossessed black subjects of their land. Furthermore, it is plausible that Chief Sandile was invoked in Vuyo's delusions as he was an icon who opposed and defied imperial domination, as well as an icon who could liberate black subjects from feelings of inferiority and insignificance.

The casebooks of the GLA provide a detailed inventory of the delusions of grandeur presented by black subjects that featured the content and figures of the imperial and colonial context; however, the psychiatrists of the Colony did not publish such findings. In several of Greenlees' publications,^{31,32,33} he provides examples of the cases of delusions presented at the GLA but none of these cases included black subjects. While Greenlees' texts were mute on the content of delusions presented by black subjects, they were vociferous in claiming that black subjects had an 'infantile mind'³⁴ and the type, form and content of their psychopathology was 'simpler'³⁴ than in white subjects.^{35,36} Pursuing this line of thought, John Conry,³⁷ the medical superintendent of the Fort Beaufort Asylum, professed that:

... the Native seldom expresses delusions of an exalted character, more frequently his delusions concern stock, *i.e.*, cattle, sheep, etc., that he possesses, or that have been taken from him, or that he has a number of wives and children when such is not a fact. His delusions follow the line of his normal mentalisation. (p. 34)

Conry thus omits the delusions of grandeur presented by black subjects that contain colonial symbolism to peddle a racist conception of the African mind as inferior, weak and primitive.^{34,35,36} This study has therefore retrieved the delusional content that was silenced, omitted or censored from psychiatric texts published during colonialism. In doing so, the study offers not only a countervail to the central discourses of colonial psychiatry but also identifies how the colonial context influenced the delusional content presented by the GLA's black patients.

Conclusion

The study identified how the colonial context influenced the delusional content presented by the patients of the GLA. Moreover, the study retrieved themes in the delusional content of black subjects that were silenced, omitted or censored from psychiatric texts published during colonialism. The omissions and inconsistencies between the casebooks and the published records of an asylum are for Jonathan Andrews³⁸ an important tool for a researcher to identify the 'areas of bias and censorship' that were held by a psychiatrist. In this way, the article foregrounds how

Greenlees and Conry's published texts engaged in acts of censorship and erasure in favour of affirming colonial paradigms and discourses.

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