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Equine-Assisted Therapy in South Africa: A Scoping Review of Applications and Effectiveness

Daniel Lesiba Letsoalo[1], Martine Bronwyn Menoe[2] & Mahlatsi Venolia Semenya [3]

[1] Department of Psychology, University of South Africa, Pretoria, South Africa.
[2] Caperbush Street, Hartbeespoort, South Africa.
[3] Little Manhattan, Pretoria West, South Africa

ABSTRACT

Equine-assisted therapy (EAT) has gained interest as an alternative treatment method. It shows promise in treating various physical, neurological, and mental conditions. South Africa, a country with many of these conditions, has introduced EAT as an alternative treatment in recent years. However, its effectiveness and the populations it benefits the most are still unclear. Therefore, the purpose of this study was to systematically map the existing literature on EAT to determine the populations where it is applied most and its effectiveness. Arksey and O'Malley's methodology framework was followed to perform a scoping review. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews (PRISMA-ScR) guidelines were used for reporting, transparency and consistency. EBSCOHost (Academic Search Ultimate, APA PsycInfo), CINAHL with full text, Global Health, MEDLINE, Sabinet African Journals, and Google Scholar databases were searched and complemented by a freehand search of Google. Coverage of EAT was assessed in studies published between 2006 and 2024. The findings showed that EAT is commonly applied in populations with mental, neurological, and physical disabilities, and it resulted in positive treatment outcomes. The study suggests the importance of raising awareness and providing psychoeducation about EAT to the public. The study also contributes to the understanding of the applications and effectiveness of EAT, connecting with allied professions and providing evidence-based recommendations. Furthermore, the findings highlight the potential of EAT as a valuable therapeutic intervention and underscore the need for a continuous review of alternative treatment modalities, particularly emerging ones like EAT, in South Africa.

Keywords: *Equine-Assisted Therapy (EAT), Animal-Assisted Therapy (AAT), Applications, Effectiveness, Scoping Review*

Correspondence
Letsoalo Daniel Lesiba
Email: letsodl@unisa.ac.za

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INTRODUCTION

Equine-Assisted Therapy (EAT), which will be used interchangeably with Equine-Assisted Psychotherapy in this study (EAP), alternatively referred to as hippotherapy, equestrian therapy, horse therapy, horse riding therapy, therapeutic horseback riding, equine therapy, or equine-facilitated psychotherapy, has gained popularity in recent years as an alternative form of intervention for individuals

who suffer from various mental, neurological and physical conditions.[1] Sudhadevi and Surya define it as "a form of experiential therapy which involves activities with horses to promote human physical and mental health at Licensed EAT centres."[2] Horses are incorporated as an integral part of the therapeutic process to improve the mental and physical outcomes of clients and/or patients. The fact that the practice of EAT is carried out at licensed centres highlights the importance of regulation, which aids to minimise the risks associated with working with clients outdoors. In other words, people who facilitate such sessions must be qualified to do so, and this is the case since EAT therapeutic sessions are facilitated by a therapeutic team consisting of a therapist (usually a registered psychologist, social worker, occupational therapist, or counsellor) and the horse specialist.[3] EAT (which is the focus of this paper) falls under the broader category of Animal-Assisted Therapy (AAT). In addition to horses, the most used animals in AAT include but are not limited to horses, dogs, dolphins, guinea pigs, llamas and rabbits. AAT as a broad category can be described as a "goal-directed intervention in which animals that meet specific criteria are an integral part of a treatment that assists in the healing process and rehabilitation of individuals with physical, neurological and mental health conditions."[4] In some cases, these animals are used in combination. However, in this review, the focus is on EAT which use horses.[5]

According to Fung and colleagues, EAT has been widely used in various treatment settings and has demonstrated positive therapeutic effects in various psychological, neurological and physical conditions.[6] The notion underpinning the effectiveness of the EAT treatment modality is that companionship with animals improves the mental and physical well-being of individuals.[7] That is, the stroking, patting and movement of horses significantly reduce stress levels, creating a calm environment, reducing anxiety, and improving functional ability.[8] For those with cerebral palsy, for example, the benefits are multifold and include, among others, improved balance, motor control, coordination, behavioural tics, and posture.[9] The therapeutic benefits of EAT on those with physical disabilities were comprehensively captured by Farrell who stated that "the therapeutic value of riding is that as the horse walks, the rider feels the movement from left to right and up and down, as well as the forward motion of the horse. This develops both the core strength and the all-important 'midline' so often poorly developed in children with physical handicaps".[10]

The therapeutic benefits for people with autism have also been documented. For example, one 6-year-old autistic student at the Lovelane Special Needs Centre in Massachusetts, who was exposed to supervised horse riding, expressed enjoyment and happiness after a therapeutic session and was once quoted saying, "Riding a horse makes me happy…I love it" and another was quoted saying "just looking at the horse makes me smile."[11] The latter are some of the cases that demonstrate the positive therapeutic effects of EAT. The modality can also be applied to patients who are being treated for substance-related and addictive disorders, anxiety, mood disorders, behavioural disorders, attention deficit hyperactivity disorder (ADHD), autism spectrum and related disorders, and bipolar and related disorders.[12] EAT has

[1] Marc Roffey et al., "Equine Assisted Psychotherapy," *South African Psychiatry Review* 17 (2018): 7–15.
[2] M. Sudhadevi and M Surya, "Equine-Assisted Therapy ," *International Journal of Multidisciplinary Educational Research* 5, no. 8 (2020): 136–40.
[3] Lucinda Johns, Shaida Bobat, and Juanita Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study," *Journal of Psychology in Africa* 26, no. 2 (April 29, 2016): 199–203, https://doi.org/10.1080/14330237.2016.1167333.
[4] Monique De Milander, Samantha Bradley, and Rykie Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ," *South African Journal for Research in Sport Physical Education and Recreation* 38, no. 3 (2016): 37–49.
[5] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ."
[6] Allison Fung, "The Rich History and Evolution of Animal-Assisted Therapy," *Journal of Alternative, Complementary & Integrative Medicine* 10, no. 1 (January 31, 2024): 1–6, https://doi.org/10.24966/ACIM-7562/100443.
[7] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study."
[8] Sudhadevi and Surya, "Equine-Assisted Therapy ."
[9] Good Therapy Editor Team, "Equine–Assisted Therapy ," November 12, 2017, https://www.goodtherapy.org/learn-about-therapy/types/equine-assisted-therapy.
[10] Melanie Farrell, "Equine Therapy," accessed April 21, 2024, https://sarda.co.za/wp-content/uploads/2014/10/Equine-therapy-2-Polo-Magazine.pdf.
[11] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[12] Sudhadevi and Surya, "Equine-Assisted Therapy," 136-140.

also been found to be effective in improving young people's ability to communicate and relate to others, as well as improving adolescents' social and emotional functional ability.[13]

LITERATURE REVIEW

Brief history of EAT

The role of horses in the treatment of medical and mental conditions dates back centuries.[14] Its origin can be traced back to 460 BC when Hippocrates, a renowned Greek physician, recognised the therapeutic benefits that horses have whilst riding one and referred to its "healing rhythms."[15] Hippocrates meticulously observed how the natural movement of horses affected posture, coordination, balance, strength, and sensorimotor systems. The latter ancient recognition laid the foundation for the use of horses in therapeutic settings, which other researchers have expanded upon.[16] Following the foundation laid by Hippocrates, the therapeutic benefits of horses received even more attention in the 20th century, strengthening their appreciation and the effects they have in improving patients' mental and physical health. In recent years, many patients around the world have expressed the benefits they reaped from riding horses as captured in the following expression from some of the users, "equine-assisted therapy offers a space for recovery."[17] As a vote of confidence in the modality for bringing therapeutic relief, be it recovering from physical injury, post-traumatic stress disorder (PTSD), or any other mental difficulties, some patients who were treated with the intervention alluded that "an hour on the saddle was worth ten on the couch."[18] In effect, the latter indicates that the modality is preferred by some over the conventional way of conducting therapy. Despite the acceptance of the modality and its effectiveness in recent years, EAT was for a significant period viewed as a nouveau treatment modality. Most equine and medical professionals did not pay much attention to its usefulness until 1952, during the Helsinki Olympic Games when a Danish woman named Liz Hartel, who was suffering from polio-induced paralysis, won the silver medal for dressage.[19] This reignited the appreciation of incorporating and using EAT as a treatment and supplementary modality for rehabilitation purposes in various countries. The rehabilitative programs were focused on the physical, neurological, and psychosocial aspects of treatment.

Equine-Assisted Therapy process and its benefits

Equine-assisted therapy (EAT) as a treatment modality can be directive or nondirective. It is also flexible and can be used with individuals, couples, families and groups as a standalone intervention or supplementary to other modalities.[20] In EAT, horses work with clients with various mental, physical and neurological conditions under the guidance and supervision of a mental health professional and equine professional who together form the treatment team.[21] The mental health professional, together with the equine specialist, captures the client's experiences with the horses as the client metaphorically reenacts his or her life experiences, current struggles and relationships. That is, during the sessions, clients' representations of their inner world begin to unravel in concrete, physical, metaphorical and symbolic ways. However, these representations are subserved by the relationship between the horse and the client and as such develop into meaningful and powerful healing experiences.[22]

The benefits of EAT as opposed to traditional talk therapy are multifold. Firstly, it reduces the pressure and stress on clients to share their private matters with a stranger.[23] Secondly, it allows clients to develop relationships, and practice social skills which unlock their imagination. Thirdly, unlike humans,

[13] Sudhadevi and Surya, "Equine-Assisted Therapy," 136-140
[14] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[15] Nelly Sophie Lönker, Kim Fechner, and Ahmed Abd El Wahed, "Horses as a Crucial Part of One Health," *Veterinary Sciences* 7, no. 1 (February 29, 2020): 28, https://doi.org/10.3390/vetsci7010028.
[16] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[17] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[18] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[19] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[20] Kay Sudekum Trotter, *Harnessing the Power of Equine Assisted Counseling: Adding Animal Assisted Therapy to Your Practice* (New York, NY: Routledge/Taylor & Francis, 2012).
[21] Lynn Thomas, Mark Lytle, and Brenda Dammann, *Transforming Therapy through Horses: Case Stories of Teaching the EAGALA Model in Action* (Eagala, 2016).
[22] Joy Nussen and Leslie Becker, *Soul Recovery* (Norco, CA: Equine Works, 2012).
[23] Catherine Waite and Lisa Bourke, "' It's Different with a Horse': Horses as a Tool for Engagement in a Horse Therapy Program for Marginalised Young People," *Youth Studies Australia [Online]* 32, no. 4 (2013): 15–24.

animals provide clients with immediate feedback on their emotional and social behaviours as they instantly react to clients' conduct and internal emotional state or turmoil.[24] Additionally, animals can also serve as transitional objects assisting clients who project subjective experiences to do so onto a real object, although this is not meant to serve as a substitute for a therapeutic alliance, it helps facilitate the relationship.[25] Furthermore, animals have an inherent intuition to automatically read body language better than humans due to their enhanced senses.[26] Moreover, as animals have emotional and social needs to be met, so do humans, this is what makes the companionship between animals and humans more effective and beneficial, especially for those who struggle with mental, neurological and physical challenges.[27] As much as medical and allied health professionals are required to adopt a non-judgmental stance during talk therapy, their preconceived ideas and experiences may influence the assessment, and more so the interpretations. EAT increases objectivity and limits the latter possible bias.

Contextualising EAT in South Africa

The introduction of EAT within the South African context cannot be established with certainty, as different organisations that offer such services propose different dates. However, Life Principles for Transformation reports that EAT in South Africa was introduced in 2006 by the Equine Assisted Growth and Learning Association of Europe (EAGALA),[28] underpinning John and colleagues' assertion that this modality is still in its infancy in South Africa.[29] Although not able to establish with certainty when EAT was established in South Africa, most AAT institutions that consider more nature-based interventions offer it (i.e., the Earth Centre, the Equinox Trust, Equine-assisted Therapy Association of South Africa, the South African Riding for the Disabled [SARDA], etc.). These institutions attest to its usefulness and therapeutic value. One thing that is undeniable and deserves unequivocal attention is that, although the relationship between humans and horses has evolved over the years, the love, companionship and support horses offer to humans in need remain unwavering. The latter is an indication of the deep connection and bond between horses and humans which serves as a foundation for support for those in need and a platform for continued mental, neurological and physical rehabilitation.[30]

METHODOLOGY

The scoping review adopted five steps from Arksey and O'Malley's methodological framework for conducting a scoping review study[31] and PRISMA-ScR for transparency and reporting.[32] The latter was used to gather available evidence on the prevalent populations in which EAT is applied and its effectiveness in South Africa. EBSCOHost (Academic Search Ultimate, APA PsycInfo), CINAHL Plus with Full Text, Global Health, MEDLINE and Sabinet African Journals databases were used to identify studies. The researchers also performed additional hand searches using Google and Google Scholar to crosscheck the articles retrieved through the databases. The medical search heading (MeSH) used was "Equine Assisted Therapy". The latter was aided by an expanded Boolean search string using terms and/or keywords to identify studies. The string of terms used were equine-assisted therapy OR horse therapy OR equine-facilitated psychotherapy OR equine-assisted psychotherapy OR hippotherapy OR equestrian therapy OR horse-riding therapy OR therapeutic horseback riding OR equine therapy AND South Africa OR the Republic of South Africa.

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[24] Waite and Bourke, "' It's Different with a Horse': Horses as a Tool for Engagement in a Horse Therapy Program for Marginalised Young People," 15-24.
[25] Cynthia K. Chandler, *Animal Assisted Therapy in Counseling* (New York, NY: Taylor & Francis, 2005).
[26] Thomas, Lytle, and Dammann, *Transforming Therapy through Horses: Case Stories of Teaching the EAGALA Model in Action*.
[27] Thomas J. Sweeney, *Adlerian Counseling and Psychotherapy: A Practitioner's Wellness Approach*, 6th ed. (New York, NY: Routledge/Taylor & Francis, 2019).
[28] Life Principles, " History ," n.d., https://www.lifeprinciples.co.za/about/history/#:~:text=In 2006 the Equine Assisted,whole new world to Marie.
[29] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study."
[30] Fung, "The Rich History and Evolution of Animal-Assisted Therapy," 1-6.
[31] Hilary Arksey and Lisa O'Malley, "Scoping Studies: Towards a Methodological Framework," *International Journal of Social Research Methodology* 8, no. 1 (February 2005): 19–32, https://doi.org/10.1080/1364557032000119616.
[32] Andrea C. Tricco et al., "PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation," *Annals of Internal Medicine* 169, no. 7 (October 2, 2018): 467–73, https://doi.org/10.7326/M18-0850.

Selection of evidence

The retrieved studies were entered into an Excel sheet for management. The three reviewers LDL, MBM and SMV were responsible for the screening of the eligibility of articles. Any disagreement that emerged during the review was resolved by consensus following a robust discussion. The factors considered during this robust discussion were: (i) the fact that EAT is still considered to be in the infancy stage in the South African context, (ii) the application to disorders that have physical, neurological and/or mental health consequences, and (iii) the effectiveness of EAT in terms of therapeutic gains. These factors directly influenced our screening and selection of studies included in the scoping review.

Data extraction was conducted independently by the authors (LDL, MBM and SMV) using the selected databases. The characteristics of the studies which were used for charting included: authors and year of publication, study title, country or location, research approach or design, population, whether the study was peer-reviewed or not, and the main findings. Disagreements that arose during data extraction were also resolved through a consensus after a robust discussion. The reviewers extracted data from the studies in which EAT was the primary or only therapeutic intervention. After selecting and extracting data, the remaining studies were jointly reviewed, reflexively analysed and synthesised by the three authors (LDL, MBM and SMV).

To ensure relevance, the studies were screened following the inclusion criteria (Table 1) which were: original studies published between 2006 and 2024 as EAT was introduced in South Africa in 2006, the studies were peer-reviewed, used only EAT in any population with any mental, neurological or physical condition, and the studies followed either quantitative, qualitative or mixed methods. Grey literature, dissertations and reviews were excluded. After identifying relevant studies, the data was charted in a table (Table 1) which assisted the researchers in identifying emergent themes and subthemes. Charting of the data also assisted in ensuring transparency. The data was analysed using reflexive thematic analysis [RTA].[33]

Table 1: Inclusion and exclusion criteria

Criterion	Include	Exclude
Setting	• South Africa • Any population	• Studies conducted in other Sub-Saharan African countries
Research design/approach	• Primary studies (qualitative, quantitative and mixed methods) • Studies published between 2006 and 2024 • Studies where EAT was the primary or only therapeutic intervention	• Grey literature • Theses and dissertations, white papers, government gazettes and review studies
Participants	• Studies with a broad age coverage • Studies conducted on any population with any condition	
Language	• Peer-reviewed studies written in English	• Publications written in any other language

[33] Virginia Braun and Victoria Clarke, "Toward Good Practice in Thematic Analysis: Avoiding Common Problems and Be(Com)Ing a *Knowing* Researcher," *International Journal of Transgender Health* 24, no. 1 (January 25, 2023): 1–6, https://doi.org/10.1080/26895269.2022.2129597.

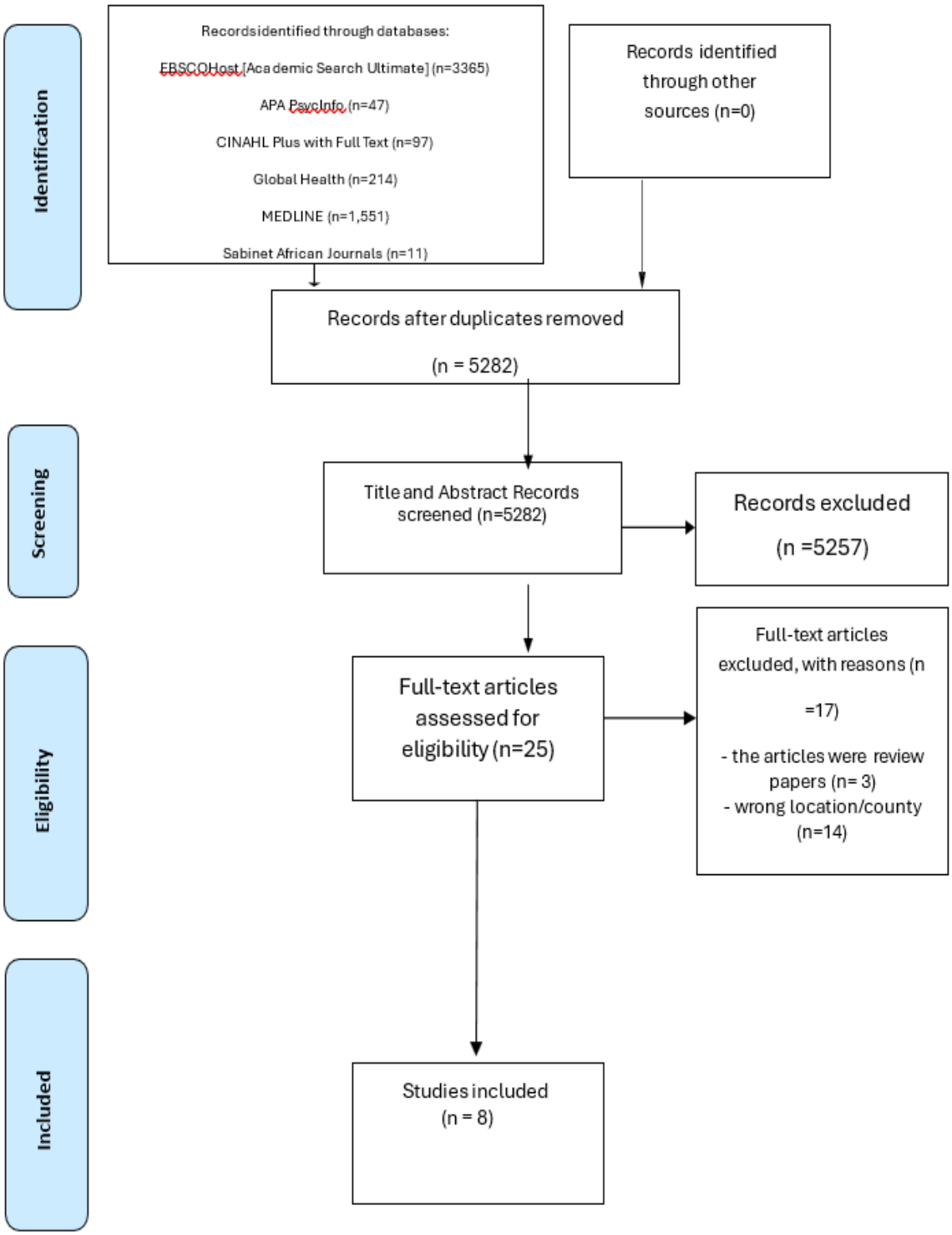

Figure 1: PRISMA-ScR Flow Diagram

Source: Tricco et al. (2018)

Description of the studies

The search of the selected databases yielded a total of 5285 articles (please see Figure 1). After removing 03 duplicates, 5282 articles remained. The titles and abstracts of the 5282 articles were then screened and then 5257 were excluded and 25 articles remained. The 25 full-text articles were then evaluated for eligibility. Most of the articles retrieved investigated the broad category of AAT and not specifically EAT, some were studies conducted in other countries and others were review studies, hence most were excluded during title and abstract screening as well as assessment for eligibility phase. Of the 25 articles which

were subjected to full-text eligibility assessment, 17 were excluded of which 3 were review studies and 14 were conducted in other countries. This overall process led to 8 relevant studies for qualitative analysis.

Table 2: Data Charting

Authors and year of publication	Study title	Country or Specific location	Research approach/ design	Population	Peer-reviewed?	Main findings
Govender et al. (2016)[34]	Hippotherapy in occupational therapy practice	South Africa, KwaZulu Natal Province	Quantitative descriptive research design	Occupational Therapists	Yes	All respondents viewed hippotherapy as beneficial for neurological conditions, as well as for specific aspects of functioning including postural control, mobility, processing and integration, self-confidence, self-esteem, mood and motivation.
De Milander et al. (2016)[35]	Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies	South Africa, Free State Province	Quantitative, pre-post-test design	Children with autism	Yes	Following a 10-week EAT intervention, changes were observed in the balance, upper-limb coordination and strength of the participants.
Boyd & Le Roux (2017)[36]	'When he's up there he's just happy and content': Parents' perceptions of therapeutic horseback riding	South Africa, Cape Town	Qualitative	Parents of children with disabilities	Yes	The participating parents reported that therapeutic horseback riding had a positive psychological, social and physical effect both on the children participating in the riding, as well as on themselves.
Surujlal & Rufus (2011)[37]	Perceptions of parents about equine therapy for children with intellectual disabilities	South Africa, Gauteng Province, Vanderbijlpark	Qualitative	Parents of children with intellectual disability who were enrolled in a	Yes	Respondents perceived equine therapy to be beneficial and reported that it brought about positive changes in their children, e.g.

[34] Pragashnie Govender, Carol Barlow, and Sameera Ballim, "Hippotherapy in Occupational Therapy Practice," *South African Journal of Occupational Therapy* 46, no. 2 (2016), https://doi.org/10.17159/2310-3833/2016/v46n2a6.
[35] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ."
[36] Lauren Boyd and Marieanna Le Roux, "'When He's up There He's Just Happy and Content': Parents' Perceptions of Therapeutic Horseback Riding," *African Journal of Disability* 6 (July 26, 2017), https://doi.org/10.4102/ajod.v6i0.307.
[37] J. Surujlal and S Rufus, "Perceptions of Parents about Equine Therapy for Children with Intellectual Disabilities," *African Journal for Physical Health Education, Recreation and Dance* 17, no. sup-2 (2011): 372–85.

				therapeutic riding programme		improved the children's physical development, confidence, self-esteem and social engagement.
Boshoff et al. (2015)[38]	The evaluation of an equine-assisted therapy programme with a group of boys in a youth care facility	South Africa, North West Province	Quantitative, Solomon four-group design	Boys who live in a youth care facility and who display behavioural problems	Yes	The study discovered that the EAT programme significantly improved the boys' subjective well-being, problem-focused coping, and emotion focused coping.
Johns et al. (2016)[39]	Therapist experiences of equine-assisted psychotherapy in South Africa: A qualitative study	South Africa, KwaZulu Natal Province	Qualitative	Practising equine-assisted psychotherapy therapists	Yes	The study discovered that the therapists perceived EAP to be effective in providing emotional and interpersonal growth for their clients who suffered from various disabilities.
Du Plessis et al. (2019)[40]	Effect of hippotherapy on physiological cost index and walking speed of adolescents with cerebral palsy diplegia	South Africa, Pretoria	Quantitative, single-system multiple-baseline design	Learners with cerebral palsy diplegia	Yes	The study discovered that hippotherapy significantly increased walking speed.
Nqwena & Naidoo (2016)[41]	The effect of therapeutic horseback riding on heart rate variability of children with disabilities	South Africa, KwaZulu Natal Province	Quantitative, quasi-experimental	Children with disabilities	Yes	Therapeutic horseback riding intervention of six sessions demonstrated a change in heart rate variability of children with disabilities.

[38] Christa Boshoff, Herman Grobler, and Alida Nienaber, "The Evaluation of an Equine-Assisted Therapy Programme with a Group of Boys in a Youth Care Facility," *Journal of Psychology in Africa* 25, no. 1 (January 2, 2015): 86–90, https://doi.org/10.1080/14330237.2015.1007611.
[39] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study."
[40] Ninette du Plessis, Tania Lee Buys, and Jodie Tamarin de Bruyn, "Effect of Hippotherapy on Physiological Cost Index and Walking Speed of Adolescents with Diplegia," *British Journal of Occupational Therapy* 82, no. 10 (October 29, 2019): 639–45, https://doi.org/10.1177/0308022619841318.
[41] Zingisa Nqwena and Rowena Naidoo, "The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities," *African Journal of Disability* 5, no. 1 (February 19, 2016), https://doi.org/10.4102/ajod.v5i1.248.

PRESENTATION OF FINDINGS

Following a robust analysis of the selected articles in accordance with Braun and Clarke's six steps of RTA (familiarisation, generating initial codes, generating themes, reviewing themes, defining and naming themes and creating the report); two major themes and two subthemes emerged.[42] We present the emerged themes and subthemes below (Table 3).

Table 3: Themes and subthemes

Themes	Subthemes
The application of EAT in South Africa	
Effectiveness of EAT as a treatment modality	• Perceptions of the effectiveness of EAT by therapists • Perceptions of the effectiveness of EAT by parents of children with various disabilities

Theme 1: The application of EAT in South Africa

The reviewed papers presented various results regarding the populations where EAT was commonly applied in South Africa. De Milander et al. applied EAT to a population of children diagnosed with autism spectrum disorder (ASD) to determine if it could improve their balance, upper-limb coordination, and strength.[43] On the same note, Nqwena and Naidoo used therapeutic horse riding among a population of children with various disabilities.[44] In addition, in the study by Boyd and Le Roux, children with various intellectual and physical disabilities (Cockayne syndrome, Down syndrome, and left hemiplegia) underwent EAT and parents' perceptions and experiences of their children undergoing the treatment were investigated.[45] Similarly, in the study by Surujlal and Rufus, children with intellectual disability underwent EAT treatment and the perceptions of the parents concerning their children undergoing such a treatment were explored.[46] On the other hand, Boshoff and colleagues investigated whether EAT will enhance the psychological well-being of adolescent boys residing in a youth facility.[47] Within the same age group, Du Plessis et al. investigated the use of hippotherapy among adolescents with cerebral palsy (CP) diplegia.[48] Both Johns et al. and Govender et al explored perceptions and experiences of EAT among a population of therapists who used it with various clients.[49] In summary, based on the reviewed studies, the most common populations to which EAT was applied included inter alia, children living with ASD, adolescents with behavioural problems and clients with various intellectual and physical disabilities (Cockayne syndrome, Down syndrome, and left hemiplegia).

Theme 2: Effectiveness of EAT as a treatment modality

Mental, neurological and physical disabilities and disorders were accentuated as areas where EAT had some significant positive outcomes. In the reviewed study by De Milander and colleagues, which explored whether EAT could improve balance, upper-limb coordination and strength in two children with ASD (who participated in a 10-week EAT intervention); it was revealed that the children showed improvement in upper-limb coordination, balance, and strength, although there was variability in terms of gender.[50] The female participant showed greater gains in upper-body limb coordination and balance, whilst the male participant displayed modest improvement in all the domains. However, in general, the results suggest

[42] Braun and Clarke, "Toward Good Practice in Thematic Analysis: Avoiding Common Problems and Be(Com)Ing a *Knowing* Researcher."
[43] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ."
[44] Nqwena and Naidoo, "The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities."
[45] Boyd and Le Roux, "'When He's up There He's Just Happy and Content': Parents' Perceptions of Therapeutic Horseback Riding."
[46] Surujlal and Rufus, "Perceptions of Parents about Equine Therapy for Children with Intellectual Disabilities."
[47] Boshoff, Grobler, and Nienaber, "The Evaluation of an Equine-Assisted Therapy Programme with a Group of Boys in a Youth Care Facility."
[48] du Plessis, Buys, and de Bruyn, "Effect of Hippotherapy on Physiological Cost Index and Walking Speed of Adolescents with Diplegia."
[49] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study"; Govender, Barlow, and Ballim, "Hippotherapy in Occupational Therapy Practice."
[50] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ."

that EAT may be beneficial for improving motor skills in children with ASD. Similarly, in the reviewed study by Du Plessis et al., which investigated the effects of hippotherapy on the Physiological Cost Index (PCI) and walking speed of adolescents with cerebral palsy (CP) diplegia, it was discovered that 12 weekly hippotherapy sessions decreased PCI values indicating improved walking efficiency and speed in adolescents with CP diplegia.[51]

Walking speed increased significantly from the 6th session with the greatest improvement observed in session 12. Overall, the study suggests that hippotherapy may have a positive effect on the walking speed in adolescents with CP diplegia who struggle with walking as they grow. Along the same lines, in the reviewed study by Boshoff and colleagues, it was discovered that EAT greatly improved the subjective well-being, emotion-focused coping and problem-focused coping of boys in a youth facility - a facility where children who were sentenced by the courts are placed and rehabilitated.[52] Despite the positive outcomes, one flaw was that EAT had little effect on the level of dysfunctional coping. In the reviewed study by Nqwena and Naidoo, the effects of therapeutic horseback riding (THR- synonymous with EAT) on heart rate variability (HRV), occupational performance, and quality of life of children with disabilities were examined during six sessions.[53] The results were inconsistent for HRV, ranging from improved vagal or parasympathetic activation to increased sympathetic activity. However, the study revealed improvements in specific aspects of occupational performance, including play skills, social interaction and family adjustment after the THR intervention. Notwithstanding the positive outcomes, due to the inconsistencies in the findings, the authors warned that the results should be interpreted with caution as they were inconclusive as to whether parasympathetic or sympathetic activity was predominantly increased.

Subtheme 2.1: Perceptions of the effectiveness of EAT by therapists

Some of the reviewed studies explored perceptions of effectiveness of EAT from the perspectives of therapists who used the modality for treatment purposes and found positive outcomes. For example, the reviewed study by Govender et al. discovered that EAT was perceived by occupational therapists as beneficial for treating neurological conditions and improving functional outcomes such as mobility, postural control and self-confidence.[54] Within the same context, the reviewed study by Johns and colleagues revealed that therapists who used EAP (synonymous with EAT) with clients with various physical and mental health challenges perceived EAP as an effective treatment modality that provides interpersonal and emotional growth for clients more flexibly and engagingly compared to traditional office-based therapy.[55] What was found to be particularly beneficial about the modality was its use of the outdoor setting and horses as co-therapists.

Subtheme 2.2: Perceptions of the effectiveness of EAT by parents of children with various disabilities

Some of the reviewed studies investigated the perceptions and experiences of the efficacy of EAT among parents of children with various disabilities whose children were treated with the modality. The reviewed study by Boyd and Le Roux showed that parents of children with various mental and physical disabilities (Cockayne syndrome, left hemiplegia and Down syndrome) found therapeutic horseback riding (synonymous with EAT) useful as they reported that it played a significant role in the lives of their children.[56] They reported that it improved their children's muscle tone, posture, balance, independence, social skills and confidence. In general, parents expressed satisfaction with the positive effect that the THR programme had on their children. Similarly, the reviewed study by Surujlal and Rufus found that equine therapy was perceived by parents of children with intellectual disabilities to have a positive impact on their children.[57] That is, equine therapy reportedly improved the children's physical development, confidence, self-esteem and social engagement. Despite parents' expectations not being fully satisfied,

[51] du Plessis, Buys, and de Bruyn, "Effect of Hippotherapy on Physiological Cost Index and Walking Speed of Adolescents with Diplegia."
[52] Parliamentary Monitoring Group, "A Situational Analysis of Reform Schools and Schools of Industry in South Africa," 2002.
[53] Nqwena and Naidoo, "The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities."
[54] Govender, Barlow, and Ballim, "Hippotherapy in Occupational Therapy Practice."
[55] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study."
[56] Boyd and Le Roux, "'When He's up There He's Just Happy and Content': Parents' Perceptions of Therapeutic Horseback Riding."
[57] Surujlal and Rufus, "Perceptions of Parents about Equine Therapy for Children with Intellectual Disabilities."

overall parents were satisfied by the effect the modality had on their children and were willing to recommend it to others.

DISCUSSION

The application of EAT in South Africa

This review found that EAT has been used in various populations with mental, neurological, and physical conditions. The study by De Milander et al. used EAT among children diagnosed with ASD.[58] Studies from the past and present have confirmed the use of EAT with children diagnosed with ASD.[59] On the same note, Du Plessis et al. used hippotherapy among adolescents with CP diplegia.[60] The use of hippotherapy within this population was confirmed in a study by Stergiou et al. which investigated the efficacy of hippotherapy in children with CP.[61] In the reviewed studies by Boyd and Le Roux, Nqwena and Naidoo and Surujlal and Rufus, EAT was used with children who suffer from various intellectual and physical disabilities.[62] This affirms the results of a global study conducted by Bae and colleagues which investigated the effects of hippotherapy on a sample of children with intellectual disabilities.[63] The reviewed study by Boshoff and colleagues, on the other hand, used EAT in a sample of adolescent boys in a school of industry.[64] The latter is significant and indicates the breadth of EAT application.

Effectiveness of EAT as a treatment modality

The review showcased that EAT improves balance, upper-limb coordination and strength in children with ASD, although with variability in terms of gender.[65] This is confirmed by Srinivasan et al. who stated that equine therapy has a beneficial influence on behavioural skills and to a limited extent on social communication in individuals with ASD.[66] Borgi et al. add that EAT does not only improve the social and motor abilities of individuals with ASD but also their executive functioning (i.e., planning time in problem-solving tasks).[67] The review also found that hippotherapy has a positive effect on walking speed of adolescents with CP diplegia who struggle with walking as they grow.[68] This is affirmed by Snider et al. who stated that hippotherapy is effective in treating muscle symmetry in the hip and trunk of children with CP.[69] Overall, hippotherapy was reported to have improved gross motor function in children with CP.

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[58] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies," ."

[59] Sophie Anderson and Kerstin Meints, "Brief Report: The Effects of Equine-Assisted Activities on the Social Functioning in Children and Adolescents with Autism Spectrum Disorder," *Journal of Autism and Developmental Disorders* 46, no. 10 (October 25, 2016): 3344–52, https://doi.org/10.1007/s10803-016-2869-3; Shay Dawson et al., "Equine-Assisted Therapy with Autism Spectrum Disorder in Serbia and the United States: A Pilot Intervention," *Therapeutic Recreation Journal* 56, no. 1 (April 1, 2022), https://doi.org/10.18666/TRJ-2022-V56-I1-10387.

[60] Du Plessis et al., "Effect of Hippotherapy on Physiological Cost Index and Walking Speed of Adolescents with Diplegia."

[61] Alexandra N. Stergiou et al., "The Efficacy of Equine Assisted Therapy Intervention in Gross Motor Function, Performance, and Spasticity in Children with Cerebral Palsy," *Frontiers in Veterinary Science* 10 (August 15, 2023), https://doi.org/10.3389/fvets.2023.1203481.

[62] Boyd and Le Roux, "'When He's up There He's Just Happy and Content': Parents' Perceptions of Therapeutic Horseback Riding"; Nqwena and Naidoo, "The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities"; Surujlal and Rufus, "Perceptions of Parents about Equine Therapy for Children with Intellectual Disabilities."

[63] Myung-Soo Bae, Chang-Kyo Yun, and Yong-Gu Han, "The Effects of Hippotherapy for Physical, Cognitive and Psychological Factors in Children with Intellectual Disabilities," *Journal of The Korean Society of Physical Medicine* 12, no. 3 (August 31, 2017): 119–30, https://doi.org/10.13066/kspm.2017.12.3.119.

[64] Boshoff, Grobler, and Nienaber, "The Evaluation of an Equine-Assisted Therapy Programme with a Group of Boys in a Youth Care Facility."

[65] De Milander, Bradley, and Fourie, "Equine-Assisted Therapy as Intervention for Motor Proficiency in Children with Autism Spectrum Disorder: Case Studies."

[66] Sudha M. Srinivasan, David T. Cavagnino, and Anjana N. Bhat, "Effects of Equine Therapy on Individuals with Autism Spectrum Disorder: A Systematic Review," *Review Journal of Autism and Developmental Disorders* 5, no. 2 (June 20, 2018): 156–75, https://doi.org/10.1007/s40489-018-0130-z.

[67] Marta Borgi et al., "Effectiveness of a Standardized Equine-Assisted Therapy Program for Children with Autism Spectrum Disorder," *Journal of Autism and Developmental Disorders* 46, no. 1 (January 26, 2016): 1–9, https://doi.org/10.1007/s10803-015-2530-6.

[68] du Plessis, Buys, and de Bruyn, "Effect of Hippotherapy on Physiological Cost Index and Walking Speed of Adolescents with Diplegia."

[69] Laurie Snider et al., "Horseback Riding as Therapy for Children with Cerebral Palsy," *Physical & Occupational Therapy In Pediatrics* 27, no. 2 (January 29, 2007): 5–23, https://doi.org/10.1080/J006v27n02_02.

Furthermore, the review established that EAT greatly improved subjective well-being, emotion-focused coping, and problem-focused coping of boys in a school of industry.[70] Despite the positive outcomes, one shortfall in this regard was that EAT had little effect on the level of dysfunctional coping of the boys. This is underpinned in the study by Matias and colleagues which discovered that following the implementation of the EAT programme among institutionalised children with behavioural problems, there was an improvement in the children's skills, more specifically intrapersonal skills and self-control and self-regulation in addition to improvement in movement intentionality and sensitivity to the context.[71]

The review revealed that THR improved HRV in some of the children with disabilities who were examined through a six session period. Improvements in specific aspects of occupational performance including skills, social interaction and family adjustment were also revealed. Notwithstanding the positive outcomes, because of the inconsistencies in the findings, the authors warned that the results be interpreted with caution. This was echoed by García-Gómez and colleagues who stated that EAT had improved heart rate variability among participants in their study by activating the parasympathetic nervous system (PSNS).[72]

On the other hand, the effectiveness of EAT was explored from the perspectives of the therapists who used the modality for treatment purposes. EAT was perceived by occupational therapists as beneficial for treating neurological conditions and improving functional outcomes such as mobility, postural control and self-confidence.[73] This is confirmed by Del Carmen Rodríguez-Martínez and colleagues who stated that EAT has many benefits in various neurological conditions which include inter alia mental and behavioural health as well as motor and physical ability.[74] Within the same context, EAP was also perceived by therapists as an effective treatment modality that provides interpersonal and emotional growth for clients more flexibly and engagingly as compared to traditional office-based therapy.[75] However, of note in the study was the singling out of the positive benefit that outdoor setting and the use of horses as co-therapists have on the rehabilitation process.

The effectiveness of EAT was also investigated from the perspective and experiences of parents of children with various disabilities. The parents mentioned that therapeutic horseback riding was useful as it played a significant role in the lives of their children and improved their muscle tone, posture, balance, independence, social skills and confidence. In effect, parents expressed satisfaction with the positive effect that EAT had on their children. That is, equine therapy reportedly improved the children's physical development, confidence, self-esteem and social engagement.[76] Overall, the parents were satisfied with the positive effect the modality had on their children and were willing to recommend it to others. These were affirmed by Buchanan and Higgins who stated that parents of children who underwent EAT in their study expressed the positive ways in which their children have generally benefitted from the programme.[77]

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

- More original studies should be conducted to increase the limited empirical base on EAT as the modality is still in its infancy in South Africa so that conclusive inferences can be made with confidence;

[70] Boshoff, Grobler, and Nienaber, "The Evaluation of an Equine-Assisted Therapy Programme with a Group of Boys in a Youth Care Facility."
[71] Ana Rita Matias, Graça Duarte Santos, and Nicole Almeida, "Equine-Assisted Therapeutic Intervention in Institutionalized Children: Case Studies," *International Journal of Environmental Research and Public Health* 20, no. 4 (February 6, 2023): 2846, https://doi.org/10.3390/ijerph20042846.
[72] Andrés García-Gómez et al., "Equine-Assisted Therapeutic Activities and Their Influence on the Heart Rate Variability: A Systematic Review," *Complementary Therapies in Clinical Practice* 39 (May 2020): 101167, https://doi.org/10.1016/j.ctcp.2020.101167.
[73] Govender, Barlow, and Ballim, "Hippotherapy in Occupational Therapy Practice."
[74] María del Carmen Rodríguez-Martínez et al., "Evidence of Animal-Assisted Therapy in Neurological Diseases in Adults: A Systematic Review," *International Journal of Environmental Research and Public Health* 18, no. 24 (December 7, 2021): 12882, https://doi.org/10.3390/ijerph182412882.
[75] Johns, Bobat, and Holder, "Therapist Experiences of Equine-Assisted Psychotherapy in South Africa: A Qualitative Study."
[76] Surujlal and Rufus, "Perceptions of Parents about Equine Therapy for Children with Intellectual Disabilities."
[77] Alice M. Buchanan and A. Higgins, "'It Gives Her a Sense of Accomplishment': What Parents Say When Children with Disabilities Ride.," *European Journal of Adapted Physical Activity* 16 (April 6, 2023): 3–3, https://doi.org/10.5507/euj.2022.007.

- More psychoeducation about the modality should be conducted among healthcare professionals so that they can consider incorporating the method and appreciate its uniqueness and the benefits it offers to the treatment landscape;
- Training or academic institutions should consider including the modality in the training of psychologists and other relevant allied professionals;
- More education and awareness should also be provided to the public to ensure that they are well-informed about the modality and how to access such services so that they can take advantage of the unique benefits the modality offers;
- As most of the available studies used few sample sizes, it is recommended that future studies be conducted with larger sample sizes to allow for generalisation.

CONCLUSION

Mental, neurological and physical disabilities continue to escalate globally and in South Africa particularly. As such, new and promising treatment modalities such as EAT need to be adopted to help solve this conundrum. EAT was introduced in South Africa in recent years, and as such it is still considered to be in its infancy. Despite this, the modality has been used to treat individuals with various conditions. However, since its introduction no scoping, rapid or systematic review studies have been conducted to consolidate the available literature on this modality to establish the applications of the modality and how effective the modality is. This is a gap that this study aimed to close to ensure that the available literature on the modality is consolidated. The study discovered that the modality mostly yielded positive outcomes in studies where it was applied. However, due to the limited number of studies available in this niche in South Africa, and the small sample sizes used, more studies are still needed. Notwithstanding the valuable insights the reviewed studies provide, the results of this study considering all the latter limitations should be interpreted with caution and treated as tentative rather than conclusive.

LIMITATIONS

This scoping review, whilst providing valuable insights, has the following limitations. Firstly, the studies which were used in this review were retrieved through the selected databases, specifically, EBSCOHost (Academic Search Ultimate, APA PsycInfo), CINAHL Plus with Full Text, Global Health, MEDLINE, Sabinet African Journals and Google Scholar. This study also excluded grey literature, dissertations and review studies as the focus was on original studies. Due to the latter, other published studies that may have enhanced or offered a different perspective may have been excluded. Secondly, the study focused on EAT within the South African context; therefore, the results cannot be generalised nor extrapolated to other areas. Additionally, the search strategy was filtered between the years 2006 and 2024 (EAT was introduced in South Africa in 2006), English language and peer-review, as such studies written in other languages may have been omitted.

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The authors have no potential conflict of interest to declare.

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ETHICAL CONSIDERATIONS

Not applicable as the study did not involve human participants.

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ABOUT AUTHORS

Dr. Daniel Letsoalo holds PhD in psychology and is a clinical psychologist registered with the Health Professions Council of South Africa (HPCSA) and a senior lecturer at the Department of Psychology,

College of Human Sciences, University of South Africa. He is also part of the coordination for the MA clinical psychology programme.

Mrs. Bronwyn Menoe holds an MSc in clinical psychology and is a clinical psychologist in private practice registered with the Health Professions Council of South Africa (HPCSA). She is also a former lecturer.

Ms. Venolia Semenya holds a master's degree in criminology and criminal justice from the University of Limpopo.