Sex as a spectrum: Inclusive anatomical education and the translation thereof into clinical practice

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Thesis presented in fulfilment of the requirements for the degree Master of Science in Morphological Sciences in the Faculty of Biomedical Sciences, Division of Clinical Anatomy, Stellenbosch University

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Declaration

By submitting this Research proposal electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: December 2022

Abstract

Introduction: Transgender and non-binary individuals repeatedly experience erasure of their identity in healthcare, ultimately leading to avoidance of healthcare environments, and unsupervised, self-administered healthcare practices. The erasure of transgender and non-binary identities in healthcare starts at medical school level. Cisnormative teachings and binary views of sex exclude transgender and non-binary identities from the training healthcare workers in South Africa receive.

Methods: Data was collected in three parts. a Mix method, cross-sectional survey was sent to students and lecturers at Tygerberg Medical Campus who are involved in the learning and teaching of anatomical sciences at Stellenbosch University (N=154). Simultaneously, individual interviews were conducted with transgender and non-binary adults who have previously used the South African healthcare system before (N=13). After recommendations, knowledge levels and lived experiences were collected from the cross-sectional survey and individual interviews, data was used to triangulate and explore selected themes in a focus group session with community members who participated in the individual interviews (N=6).

Results: Students self-reported a lack of resources on transgender and non-binary content in the medical curriculum at Stellenbosch University and expressed willingness to incorporate of this content in the future. Transgender and non-binary adults who have accessed healthcare in South Africa shared how the binary nature of medical teachings have impacted their experience of healthcare in the Country.

Discussion: Transgender and Non-binary individuals in South Africa report experiencing complete erasure of their identities in healthcare. Ultimately leading to avoiding healthcare facilities in South Africa; as well as discrimination from undereducated healthcare workers. Majority of Students, lecturers and gender diverse community members reported a lack of transgender and non-binary resources in healthcare. Students and gender diverse community members believe that incorporation of fact-based knowledge and representation of transgender and non-binary individuals throughout the curriculum of transgender and non-binary bodies in healthcare could improve healthcare worker attitudes towards transgender and non-binary individuals, creating a safer and more inclusive environment in healthcare facilities for the individuals of South Africa.

Conclusion: Tygerberg Medical Campus is contributing to the passive erasure of transgender and non-binary identities in South African healthcare, by not offering any resources to students or lecturer on transgender care or language. An intervention is required to include transgender and non-binary visibility in the training of future healthcare professionals at Stellenbosch University. The present study believes that teaching sex as a spectrum in anatomical sciences and including a primer lecture (discussing gender, sex and medicine beyond the binary) could be a small, yet effective intervention to introduce healthcare students to bodies that are not only cisgender, working towards less of a binary

approach to healthcare practices that are life threatening to transgender and non-binary patients. **(440words)**

Researcher reflexivity and bracketing

The primary investigator is a cis-gendered white male. As someone who is part of the Lesbian, Gay, Bisexual, Transgender, Queer and intersex (LGBTQI) community and has chosen family on the gender spectrum, he acknowledges his potential bias in the urgent need for change in the healthcare curriculum. Ultimately, this research will aid in creating a more inclusive environment for transgender and non-binary individuals seeking medical care.

The research team included a cisgendered, heterosexual consultant to overview and code the transcripts independently from that of the primary investigator. In addition, the two supervisors for the research project: cisgendered and non-binary, have reviewed the results to ensure that all perspectives of the different samples are highlighted and to capture the essence of the phenomenon, as is the case with phenomenological research.

The primary investigator and research consultant documented their thoughts while the individual interviews and focus group was held. These comments and how they evolved during the interview were to show the coding officers how their own personal biases could affect data analysis. Furthermore, coding was done in landscape format, on a table with three columns. In the middle was the member checked transcript, on the left-hand side the corresponding theme that matches the written verbatim and in the right-hand side column was the researcher's notes on the theme; how this made them feel personally and what they thought of the theme.

Acknowledgements

I would like to thank everyone who believed in me and that was willing to take a chance on me and this project. It took me twelve months and a personal consultation with the HREC (Health Research Ethics Committee) committee of Stellenbosch University to get ethical approval for this project. Many of my peers warned me to not do this study. Thank you Sondre Bailey for consulting us with this project, supervising my interviews and coding independently from myself. Another thanks you to Professor Karin Baatjes for signing off on this project in 2021, as the previous head of our Division of Clinical Anatomy. Even though you did not completely understand how and why I wanted to do this study, you still took a chance on me. Thank you, Bryan, for trusting and believing in me every step of the way. You gave me complete autonomy to choose what we wanted to do and who we would like to work with. You sent me one of B's publications in the beginning of 2021 and you said that you have funding. The institutional Forum of Stellenbosch University and the Division of Clinical Anatomy are very fortunate to have a leader such as yourself on their team.

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Finally, I would like to acknowledge how proud of myself I am. My previous supervisor told me I would amount to nothing. The following year I was disowned by my father. To say the least, this journey has not been easy, but it is because of the individuals who I surrounded myself with that I gained my confidence back and could serve my family in the transgender and non-binary community through this project. Hopefully, in the future, I could do so on the frontlines, as a Medical Doctor, which has been my dream since a child.

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Abbreviations

ADA – African Doctoral Academy

BOT- Bachelor of Occupational Therapy

BMidNur – Bachelors of Midwifery and Nursery

BScDiet – Bachelor of Science in Dietetics

BScPhys – Bachelor of Science in Physiotherapy

BSLHT – Bachelors of Speech, Language and Hearing Therapy

DSM – Diagnostic and Statistical Manual of Mental Disorders

DRACA – Doctors as Change Agent

HREC – Health Research Ethics Committee

HRT – Hormone Replacement Therapy

HIV – Human immunodeficiency virus

H. Sapiens – Homo Sapiens

ICD – International Classification of Diseases

IT – Information Technology

LGBTQI – Lesbian, Gay, Bisexual, Transgender, Queer and Intersex

MBChB – Bachelor of Medicine and Bachelor of Surgery

POPIA – the Protection of Personal Information Act

WHO – World Health Organisation

WPATH – the World Professional Association for Transgender Health

Chapter 1: Introduction

Generations of anatomical research has shown that *Homo sapiens* vary individually due to many factors, such as age, sex, and ancestry (Štrkalj & Pather, 2020). More recently, variations in biological sex has been questioned in Anatomical sciences and its effect in clinical practice on patient experiences (Bateman, 2011; Rispel, Metcalf, Cloete, Moorman & Reddy, 2011; Tordoff, Haley, Shook, Kantor, Crouch & Ahrens, 2021). Research dating as far back as the 1990's has suggested that the binary nature of sex currently taught in anatomical sciences may not be as defined and singular to a particular architype,(Blackless, Charuvastra, Derryck, Fausto-Sterling, Lauzanne & Lee, 2000; Feder, 2000; Kenen, 2002; Migeon, 2009; Jones, 2018; Štrkalj & Pather, 2020). Instead, various authors have proposed a clinical approach to the understanding of sex. These research findings are from fields, such as biological sciences, social sciences, humanities and other activism or interest groups, which anatomy is integrated in each of these practices (Reisner, Radix, Deutch, 2016; Štrkalj & Pather, 2020). Currently, medical curricula taught in South Africa has not caught up to these more findings (Wilson, Marais, De Villiers, Addinall & Cambell, 2014; Reisner *et al., 2016*; Spencer, Meer & Müller, 2017; Luvuno, Ncama & Mchunu, 2019).

Transgender and non-binary individuals continue to experience neglect and erasure in the South African healthcare system (Reisner *et al*., 2016; Luvuno *et al*., 2019). Individuals who identify as transgender no longer identify with the gender that they were assigned at birth (Luvuno *et al*., 2019; Thorne, Yip, Bouman, Marshall & Arcelus, 2019). Non-binary identifying individuals do not identify with either the male or female gender (Thorne *et al.,* 2019). Therefore, having a non-binary body with typically 'male' or 'female' sexual organs and characteristics (Moxham, Plaisant, Smith, Pawlina & McHanwell, 2014; Thorne *et al*., 2019; Štrkalj & Pather, 2020). However, these body parts are not seen as attributed to a binary nature. For example, a non-binary individual would not have a typically 'male' reproductive system, but rather a penis and testis (Luvuno *et al.,* 2019; Thorne *et al.,* 2019). It is important to acknowledge that transgender identifying individuals would typically identify as either a transgender "male" or "female" and nonbinary individuals do not adhere to either of these classifications (Thorne *et al.,* 2019)

Teaching an adequate amount of variation to medical students is needed to ensure proper understanding and treatment of an illness (Reisner *et al.,* 2016; Štrkalj & Pather, 2020). Currently, South African and global literature suggest that sex variation is not discussed enough in anatomical sciences and that this is translating into clinical practice as the erasure of transgender patients (Russell, Ryan, Toomey, Diaz & Sanchez, 2011; Snelgrove, Jasudavisius, Rowe, Head & Bauer, 2012; Wilson *et al*., 2014; White Hughto, Reisner & Pachankis, 2015; Reisner *et al.,* 2016; Spencer et al., 2017; Luvuno *et al*., 2019).

Studies evaluating the clinical experience of transgender and non-binary patients, as well as clinicians, in South Africa, have recommended that sex variation and transgender terminology be introduced into medical programme curricula (Wilson *et al*., 2014; Spencer *et al.*, 2017; Luvuno *et al.*, 2019). Promising results were found in a survey conducted by Strakjl & Pather (2020) on medical schools in both New Zealand and Australia. These surveys found that small changes and early interventions in the medical programme could lead to major improvements in patient-clinician interactions. This improved interaction would involve the possible development of professional courtesy and sensitivity towards sexual and gender minority individuals (Snelgrove *et al.*, 2012; Luvuno *et. al.*, 2019; Brookfield, Dean, Forrest, Jones & Fitzgerald, 2020). Sexual and gender minorities would include individuals who do not identify with cisnormative gender and sex categories assigned to them at birth. These individuals experience erasure and active discrimination in healthcare systems, ultimately marginalising this population of individuals (Vincent & Camminga, 2009; Wilson *et al.*, 2014; Roberts & Fantz, 2014; Reisner *et al.*, 2016; Spencer, *et al*., 2017; Camminga, 2018; Luvuno, *et al.*, 2019; Thorne *et al*., 2019; Brookfield, Dean, Forrest, Jones & Fitzgerald, 2020)

The erasure of transgender and non-binary individuals in the anatomical sciences translates further than our health care system, especially within a South African context (Vincent & Camminga, 2009; Camminga, 2017; stated in an article that the medicalisation of transgender and non-binary bodies gate keep the right of entry for asylum seekers in South Africa (Camminga, 2018). Asylum seekers find South Africa to be the only country in Africa where it is legalised to identify as transgender. These refugees only have 14 days after entering the country to obtain an asylum seeker permit; allowing temporary occupancy in South Africa until refugee status is approved or dismissed (Snelgrove *et al.*, 2012; Reisner *et al.*, 2016; Brookfield *et al*., 2020). Possible changes in how anatomical sciences is taught in the medical programme could provide a scientific basis to the non-binary nature of sex (Reisner *et al.*, 2016). Translating into a bigger effect on the continent of Africa and the safety of transgender and non-binary individuals, not only in a clinical setting, but also extend healthcare to everyone, regardless of the language they might use to identify themselves

1.1. Topic/Problem statement

Globally there is a lack of transgender and non-binary knowledge within the medical context (Luvuno, *et al.*, 2019). This has led to structural and systematic barriers in healthcare for transgender and non-binary individuals (Štrkalj & Pather, 2020). Anatomical sciences is one component within medical curricula that could provide a biological approach to minimise discrimination in healthcare and improve the access and diagnosis of transgender and non-binary patients (Reisner, *et al.*, 2016). Therefore, the present study will explore the need and recommendations for including a transgender and non-binary component within the anatomical curricula offered at the Tygerberg Medical Campus, Stellenbosch University. Secondly, the present study will qualitatively investigate the effect that the binary nature of current anatomical science has on the transgender and non-binary community in a health care setting, more specifically, in South Africa.

1.2. Aims

1.2.1. Primary aims

- Explore the current knowledge held on language to describe biological sex that medical anatomical personal and students have.
- Describing the need to include more varied ways to describe biological sex in anatomical sciences from the perspective of students, as well as anatomical educators.

1.2.2. Secondary aims

- Explore the current experiences of transgender and non-binary individuals who have made contact with the health care system in South Africa.

1.2.3. Tertiary aims

- Explore themes that arose from the cross-sectional survey and individual interviews, which were not fully saturated from these methods.
- Understand how healthcare students think about transgender and non-binary realities, versus that of transgender and non-binary community members.

1.3. Objectives

1.3.1 Primary objectives

- Explore the current knowledge held to describe biological sex of transgender and non-binary individuals from anatomical educators and students.
- Explore the accessibility of transgender and non-binary biological sex information through the medical program at Stellenbosch University.
- Gather recommendations from healthcare students and educators on how to incorporate transgender and gender diverse terminology into the anatomy program.

1.3.2. Secondary objectives

- Engage with the participant's first-hand experience of the healthcare experience as transgender and non-binary individuals.
- Identify barriers that transgender and non-binary individuals face in the healthcare system because of the binary classification of biological sex.
- Gather recommendations and opinions from transgender and non-binary individuals who has had contact with the healthcare system.

1.3.3. Tertiary objectives

- Saturating themes found in the individual interviews and cross-sectional survey in a natural environment between a group of transgender and non-binary identifying community members.
- Identify similarities and differences between the student responses and that of the community members.
- Combining recommendations and opinions from the student responses and those of the transgender and non-binary community.
- Triangulating findings from the individual interviews with the transgender and non-binary community.

Chapter 2: Literature review

2.1. Sex as a Binary

The western (or colonial) world views gender and sex as binary; meaning individuals would either be assigned male or female (Morgenroth, Seden, Lindqvist, Renström, Ryan, & Morton, 2021). The binary view of sex is a consequence of societal descriptions and proscriptive, dictating which genders and sexes should or should not exist and how they should exist in the world (Morgenroth & Ryan, 2020). Ultimately, the binary view of sex has created a system that would expect an individual with XX chromosomes to develop "female" bodies, identify as "women", and act "feminine". Alternatively, the sex binary would expect someone with XY chromosomes to develop a "male" body, identify as a "man", and act "masculine" (Morgenroth *et al.,* 2021; Morgenroth & Ryan, 2020).

The colonisation of sex, gender and how we view these identities has influenced how medicine classifies and teaches healthcare students which bodies are "normal" or "typical." (Morgenroth *et al.,* 2021). This view of identity has led to controversial and discriminatory practices in medicine. One of these practices is when babies are born intersex, karyotyping (the determining of chromosome composition; XY, male and XX, female) is performed, and the parents of the newborn child can consent for the doctor to perform "corrective" or "normalising" surgeries (Štrkalj & Pather, 2020). Discriminatory practices, for example, how healthcare workers mistreat or fail to acknowledge patients who are not cisgender (as represented by their healthcare training and study material) exist (Reisner, Radix & Deutsch, 2016).

Broadly, sex refers to biological characteristics that are generally related to one's reproductive anatomy and physiology. In contrast, gender is culturally and societally contextualized in structural experiences and specific expressions of identity (DuBois & Shattuck-Heidorn, 2021). Sex and gender cannot be studied mutually exclusive in a healthcare context (DuBois & Shattuck-Heidorn, 2021). Kaiser, Haller, Schmitz and Nitsch (2009) argue that even if sex and gender are described and contextualised separately, when dealing with human biology, we are nearly always interacting with both. Therefore, they use the term "sex/gender" or "gender/sex", the biosocial equivalent of sex and gender. This term emphasizes how gender and sex are developmentally and irreversibly intertwined throughout human life (Springer, Stellman, & Jordan-Young, 2012).

2.2. Sex as a spectrum

Mainstream anatomy holds the belief that all *Homo sapiens* are sexually dimorphic according to sex chromosome composition, gonadal structure, hormonal levels, the structure of internal genital duct systems, and external genitalia. This belief was named the platonic ideal (Blackless, Charucastra, Derryck, Fausto-Sterling, Lauzanne & Lee, 2000). The platonic ideal, sometimes called the typological approach, assumes that every individual has a singular, correct way of developing (Blackless *et al.*, 2000; Kenen, 2002). Blackless *et al., (2000),* state that this binary approach to anatomy impeded the understanding of biological sciences. A fundamental flaw of the platonic ideal, being questioned in the 21st century, is that complex organisms, such as *H. sapiens, are* grouped within the "ideal" types. This flaw translates to clinical practice in the form of non-consensual surgical "correction" of any anatomical deviation, which was found to deviate from what is typically 'male' or 'female'. Some textbooks even use the word "restored" to describe this modification at birth. Implying that the individual was born less than normal, pathologizing sex that does not confine to the binary approach currently taught as superior in anatomical sciences Reisner *et al.*, 2016; Sanchez, Southgate, Rogers & Duvivier, 2017; Ferrara & Casper, 2018; Štrkalj & Pather, 2020).

Blackless *et al. (2000),* described the typological approach to sex as too narrow for *H. sapiens*, holding onto a strong belief that sex could be more comprehensively understood by a clinal approach. He uses the example that some individuals may have different characteristics among and across varying levels of biological organisation. This understanding means that an individual could have an XY (typically male) chromosome composition with high estrogen levels (typically female). Furthermore, chromosomal sex may differ from anatomical sex (Štrkalj & Pather, 2020). Macroscopically these characteristics can be found in a distorted manner. For example, one may have primary sex characteristics (physical, sexual organs, such as a uterus, vagina, penis and testis) from both binaries (Blackless *et al.*, 2000). This chimerism, referred to as biological sex, becomes even more complex to systematically categorise when considering secondary sex characteristics (these features appear during puberty in humans, such as pubic hair, growth of breasts, fat distribution, etc.) (Ferrara & Casper, 2018)

Ferrara & Casper (2018) state that the concept of intersex and "differences in sexual development", which is often offensive, leads to the pathologizing of differences in sex from the binary currently held to majority belief. They suggested that the term intersex be used for an individual who is born with a combination of typically "male" or "female" biological organisation (such as chromosomal sex, gonadal, hormone, etc). Table 2.1. serves as an adapted version of how Štrkalj & Pather (2020) suggest implementing intersex terminology into the medical curriculum through anatomical sciences. These small interventions could relieve the pathologizing of sex differentiations (Eriksson & Safer, 2016).

Interventions such as this could carry strong value in fields such as bioethics, endocrinology, surgery and psychiatry and the pathologizing of intersex, which lead to the non-consensual and gender-conforming surgeries performed at birth (Ferrara & Casper, 2018; Jones, 2018; Feder, 2000).

Table 2.1. Proposed curricular changes in anatomical language to include intersex terminology, adapted from Štrkalj & Pather (2020).

Sex-defining characteristics	Typically, "male" classification	Proposed continuum classification	Typically, "female" classification
Genotypic sex	XY	Sex chromosome ambiguity	XX
General phenotype	- Testicles - Eppididdimis - Vas deference - Penis - Scrotum	- Enlarged clitoris - Fused labia - 'male' internal genitalia with 'female' external genitalia in genotypically XY individual	- Ovaries - Uterus - Cervix - Clitoris - Labia majora & Minora, - Vagina
Anatomy of the reproductive tract	- Vas deferens - Prostate	- Hemi-uterus - Unicormuate uterus - Fused paramesonephric ducts	- Uterus - Uterine tubes
Anatomy of external genitalia	- Scrotum - Penis	- Hypospadias - Microphallus - Vaginal agenesis - Vaginal hypoplasia	- Labia majora and minora - Clitoris
Secondary sex characteristics	- Increased facial hair	- Hirsutism - Gynecomastia	- Larger breasts - Increased abdominal fat

Pelvis osteology	- Heart shaped pelvic inlet with sacral promotory that projects further acute angles between inferior pubic ramus (-70 degrees)	- Platypelloid pelvis - Android pelvis - Anthropoid pelvis	- Gynecoid pelvis - Larger, broader pelvis - Larger oval-shaped pelvic inlet - Obtuse angle between inferior pubic ramus (-90-100 degrees), large pelvic outlet, higher and more pronounced iliac crest.
Anatomy of the sacrum	- Long, narrow, straighter, and has a pronounced sacral promontory	- Range of variation between the typical male and female descriptions	- Shorter, broader and more curved posteriorly - Less pronounced promontory
Anatomy of acetabulum	- Faces more laterally	- Range of variation between the typical male and typical female	Faces more anteriorly, wider apart in females than in males
Biomechanics and anatomy of Galt	- Lower limb can mov e forwards and backwards in a single plane	- Range of variation between the typical male and typical female	- Lower limb swings forward and inward, from where the pivoting head of the femur moves the leg back in another plane.

2.3. The LGBTQI community

As Mentioned earlier, the binary view of sex and gender prescribes and dictates how healthcare professionals perform care. Individuals who do not adhere to these prescriptions and proscriptive are prosecuted by society, such as members of the Lesbian, Gay, Bisexual, Transgender, Queer and intersex (LGBTQI) community (Moss-Racusin, Phelan & Rudman, 2010; Katz-Wise & Hyde, 2012; Rudman, Moss-Racusin, Phelan & Nauts, 2012). More evidence-based research shows how discrimination against this community in healthcare impacts the community's mental health, which predisposes the LGBTQI+ community to significant health inequalities. Examples include substance abuse, anxiety self-harm, as well as suicidal ideations (Bauer, Scheim, Pyne, Travers & Hammond, 2015).

2.4. Transgender and non-binary individuals

Individuals who identify as transgender have incongruent experiences about their gender assignment at birth (Reisner *et al.*, 2016). Therefore, a transgender female is assigned the male gender at birth, and a transgender male is assigned the female gender at birth (Bouman, Schwend, Motmans, Smiley, Safer, Deutch, Adams & Winter, 2017). However, transgender individuals view sex on a spectrum instead of a binary construct (Luvuno, Ncama & Mchunu, 2019). The clinical approach was derived from the notion that gender is socially constructed; therefore, the reality of an individual's gender would depend on context and culture. Thus, making the definite and universal reality of one's gender impossible to categorise systematically (Reisner *et al.*, 2016; Spencer, Meer & Müller, 2017; Luvuno *et al*., 2019).

Wilson, Marais, de Villiers, Addinall & Cambell (2014) highly regard the use of transgender terminology in health care practice. They believed that these concepts are essential and should be taught to all health care workers to avoid the exclusion of transgender patients. To reiterate what was previously described, the term sex, is the most biological categorisation of characteristics attributing to one's reproductive functions (typically assigned as either male to male or female sex at birth; natal sex) (Moxham, Olaisant, Smith, Pawlina & McHanwell, 2014).

In relation to sex, the term gender refers to the attributes, behaviour and roles labelled as feminine or masculine according to the nature of the individual's context and culture (Štrkalj & Pather, 2020). Gender identity would thus refer to the congruent or incongruent personal experience with one's natal sex. If there is an incongruent experience with one's natal sex/gender, a form of medical transitioning is implemented to various degrees to relieve gender dysphoria (Drescher, Cohen-Kettenis & Winter, 2012).

Medical transitioning is the physiological or psychological process of adjustment, undertaken by an individual who experiences incongruence with their sex assigned at birth. This process of adjustment is undertaken to create a closer sense of congruence between their experienced gender and sex. The final process introduced is gender reassignment therapy, which is any form of gender alignment or gender-affirming actions. It is important to note that this intervention is patient-context-dependant and cannot be universally applied to all transgender and non-binary bodies (Bouman *et al.*, 2017; Jones, 2018). These interventions include endocrine and surgical options to enable physical feminisation or masculinisation to facilitate their medical transition (Drescher *et al.*, 2012; Štrkalj & Pather, 2020; Vincent & Camminga, 2009; Wilson *et al*., 2014). According to Wilson et al. (2014), there is a lack of undergraduate – and limited postgraduate – training in transgender services in South Africa. This lack of training severely restricts the number of professionals equipped to treat transgender individuals in the healthcare industry. There is also a lack of interest and involvement in reconstructive medicine and surgeons who lack local transgender research, which is believed to limit the development of evidence-based interventions (Wilson *et al.*, 2014).

Medical transitioning is influenced by binary teachings of sex, gender and cisgenderism in medical education (White Hughto, Reisner & Pachankis, 2015). Transgender is simply an umbrella term and adjective used to describe individuals who do not express their gender or identify their gender as culturally bound to the gender or sex to which they were assigned at birth (Bornstein, & Bergman, 2010). Therefore, transgender individuals can define their gender identity in a variety of ways and ultimately express it as such. For example, transgender individuals can identify as *Femme queen*, *Butch queen*, non-binary, gender diverse, transgender masculine, transgender feminine etc (White Hughto *et al.*, 2015). Transgender individuals do not have to align their sexual orientation according to heterosexual and cisnormative schools of thought. For example, transgender men can identify as butch lesbians or gay men (Morgenroth *et al.*, 2021). The common denominator between these mentioned expressions is that they do not replicate or aim to replicate cisgender lives or cisgender manner of gender expression or identity (Bergman, 2011). Being transgender cannot be reduced to the desire to be the opposite gender or sex assigned at birth. This reduction would be classified as cisgenderism, which is the systematic approach that cisgender is the norm individuals seek to obtain. This pattern of thinking and its systemic implementations in the world, specifically in medical education, has pathologized being transgender and put pressure on transgender individuals to replicate cisgender appearance (Matthyse, 2017), when in fact, that is not the goal for most, if any, transgender individuals. These expectations of cisgender identity expression have caused immense barriers across multiple disciplines (employment, healthcare etc.) for transgender individuals (Reisner *et al.*, 2016). Ultimately transgender individuals who obtain closer proximity to cisgender identity expression receiving better treatment in healthcare and are more accepted by mainstream society (Matthyse, 2017).

2.5. Exclusionary practices in anatomical education

Most recent representations of the "normal" body in anatomical textbooks are described through images as muscular, with a light complexion, and a penis and testis (Smith, 2021). These body norms have historically been weaponised against minority groups to discriminate and erase the identities of transgender and non-binary individuals in Anatomy and, ultimately, medical education (DuBois & Shattuck-Heidorn, 2021). How anatomists define sex has the reach to influence how healthcare policies, treatment plans, symptom recognition and presentation, holistic care, public health and many other healthcare fields provide access to healthcare in countries (Smith, 2021). If definitions of biological sex in these practices are according to the dimorphic or topological approach, as mentioned earlier, these healthcare practices and phenomena only serve and accommodate individuals who present "male" or "female" across all levels of biological organization, as well as gender expression following accordingly (Aintsworth, 2015). Assuming that sex is congruent across all levels of biological organisation, the social aspects of a patient could lead to life-threatening misdiagnoses and inaccurate treatment plans. Anatomists should practice inclusive definitions and representations of sex and gender to create an inclusive biosocial understanding of how sex and gender interact (Štrkalj & Pather, 2020).

2.6. Exclusion in broader healthcare

Globally, transgender health is underreported (Reisner, *et al.,* 2016). Transgender individuals are one of the most marginalised social groups in the world; and are often subjected to discrimination and mistreatment (Jobson, Theron, Kaggwa & Kim, 2012; Kosenko, Rintamaki, Raney & Maness, 2013; Haire, Blondeau & Bing-You 2021). This discrimination is prevalent in developed and developing countries (Reisner *et al.,* 2016). Transgender patients are often left without legal identity being assigned to them, resulting in higher challenges within and outside anatomical and clinical practices (Lee, 2000; Roberts & Fantz, 2014; Reisner *et al.,* 2016; Camminga, 2018). These challenges include lack of employment, limited access to healthcare and lack of social support due to erasure and discrimination (Jobson *et al.,* 2012; Jones, 2018). Transgender patients experience structural barriers within the healthcare system, such as no unisex bathrooms in hospitals and being assigned to the ward according to their natal gender or sex; these are passive forms of erasure and transphobia (Spencer *et al.,* 2017). Systematic barriers include the lack of acknowledgement of transgender identities within the healthcare system (Spencer *et al.,* 2017; Luvuno *et al*., 2019). Often passive erasure is dismissed as not being discriminatory. The current healthcare curriculum in South Africa does not include any LGBTQI health information, therefore serving as an instrument of passive erasure via lack of knowledge, data policies and practical guidelines relating to the transgender population (Wilson *et al*., 2014). Active erasure is often the only current acknowledged form of discrimination in the healthcare system. this form of

erasure takes the form of hostility and verbal abuse causing distress to transgender patients, and ultimately leading to transgender individuals avoiding the healthcare system (Corliss *et al*., 2007; Roberts & Fantz, 2014; White Hughto, Reisner & Pachankis, 2015; Luvuno *et al.,* 2019). In some instances, this leads to the unsupervised practices of dangerous medications and procedures. Transgender individuals avoiding the healthcare system proves problematic, as this group is at higher risk for multiple conditions, such as substance abuse, suicide, mental illness and very high HIV prevalence (Reisner *et al*., 2016). Furthermore, it is also reported that the transgender population has a fourfold chance of contracting the HIV (Clements-Nolle, Maex, Guzman & Katz 2001; De Santis, Hauglum, Deleon, Provencio-Vasquez, & Rodriguez 2017)

Above mentioned erasure and discrimination lead to transgender individuals withdrawing from healthcare environments, even though their transitioning needs are so heavily reliant on the healthcare system. Unsupervised practices are self-performed, such as orchiectomy (amongst transgender females) and mastectomy (amongst transgender males) (Rotondi, Bauer, Scanlon, Kaay, Travers & Travers 2013; Ferrara & Casper, 2018). Other practices include cross-gender hormone administration. The prevalence of unsupervised hormone usage amongst transgender individuals ranges from 29-63%; often associated with hypercoagulability, thromboembolism, and decreased insulin sensitivity (Rotondi *et al.,* 2013).

The lack of knowledge among healthcare workers is cited as a restriction for transgender patients seeking medical attention (Wilson *et al*., 2014; White Hughto *et. al*., 2015; Sanchez *et al.,* 2017; Štrkalj & Pather, 2020). These defects are apparent at an institutional level of medicine, where policies to protect transgender individuals go unrecognised, such as the inability or refusal to accommodate in-patient placement consistent with a patient's expressed gender (White Hughto *et al.,* 2015). Another defect is allowing the erasure of transgender bodies in the medical sciences through anatomical sciences. This lack of knowledge provides a theoretical base to allow the informational and institutional process through which healthcare barriers arise.

2.7. Health Care experiences in SA

During the apartheid era (1948-1994) in South Africa, several laws that criminalised and denied the rights of sexual and gender minority populations. The adoption of the new South African constitution in 1996 and the bill of rights, section 27(1), states that the protection and guaranteed rights for all, including the LGBTQI population. Therefore, access to healthcare systems was one of these rights, accompanied by the written statement that no person shall be refused healthcare or be given inferior treatment, according to the constitution and national health act 61 of 2003. Despite this legal right to

protect its individuals, evidence suggests that the LGBTQI population in South Africa still encounters numerous structural and systemic barriers in accessing healthcare.

South African transgender individuals experience similar challenges corresponding to those of other middle-income countries. These experiences would be even more prevalent, as it is exacerbated by the criminalisation of LGBTQI identity in the majority of the African continent. Furthermore, South Africa has one of the highest rates of HIV globally. These factors are why barriers created by lack of policy to protect transgender health rights, and limited skills to treat these patients, prove especially dangerous (Spencer *et al*., 2017; Luvuno *et al.*, 2019). Spencer *et al*., (2017) performed a policy review and service mapping on the experience of the transgender population from the perspective of healthcare workers and found that access remains severely limited and unequal in South Africa. Whilst there are few documented transphobic experiences in the South African healthcare system; transgender advocacy organisations provide important first-hand accounts of gender-based discrimination (Sanchez *et al.*, 2017; Luvuno *et al*., 2019).

2.8. Anatomical education as an inclusive space in medical education

The concept of cisnormativity (or cissexism) contributes to the dominant discourse around sex and gender in medicine. Cisnormativity is grounded in the historical privilege of cis-gendered bodies and experiences, medicalising, and 'othering' transgender bodies (Luvuno *et.al.*, 2019). Štrkalj & Pather (2020) explain how cisnormativity leads to the underlying process, driving the erasure of transgender patients. Transgender and non-binary individuals experience erasure through informal systems, typically due to the lack of knowledge about transgender and non-binary bodies. This erasure could be passive assuming that these individuals do not exist in the healthcare system, whereby institutions lack policies focused on accommodating transgender identities (Bouman *et al.*, 2017). This erasure contributes to the challenges that transgender youth face while accessing health information that includes transgender and non-binary bodies, contributing to the erasure of transgender identities (e.g., through sex education policies and in health care systems; Vanderleest & Galper, 2009). In both examples, the historical educational needs of cisgender students, teachers, and healthcare providers are prioritised over equitable access to information and inclusive curricula for transgender individuals (Bouman *et al*., 2017; Jones, 2018).

Tordoff, Hale, Shook, Kantor, Crouch, & Ahrens (2021) found that the overwhelming majority of transgender and non-binary individuals were uncomfortable with the terms "female" and "male" when being used to describe their bodies. Furthermore, participants who disliked the terms "male" and "female" do not ascribe to these terms, as it inaccurately describes their current sex status. One of the

feminine-bodied non-binary participants stated, "I am not a female. I am a person with a vagina, I menstruate, I could give birth. That does not make me female. I am a non-binary person, with a non-binary body." Another masculine-bodied individual said, "I'm not female. I'm a man with a vulva who's about to give birth, and no, I'm not going to be a mother; this is my male body because I'm a man, and male is an adjective for man." Healthcare affiliates also acknowledge that many of their professional peers often use gender-essentialist language, promoting the erasure of transgender and non-binary bodies (Bouman *et al.,* 2017).

The LGBTQI population is at higher risk of receiving improper medical care globally (Castañeda, 2015; Reisner *et al.*, 2016; Haire *et al.*, 2021). Eriksson and Safer (2016) believe medical education has yet to establish appropriate mechanisms to educate the students/future clinicians on any understanding of human sexual diversity and its relevance to clinical practice. According to Sanchez *et al.,* (2017), in New Zealand, there is a need for further inclusion of curriculum related to transgender, gender diverse and intersex patients.

Furthermore, another review on mainstream anatomical science textbooks that Australian medical schools use, found that these textbooks adhere to an almost complete binary approach to sex. Moreover, these textbooks were also found to be used globally and appear in many different foreign languages (Sanchez *et al.*, 2017). These textbooks are regarded as some of the highest quality educational materials in the world for anatomy. However, there could still be minor revisions to include more biological sex variation (Štrkalj & Pather, 2020). Moxham *et al*. (2014) hold fundamental that because anatomy is incorporated into multiple disciplines, such as medicine, allied health and science, as well as humanitarian studies, the conversation should be standardised amongst all above-mentioned practices. Anatomical sciences has fallen behind on the conversation that its allied disciplines have been exploring and it is translating into clinical practice (Corliss, Belzer, Frobes & Wilson, 2007; Safer & Pearce, 2013; Moxham *et al.*, 2014; Sanchez *et. al*., 2017; Štrkalj & Pather, 2020). Luvuno *et al., (2019),* suggest that an introductory short course be implemented and be done without contributing to the hefty workload that already exists on top of medical students.

A publication by Easterling and Byram (2022) from the School of Medicine, Indianapolis, United States of America (USA), showcased how the introduction of a "primer" in the urogenital anatomy module created a higher comfort level for a transgender patient when the student has to take patient history. The "primer" was based on sex and gender and was used to compare and explain gender and sex as being on a spectrum (Easterling & Byram). This study argues that the anatomical sciences are the building blocks for many medical professions and should set the standard of care. Teaching medical students how individuals in the world view and understand their bodies improves diagnosis, symptom recognition and clinician-patient interaction (Aintsworth, 2015; Easterling & Byram, 2022).

Chapter 3: Materials and Methods

PURPOSE/GOAL: Establishing the scope of transgender and non-binary health information in the Stellenbosch University's anatomy and medical curricula as well as evaluating the effect that the sex binary taught in medicine has on transgender and/or non-binary individuals receiving health care in South Africa.

FOCUS GROUP: Tygerberg Medical Campus, Stellenbosch University, and the Transgender and Non-binary community in South Africa.

LOCATIONS/ORGANISATIONS TARGETED: The Gender Dynamix organisation, Zoom platform (online; only national participants) and Tygerberg Medical Campus, Stellenbosch University.

POPULATION: Health science students attending Tygerberg Medical Campus that have taken or are taking anatomy, lecturers, tutors, demonstrators (practical assistants), as well as transgender and/or non-binary individuals above the age of 18 who have had contact with the health care system in South Africa.

STUDY DESIGN OVERVIEW

The present study used three different data collection instruments to comprehensively understand how the binary nature of Anatomical sciences, later discovered the medical curriculum in general, is impacting transgender and non-binary patients in the South African healthcare system. Detailed explanations of each data collection instrument will be explained in later sections 3.1., 3.2. and 3.3.

In Figure 3.1. we indicate that we used purposeful sampling based off the respective inclusion criteria for each data collection instrument. Institutional permission was granted to distribute our survey to students and staff involved in anatomical sciences at Tygerberg Medical Campus, Stellenbosch University. The study would also like to acknowledge that Gender Dynamix NGO distributed our study information via their social media platforms and amongst their cliental base in order for use to do individual interviews with our second data collection instrument.

Data was collected in three parts: part one and two were conducted simulations, As the Mixed methods survey was distributed electronically and self-reported, which allowed the primary investigator and research consultant to conduct individual interviews. Data from the mixed methods survey (Part one) and individual interviews with transgender and no-binary community members (Part two) were coded and new topics/themes were developed to form a third instrument (Part three: the focus group). The

sample for the focus group was invited from the individual interview participants. The reason for this was so that we could also triangulate some of our findings from the individual interviews as an extra measure of trustworthiness. After the focus group discussion was coded, we could use the date from all three instruments to come to a conclusion and address out problem statement as our research exploration (question).

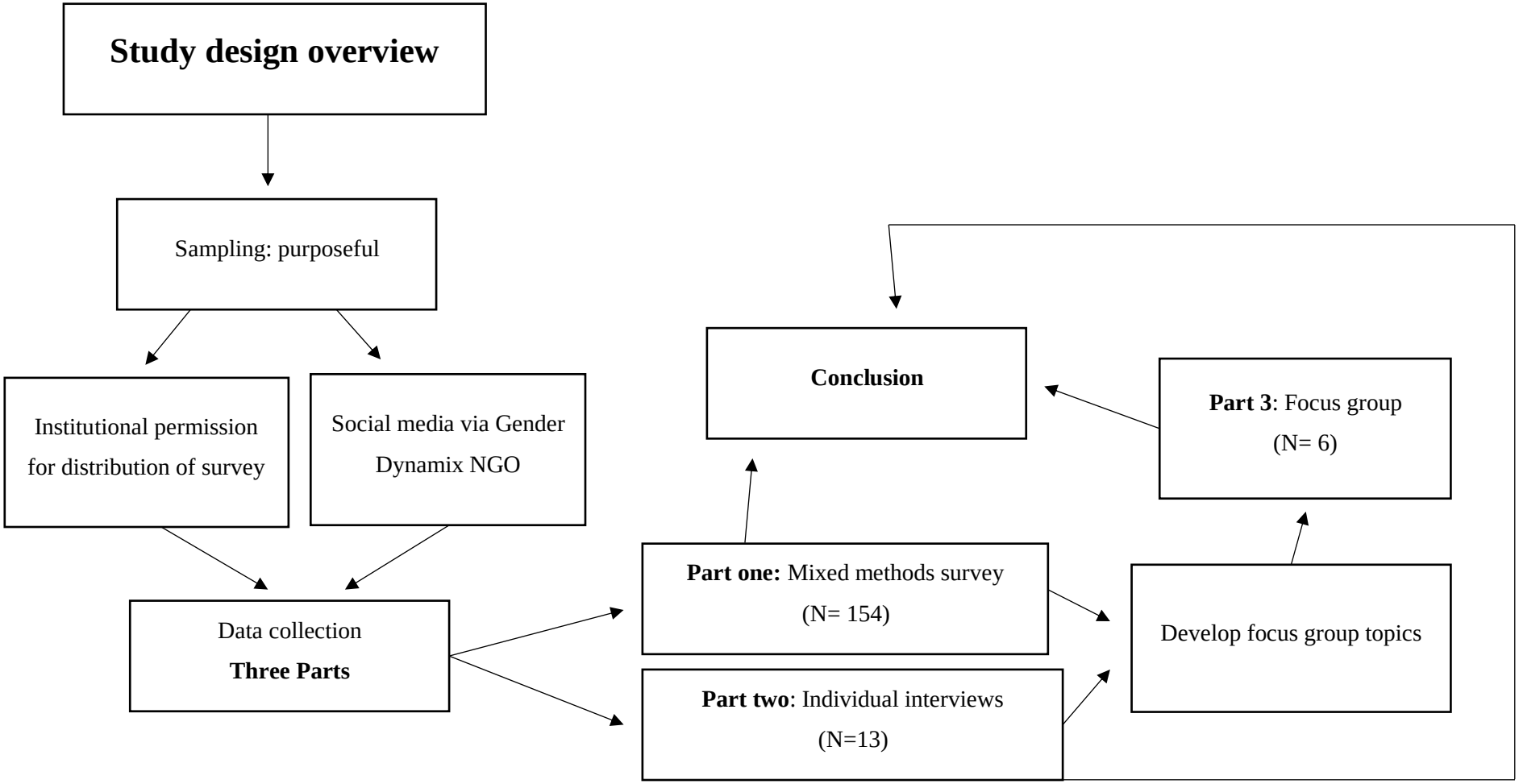

Figure 3.1. A diagram that illustrates the broad research design and chronological data collection procedures of the present study.

3.1. Establishing the scope of LGBTQIA+ curriculum at Tygerberg Medical Campus, Stellenbosch University

3.1.1. Research design and methods

The research design and methodology for the present study was adapted and modified from a study conducted by Sanchez, Southgate, Rogers and Duvivier (2017). This study aimed to establish the scope of Lesbian, Gay, Bisexual, Transgender, Queer, Intersex (LGBTQI) health in the medical training of Australia and New Zealand healthcare workers. The study methodology included an online cross-sectional survey that was sent via email to the administrative council of each medical school involved. Pre-existing literature regarding education and gender in South African medical schools are more scares compared to systems in New Zealand and Australia. Therefore, questions were adapted to the South African context. The present study will focus on transgender and non-binary sensitisation resources available to medical students whereas Sanchez *et al.* (2017) was investigating content covered to train doctors on interactions with the wider scope of all LGBTQI individuals. Future studies could use the data from the present study to possibly create a more detailed approach for inclusive health care provision, such as the study conducted by Sanchez *et al.* (2017). Due to the scope of the current study and time constraints, the need for transgender and non-binary inclusion within healthcare will be addressed in the present study.

The adaptation process included a rereview of the papers, "Evidence of interventions for improving healthcare access for lesbian, gay, bisexual and transgender people in South Africa: A scoping review" by Luvuno, Mchunu, Ncama, Ngidi, and Tivani Mashamba-Thompson (2019), and paper, "Inclusions of Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex Health in Australian and New Zealand Medical Education" by Sanchez *et al.* (2017). In the Scoping review Luvuno and colleagues found that South African Studies on the LGBTQI community have small sample sizes and focuses mainly on the sexual health of gay men and men who have sex with men. Neglecting the rest of the LGBTQI community. Based off the reports in this scoping review, we decided to only focus on transgender and non-binary identifying adults who access general healthcare (which may also include affirmative and sexual health experiences). The primary investigator and supervisors used the scoping review analysis of factors that contribute to poor LGBTQI health as a guide when selecting questions from the Sanchez *et al.* (2017) paper. These factors were Internalised homophobia or transphobia, lack of healthcare worker sensitivity and skills, lack of policies on LGBT health, Lack of targeted LGBT health programs, Lack of fata on LGBT population, Lack of LGBT health in the Healthcare environment curriculum and humiliation and ridicule of LGBT patients by healthcare workers. The survey was piloted amongst ten anonymous colleges who did not participate in the present study.

The cross-sectional survey was descriptive in nature, with the central phenomenon being current knowledge and resources available to students and educators primarily engaging in anatomical sciences, and other healthcare courses at Tygerberg Medical Campus, Stellenbosch University. Due to the lack of transgender and non-binary research conducted on South African healthcare programmes, a descriptive study was chosen as it would build empirical evidence to support future policy formation and more inclusive medical curricula at Stellenbosch University, and South Africa at large.

Motivations and recommendations based on rich textual descriptions from students and lecturers, as well as an evaluation on current knowledge and beliefs related to engaging with anatomical sciences and the rest of the medical program at Tygerberg Medical Campus. Emailed surveys were chosen as distribution and sampling tool as it is a useful tool for collecting qualitative and quantitative data effectively from a geographically diverse group of individuals.

The target group of this educational investigation have different geographical locations (due to hybrid learning during COVID-19) and time schedules (different health science degree programmes and year groups), due to the nature of their clinical learning environments. Sending email interviews does lessen the depth in which participants engage per topic/question, compared to one-on-one interviews. However, for a cross-sectional description of our current phenomenon we would prefer higher number of feedbacks, from a diverse group of healthcare students, for higher impact when it comes to making recommendations to future university policies and how anatomy is taught at Tygerberg Medical Campus. The higher the diversity of the study sample, the richer the data, according to Morgan (1997). Morgan (1997) suggests that a homogenous group of participants would not be an accurate representation of the larger community in the natural world.

Mixed methodology was used in the form of a questionnaire, comprising of both closed (quantitative) and open-ended (qualitative) questions. The design of the closed component of the questionnaire has three options to choose from: “yes”, “no”, or “not certain” (see addendum 9.2). The open-ended qualitative component was required to obtain recommendations from the students and educators, based on their first-hand experiences in healthcare education. The present study followed convergent mixed methodology; quantitative and qualitative data was collected in one survey, analysed separately, and then merged (Creswell, 2014).

In section A of the cross-sectional survey, the first eight questions tested the current knowledge of students regarding transgender and non-binary health. Thereafter, the following ten questions evaluated the student’s perspective regarding the need for more transgender and non-binary health in their curricula. Finally, seven open-ended questions were asked (section B) to expand perceptions on how

much the students currently know and if they think there is a need for more inclusive material in the curricula. Students were asked to suggest possible ways on how this could be achieved.

The identity of each participant will be kept private as no one will be required to disclose their identity or student number during data collection. However, each participant would be asked to disclose what their role is at the university, namely student, lecturer, demonstrator or tutor. All data will be kept on redcap, which is a password-protected database. Only the primary investigator and supervisors will have access to the redcap database. The survey was sent out anonymously. The students had access to the survey for one month. A reminder was sent our two weeks after the initial invitation was sent. The participants were able to enter and leave the survey at their own discretion. Furthermore, a portable document format (pdf) version of their completed response was automatically generated by the redcap server once completed. Consent was given electronically after reading the study information and participation information and clinking on the link, initiating the survey (see addendum 9.3).

3.1.2. Study population and sample

3.1.2.1. Inclusion criteria

The study population includes any anatomy lecturers, tutors, practical assistants or demonstrators, and students who are involved in the teaching or learning of anatomical sciences at Tygerberg Medical Campus, Stellenbosch University.

3.1.2.2. Sample

An online cross-sectional interview was emailed to 2085 health science students. This included students at Stellenbosch University's Tygerberg Medical Campus who had previously enrolled or participated in an anatomy module (see Table 3.1., below), as well as anatomy lecturers, tutors, and practical assistants or demonstrators. No first years were included in our survey to eliminate students who haven't been exposed to all resource's anatomy has to offer on Tygerberg Medical Campus.

Table 3.1. Student degree and year of study that the cross-sectional survey was sent out to at Tygerberg Medical Campus, Stellenbosch University

Academic Degree Programme	Acronym	Programme Year
Bachelor of Medicine and Bachelor of Surgery	MBChB	II; III; IV; V; VI
Bachelor of Speech-Language and Hearing Therapy	BSLHT	II; III; IV

Bachelor of Occupational Therapy	BOT	II; III; IV
Bachelor of Science in Dietetics	BScDiet	II; III; IV
Bachelor of Midwifery and Nursing	BMidNur	II; III; IV
Bachelor of Science in Physiotherapy	BScPhysio	II; III; IV

The sample size was determined by the number of applicants that engaged in the survey sent via email. Therefore, purposeful, typical sampling was used. Purposeful selection of the data from participants sharing their experience and opinion was done by following inclusion criteria set in section 3.1.2.1., mentioned above. Typical sampling implies that the participant reflects the average person, situation, or instance of the phenomenon.

3.1.3. Sampling procedure

Invites were sent via the Microsoft outlook mailing system via Redcap. The primary investigator did not have access to the contact details of the participants. The information's Technology department of Stellenbosch University distributed it to students who belong to the degree and year of study mentioned in table 3.1. Consent was given after reading the participant information and by understanding of the agreement was given by pressing start. This was made clear in the consent form (see addendum 9.3.).

The survey was distributed to Anatomy Lecturers, practical demonstrators and tutors by Divisional Advertisement (see Addendum 9.1.), after obtaining permission to do so from the Head of Division from Clinical Anatomy at Stellenbosch University.

Institutional permission was obtained from Stellenbosch University to access the information of academics and students and comply with the University guidelines regarding the Protection of Personal Information Act (POPIA). Participants agreed to participate after reading an online participant information leaflet (see addendum 9.3). Considering the 15830 students that enrolled for Stellenbosch University undergraduate degree programmes with English as a preferred language of instruction, and 6465 students who registered for postgraduate programmes with the same language preference, 22295 (70.7%) students chose English as their preferred language for academic instruction in 2020. Therefore, the study information and questionnaires were available in English. Participants did not incur any costs for participating, except for the data they may have used for completing the online survey. No personal identifying information was collected. Data was managed using password-protected access. Only the research team will have access to the data.

3.1.4. Data sources and data collection

Online cross-sectional surveys were sent out to each respective healthcare student, anatomy tutor, practical assistant, as well as anatomy lecturers. Language preferences were available upon request as indicated by addendum 9.3. All data collected were stored in the Redcap database, gatekept by a username and password that is only known to the primary researcher and supervisors.
Unfortunately, the number or participants from each degree and year is unknown to the Primary investigator in order to protect the identity of participants. This was advised by the HREC committee of Stellenbosch University in order to fulfil POPIA. However, we can disclose that there was a response rate of 7% (In total, 142 students, one tutor, two demonstrators, and three lecturers completed the full survey).

3.1.5. Data analysis

The qualitative component of the present study was analysed using the phenomenological paradigm. Responses were grouped in the results section by question and described with the question being the central phenomenon of each section. For each question themes were derived and grouped into separate paragraphs. The leading part of the paragraph would represent the structural description and the explanatory part of the paragraph would represent the textual description. Each textual and structural description was followed by written quotes from survey responses to prove the credibility of the themes and explanations. Using this strategy, the present study could capture the essence of the participants from each question. Unfortunately, answers in this section weren't always long enough to study or find subthemes. As a research group we decided to group phenomena under questions per paragraph, instead of using subheadings. The reasoning for this was so that the researchers didn't have the opportunity to extend subthemes, based on their perception of what the phenomena were.

The quantitative component was an objective way to test how many students have basic knowledge on transgender and non-binary identities. Question inquired into time and resources available to each student. This could all help to build future research on how a lack of transgender and non-binary knowledge could cause discrimination in the healthcare environment.

The qualitative component addressed the same phenomenon as the quantitative data, but there (in section B of the survey) rich textual descriptions were provided and an understanding about how students think about these terms and what they think are true about bodies on the gender spectrum could be formulated. Third would be in accordance with how Creswell (2014), recommends convergent mixed methods research be merged with one another. Participants also suggested possible ways of

implementing more of this knowledge into a curriculum that they are studying. Mixing the qualitative and quantitative data from the survey created an understanding of how much is currently known, how much information is available to students and how this information will help in the future could be drafted.

3.1.6. Trustworthiness

3.1.6.1. Quantitative

The results of the surveys were automatically counted and summarised by the Redcap data capturing system. The captured data on redcap was converted into bar charts by redcap. Each chart shows the total amount of participants who responded yes, no and not certain per question in section A of the cross-sectional survey.

3.1.6.2. Qualitative

Trustworthiness was established by ensuring credibility, dependability, transferability, and confirmability criteria described by Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs (2014) and Creswell & Poth (2018). Credibility was chieved by purposefully sending surveys to students, tutors, practical assistants, and lecturers that are involved in anatomical sciences at the University of Stellenbosch, on Tygerberg Medical Campus, and registered as such. The themes that emerged from this study were confirmed and verified with the respective supervisors involved in the present study. To monitor subjective bias, while developing themes, a reflective journal was kept by the researcher in which they recorder their opinions and thoughts before and after each theme throughout the research process. The dependability of the present study was ensured by following methodology from a similar study by Sanchez *et al.* (2017) which yielded significant findings that contributed to the development of more gender inclusive curricula in Australian and New Zeeland medical schools. Questions from the questionnaire and open-ended section of the present study were obtained from this study and modified to match the current phenomenon being investigated. The transferability of results was ensured via thorough description of each participant's role in the anatomy programme at Tygerberg Medical Campus and purposeful selection through inclusion criteria. Additionally, themes were inspected by the primary investigator, a paid research consultant and supervisor, yielding similar findings to the primary investigator. Inclusion of quotes from the open-ended questions shows authenticity of the participant's first-hand opinions and achieves transferability of the data sampled. Finally, to ensure conformability, collected information was verified with the research team throughout the process of data collection.

3.1.7. Ethical considerations

3.1.7.1. Principles of autonomy

The researcher did not have access to participant contact information from the survey responses. The invitations were sent to the students from redcap, which had the student email addressed attached to the back end of the survey. The surveys were distributed to the educators with an electronical flyer and survey link (see addendum 9.1) by the media and marketing committee of the Division of Clinical Anatomy. The participant only had to disclose their year of study and role in anatomy (student, lecturer, practical assistant or tutor).

3.1.7.2. Justice

The researcher did not have alternative motive and is completing the present study in fulfilment of their MSc in Morphological Sciences degree. The investigation done was to create a more inclusive environment for the transgender and/or non-binary individuals in the healthcare environment. Each participant received an automated email that contained their response after submitting their answers. We intend to publish these findings in a peer reviewed journal and present this research internationally to fellow researchers and healthcare professionals. The identity of the participants will still remain private, as the primary investigator never had access to this information in the first place.

3.1.7.3. Non-maleficence

The present study conducted research with the target population and not on them. The best interest of the participants was kept in mind. The entire study participation was voluntary, and individuals had the option to withdrawal from the study at any moment.

3.1.7.4. Beneficence

The participant was indirectly contributing to a more inclusive healthcare environment for transgender and non-binary identifying individuals. Data obtained from the online cross-sectional survey will be used to recommend improvements to the way that gender is currently taught or introduced into the medical program of future medical professionals and will create a safer space for all patients that seek healthcare in South Africa.

3.2. The sex binary in Anatomical education and its effects on transgender patients in the South African healthcare context

3.2.1. Research design and methods

The research methodology for the second third of this study has been adapted from a study conducted by Luvuno, Ncama & Mchunu (2019), "Evaluating the transgender population's experiences with regards to accessing reproductive health care in KwaZulu-Natal, South Africa: A qualitative study." The present study changed the focus of the interview to match the aims of the present study, which focuses on how the sex binary of anatomical language and medical practice translates into the experience of transgender and non-binary individuals that access healthcare.

We have mentioned before that the second instrument of data collection were assessing how the binary nature in which anatomy (later discovered the entire medical curriculum) is impacting their experience of healthcare in south Africa. Luvuno *et al.* (2019) studied the transgender population's experience with regard to accessing reproductive healthcare in KwaZulu-Natal, South Africa. In this paper the reader will find that the authors suggested that healthcare workers in south Africa are under resourced on information in this domain. We were curious how these recommendations were made after studying the community's experience in healthcare (without even asking students or educators any questions), because they were suggesting the link between education and bad quality and accessibility of healthcare for people who are not cisgender. Therefore, we could study their results to build questions that we though were relevant to ask regarding general healthcare access and not only reproductive health care; and include their recommendations and opinions of healthcare education (see addendum of individual interview questions) in our interview to present to the community. As we and Luvuno's team suspected, we also found patterns amongst our sample suggesting that the gender diverse community thinks that the lack of resources in health care education is the reason why they are being discriminated against.

This qualitative study used the phenomenological approach to organise and group data. The phenomenological approach focusses on understanding the essence and meaning of the experiences lived by participants, revealing meaning through thematic analysis (Creswell &Poth, 2018). Thus, participants explain their experiences of how anatomical language and binary teachings in healthcare education currently impact their access and experiences in South African health care. The social constructivism paradigm was used as theory of choice when interpreting data and developing themes. Following this process, the researcher was able to build a collaborative relationship with participants, acknowledge and bracket researcher bias, and recognise transgender and non-binary identities as a central organising concept in the participant's lives. Social constructivism assumes knowledge is

socially and culturally constructed, and that universal reality cannot be discovered because it does not exist until it is created in each experience. Therefore, individual realities may differ, making a conclusion extremely complex. Resultantly, the researcher relies heavily on unique participant experiences, as meanings are determined by history and the societal milieu. Memoing was used to document the thoughts of the researcher. Memoing is the writing of ongoing notes, exploring how researcher bias were shaping the interpretation of data (Creswell & Poth, 2018). The individuals who coded the interview transcripts; namely the primary investigator and hired research consultant wrote ongoing notes of their thoughts during the online interview. The transcripts were coded in a table with three columns. On the left, were the coded themes that emerged from the transcript, in the centre column was the interview transcript, and in the right-hand column the coding individual had to match their thoughts of the them that emerged horizontally with it in the lefthand side column.

3.2.2. Study population and Sample

3.2.2.1. Inclusion criteria

Participant must be eighteen or older, self-identified as transgender and/or non-binary and have had contact with healthcare services in South Africa.

3.2.3. Sampling procedure

Snowball sampling was the preferred method of choice, followed by purposeful sampling according to the inclusion criteria. Snowball sampling was preferred because transgender and non-binary individuals are part of a vulnerable and underserved minority group. The snowball sampling was followed by purposeful selection because the phenomenological approach requires the participants to be selected intentionally on the basis of having experienced the phenomenon being explored. The present study worked with a marginalised and hidden group of individuals, therefore snowball sampling was most appropriate for identity protection.

The present study collaborated with the Gender Dynamix organisation, located in Observatory, Cape Town. Gender Dynamix is a gender diverse and transgender-focused NGO, experienced in working with and counselling gender diverse and transgender individuals. Gender Dynamix have a group of individuals that they have built allyship with to participate in studies that they conduct. Gender Dynamix designed an advertisement containing the study information and researcher contact details (see addendum 9.4.). The NGO distributed the advert on all of their social media platforms; Their social

media following was able to reshare the study information. If individuals were interested in participating in the study, then they contacted the primary investigator via email.

The present study aimed for a minimum of 10 participants. According to Creswell and Poth (2018), data saturation could be reached from anywhere between 5-25 participants, but more generally between 10-15 participants. Data saturation usually occurs when the same information is presented, and no new themes emerge. The present study had thirteen participants and data saturation was reached after the ninth interview. Data was analysed and collected concurrently. The first thirteen interviews had finished, and the research group were still rerouting more participants. In this period the two researchers who coded the data, started the coding process and found saturation by the ninth interview coded. We continued the coding process, as we had finished all thirteen already. The recruitment platform closed, the final four interviews were coded, and no new themes emerged.

3.2.4. Data sources and data collection

Consent was obtained from each participant, and they were provided with an information sheet (see addendum 9.5.) explaining the purpose of the study. Translation services were available in instances when a participant was not comfortable with the interviews being conducted in English.

Due to Covid-19 regulations, interviews were held online via Zoom and recorded on the same platform. The interview recording was transferred to Redcap within 30 minutes after the interview. Each interview recording was then erased from the Zoom platform once uploaded to Redcap. Offering the option of an online interview made the data collected more reflective of the community in South Africa and did not limit the sample to the geographic region of Cape Town. Furthermore, the study was able to access individuals from anywhere in the country with zoom and participants agreed that they would most likely would have hesitated to engage in the present study if traveling was involved. the research team could sample more individuals this way. Mobile data was offered as compensation on the study advertisement so that we could reach different levels of income groups and not only those with broader access to the internet. Participants tended to be available after working hours, specifically after 17h00.

The present study acknowledges that this population faces many structural and systemic barriers. Therefore, we offered psychological assistance and access to counselling resources should a participant require such services. A clinical psychologist was available to join the zoom call in the event that de-escalation be required. The research team reached out to Gender Dynamix, to arrange for the provision of post-interview resources.

3.2.5. Interviews

Eleven open ended questions (see addendum 9.6.) were asked to each participant. A single interview was held with each participant to understand their individual experiences and document a reality for each participant based on these experiences.

3.2.6. Data analysis

Firstly, data was coded and reduce to general, broad codes using the phenomenological coding process of horizontalizing data (developing a list of non-repetitive, significant statements, all with equal value). Secondly, supervisor, research consultant, and primary investigator analysed the data and developed meanings and themes from written verbatim. Thirdly, we developed a structural definition based on how the phenomenon was experienced. The data was reduced to significant statements, which were combined from themes. Significant statements would imply that there were common themes found from each interview. The themes were translated to textual descriptions of what was experienced. Lastly, a structural description was used to convey the overall essence of experiences. Through constant comparison, the research team identified both common and variant themes, emerged and confirmed from individual interviews. The research consultant and primary investigator coded the data on the Redcap database.

3.2.7. Trustworthiness

Criteria on achieving trustworthiness, described by Creswell & Poth (2018) involves establishing credibility, dependability, transferability, and conformability. The credibility in the present study was achieved by purposefully selecting participants, after snowball sampling, who self-identify as transgender and accessed South African healthcare.

Furthermore, the audio and transcript from the interviews were shared with respective supervisor and research consultant to confirm coded themes. Interview transcripts were shared with the participants. If the participant found the transcript to be an accurate reflection of their character as well as the conversation, they accepted and signed the document. This process is called member checking (Creswell & Poth, 2018). A reflective journal was kept, where the researcher practiced memoing of experiences and thoughts, constantly monitoring research bias.

Dependability in the present study was established by using similar methodology from a study done by Luvuno *et al.*, (2019). In this study researchers used detailed methodology that we could draw

techniques from and conduct in our own study to yield valuable information and contributing transgender health in medicine (Luvuno *et al*., 2019). Questions used in this study were approved by Gender Dynamix, our research consultant and the primary investigator's supervisors on basis off existing literature, provided in chapter two.

Transferability was achieved through a thorough description of the context in which the participants found themselves in, as well as purposeful selection via an inclusion criteria. The data was coded by three investigators, as previously mentioned, to ensure that the primary investigator's bias do not overshadow the participant voice. Authenticity was supplemented by inclusion of verbatim quotes from the research participants, bolstering transferability of the data. Furthermore, member checking provided triangulation of the themes coded from the individual interviews. Triangulation was done in a focus group session with six of the participants (randomly selected) from the individual interviews. Finally, to ensure conformability, the collected data was verified with research supervisors, consultant, and the study participants, throughout the data collection process.

The primary investigator received training from Stellenbosch University's African Doctoral Academy (ADA) on how to conduct interviews and qualitative research. Additionally, the research team took a qualified research consultant on board, who has worked for Gender Dynamix in the past, conducting and coding qualitative research with the transgender and non-binary community. The role of the research consultant was to supervise interviews and independently code the transcripts. This was another way for the present study to ensure validity, credibility, and transferability of the data presented in chapter four.

3.2.8. Ethical consideration

The present study acknowledges that this population faces many structural and systemic barriers. Therefore, we offered psychological assistance and access to counselling resources if a participant was negatively affected by the interview process.

3.2.8.1. Principles of autonomy

Gender Dynamix has built a following of individuals on the gender spectrum. The organisation designed an advertisement for the present study and shared it on their social media platforms. The identities of each participant were kept private. After a participant contacted the primary investigator, their identity was replaced with a randomly assigned value for reference. Each participant was asked to disclose their age and self-identified gender. According to Luvuno *et al.* (2019), there is a gap in transgender male

and non-binary representation in South African medical literature. The gender and pronouns were also necessary to be known to the researcher in order to properly address each participant. No other personal details were required. The email addresses were kept on a password protected database, redcap, and only the primary investigator will have access to it. Participants gave the researcher consent to keep their email addresses for member checking and focus group invitations

Informed consent was given after reading through the emailed or pdf document what's apped to each participant (if they did not have a computer or email address. We provided the opportunity of a phone call as a "consultation" if any participants wanted to ask more or know more about the research study, before signing the consent form.

3.2.8.2. Justice

The primary investigator testified that no alternative motive was involved in conducting the present study. The present research was conducted in accordance with the complete fulfilment of a Master of Science (MSc) degree programme. Therefore, research was conducted with the aim of improving healthcare environments for all patients on the gender spectrum.

3.2.8.3. Non-maleficence

The present study was conducted in collaboration with Gender Dynamix and their community built on social media. Participants were informed that their participation was completely voluntary and that they could withdraw at any moment.

3.2.8.4. Beneficence

Participants were informed that their participation and related data could be used to create a safer and more inclusive environment within the healthcare system.

3.3. The sex binary in Anatomical education and its effects on transgender patients in the South African healthcare context: a Focus group

3.3.1. Research design and methods

Section 3.1, "Establishing the scope of LGBTQI curriculum at Tygerberg Medical Campus, Stellenbosch University and section" and section 3.2, "The sex binary in anatomical education and its effects on transgender patients in the South African healthcare context" were successfully coded and discussed prior to the initiation of this section. Thereafter, the primary investigator, supervisors, and research consultant identified unanswered phenomena important for recommending inclusive practices in healthcare. Four questions/topics were formulated from the educational investigation survey and four questions/topics were formulated from the individual interviews held.

Initially the focus group was only going to be used as member checking to confirm themes that arose from the individual interviews. This was still done during the focus group session. However, Morgan (1997) found that focus groups can be used to explore questions and themes that have not been completely answered previously. The present study utilised the focus groups to explore new phenomena that came up during the cross-sectional survey and individual interviews.

3.3.2. Study population and Sample

3.3.2.1. Inclusion criteria

Participants were eighteen years and older, self-identified as transgender or non-binary and have had contact with the healthcare system. Participants were invited from the group of thirteen participants who individual interviews were previously conducted with in this study. The focus group added another layer of credibility to themes coded from the individual interviews; themes were member checked during the focus group. The themes chosen from the individual interviews were as follow, "Can participants who are not perceived as cis passing share how they think their treatment differs from individuals who are more cis passing in a healthcare environment?", "What type of sensitization would you see as urgent in current training of healthcare workers towards patients on the gender spectrum?", "How do you think cis normative environments such as maternity, gynaecology, urology and wards could be more inclusive or transgender and non-binary individuals?", and "Besides for hospital and healthcare policies. How could doctors make you feel more comfortable/safer in a healthcare

environment?" The present study acknowledged that the transgender and non-binary communities often face exploitation in research. Therefore, a focus group conducted with previous participants meant that we did not saturate the Gender Dynamix social media platforms with another study pamphlet.

3.3.3. Sampling procedure

Purposeful sampling was used by sending focus group invitations to everyone who participated in the individual interviews. Permission to contact individuals was obtained at the end of each individual interview. Thirteen invitations were sent out and six individuals responded and confirmed a mutual date and time. According to Zeller (1993) and Calder (1977), Morgan reports that a focus group of six to 10 participants is ideal. More than 10 participants proved to be difficult to manage by one researcher, while less than six participants could possibly be not dynamic enough to address topics and questions. This range comes with the condition of the homogeneity of the group and how experienced the participants are with the phenomena. Focus group topics were sent with each invitation for the prospective participants to decide if they have experienced any of the topics and question. Furthermore, group diversity was ensured, as the respondent group comprised two transgender men and four non-binary individuals. Data saturation was reached and confirmed with the research consultant and project supervisor after the first focus group.

3.3.4. Data sources and data collection

Consent was obtained from each participant, and they were provided with an information sheet (see addendum 9.8.) explaining the purpose of the study. The focus group participants were offered other language preferences and a translator, however the group decided to have the focus group session in English.

Initially the research team was hesitant to conduct interviews online via Zoom due to the loss of in-person interaction. However, participants emphasised the privacy of a zoom call and being able to answer in the chat box as benefits of online engagement. The audio recording was transferred to Redcap within 20 minutes after the session. The diversity and representation of the community would not have been possible if interviews were in person, as many of these participants travel for work, cannot afford travel or do not have time to travel to a venue. Moreover, they preferred the privacy of a zoom call in their home environment, in which they feel comfortable and most themselves.

It is important to repeat that these individuals are highly marginalised and have experienced highly traumatic events while interacting with the healthcare system. Psychological resources were obtained

from Gender Dynamix and offered to the focus group. A psychologist was also on call and available to engage with the group if needed. It was mentioned in section 3.2. that the primary investigator who conducted the focus group received training from Stellenbosch University's African Doctoral Academy on how to conduct qualitative research, however, the research consultant was still made available to supervise the group session and independently code the data from the transcript. This was another way for the present study to ensure validity, credibility, and transferability of the data presented in chapter four.

3.3.5. Focus group session

Eight topics with context (see addendum 9.8.) were presented to the focus group. A single focus group session of forty-five minutes was held to understand how the individuals experience these topics as a collective.

3.3.6. Data analysis

Merton (1990) divides four broad criteria for effective focus group interviews. Namely range, specificity, depth, and personal context. Again, Merton (1990) notes that range is important when creating the topics so that the researcher does not ask what they think are important. Therefore, each question was followed with a description of the context in which the research team formulated the question; this allowed a range of answers from the group.

The researcher must account each person's experience in concrete detail (Merton, 1990). This helps the group stay on topic when long discussions are held. Depth is stressed during a fucus group session to ensure that each participant is engaging in the topic being discussed. The final criteria to consider when observing a focus group is personal context. The primary investigator made sure to understand what it was that led a particular participant to express things in a particular way. Therefore, accounting for the context in which the participant experienced a particular interaction

Morgan (1997) mentions three general ways to code focus groups. Firstly, noting every mention of a particular code or theme. Secondly, if one participant mentioned a particular code that does not come up again during the course of the focus group then it should be documented as such. Finally, whether each group discussion contained a given code that came up during another focus group, documenting common themes from multiple focus groups. The present study only conducted one focus group, as we reached data saturation thereafter. A Phenomenological strategy was used with the mentioning of which codes were mentioned by all participants, and which codes were mentioned by a singular participant.

Following the phenomenological approach, data was coded and reduce to general, broad codes using the coding process of horizontalization of data (developing a list of non-repetitive significant statements, all with equal value). Meanings and themes were developed from the transcriptions by the research team, supervisor, research consultant and primary investigator. How the phenomenon was experienced was described next, this is called the structural description. Data was then reduced to significant statements and included under the appropriate themes. Themes were translated to "textual description" to describe the experiences. Finally, a structural description was added to convey the overall essence of reported experiences. Through constant comparison, the research team identified both common and variant themes that emerged and confirmed from the focus group. Coding was done to the latent levels, inductively on Redcap.

3.3.7. Trustworthiness

To achieve trustworthiness Creswell & Poth (2018) states that the research should establish clear dependability, conformability, transferability, and credibility. Dependability was achieved by carefully considering focus group topics (Morgan, 1997). Themes that were not fully described by the survey and data from the individual interviews were made into focus group topics and questions to explore and describe the phenomenon being explored. The present research is conformable because it reflects authentic experienced of the group. This was done by including focus group transcriptions, which makes the data transferrable. Credibility was achieved via member checking of each participant of the focus group.

A transcript of the session was sent to each participant and a signed agreement was sent back to the research team, which states that the transcribed document was indeed an accurate reflection of the group discussion that was held as well as reflects the character of the group as a whole and of each participant. The data was coded independently by each investigator, primary investigator, supervisor and research consultant. Finally, the study is credible, as it purposefully selected and sent out invitations to participants who are above eighteen years of age, self-identify as transgender and/or non-binary and have had contact with the healthcare system in South Africa. A reflective journal was kept, where the primary researcher completed memoing of their own thoughts to monitor research bias throughout the course of the study.

3.3.8. Ethical consideration

The present study acknowledges that the transgender and non-binary community of South Africa experience structural and systemic barriers. Therefore, psychological assistance and counselling resources were available if a participant experienced an interview negatively.

3.2.8.1. Principles of autonomy

The identity of participants was only known by the primary researcher, research consultant and other participants in the focus group. Participant identities were replaced with randomised values after the audio was transcribed. All transcripts are stored on the password protected Redcap system. Only the primary investigator has access to the Redcap database.

3.3.8.2. Justice

This research was conducted in fulfilment of the primary investigator's MSc in Morphological sciences degree and did not have any other alternative motive. The objective of the present study was to obtain data from the learners and educators of Tygerberg medical campus and adults on the gender spectrum who have had contact with the healthcare environment and then make recommendations on how to make healthcare in South Africa safer and more accessible for the transgender and non-binary community.

3.3.8.3. Non-maleficence

The present study ensured that research was being done in collaboration with the community and that participants did not feel studied or inhumanly treated. Participants were informed that their participation was entirely voluntary and that they could withdrawal from the study when they wanted to.

3.3.8.4. Beneficence

Participants were informed that they could be contributing to how medical professionals will be trained in the future. The data yielded from the study will be used to make recommendations on how medical professionals and student healthcare workers can create a safer environment in a healthcare space for patients on the gender spectrum.

Chapter 4: Results

4.1. Resources and recommendations from students and staff at Tygerberg Medical Campus

Sample

Our survey was sent out to 2085 individuals. The sample included students at Stellenbosch University's Faculty of Medicine and Health Sciences who have previously taken anatomy within their curriculum. These students are enrolled in undergraduate courses at the faculty (Bachelor of Medicine and Bachelor of Surgery II, III, IV, V and VI; Bachelor of Speech, Hearing and Language Therapy II, III and IV; Bachelor of Science in Dietetics II, III and IV; Bachelor of Science in Occupational Therapy II, III and IV; Bachelor of Sciences in Physiotherapy II, III and IV; and Bachelor of Midwifery and Nursing, II, III, and IV), anatomy lecturers, tutors, and practical assistants or demonstrators. No first-year students were included in our survey to eliminate students who have not been exposed to the resources offered by the Division of Clinical Anatomy, based at our Tygerberg Medical Campus. Figure 4.1. shows the number of responses obtained by the survey. In total, 142 students, one tutor, two demonstrators, and three lecturers completed the full survey. Partially completed responses were not included, as there is no way to standardize our findings when some questions are left unanswered.

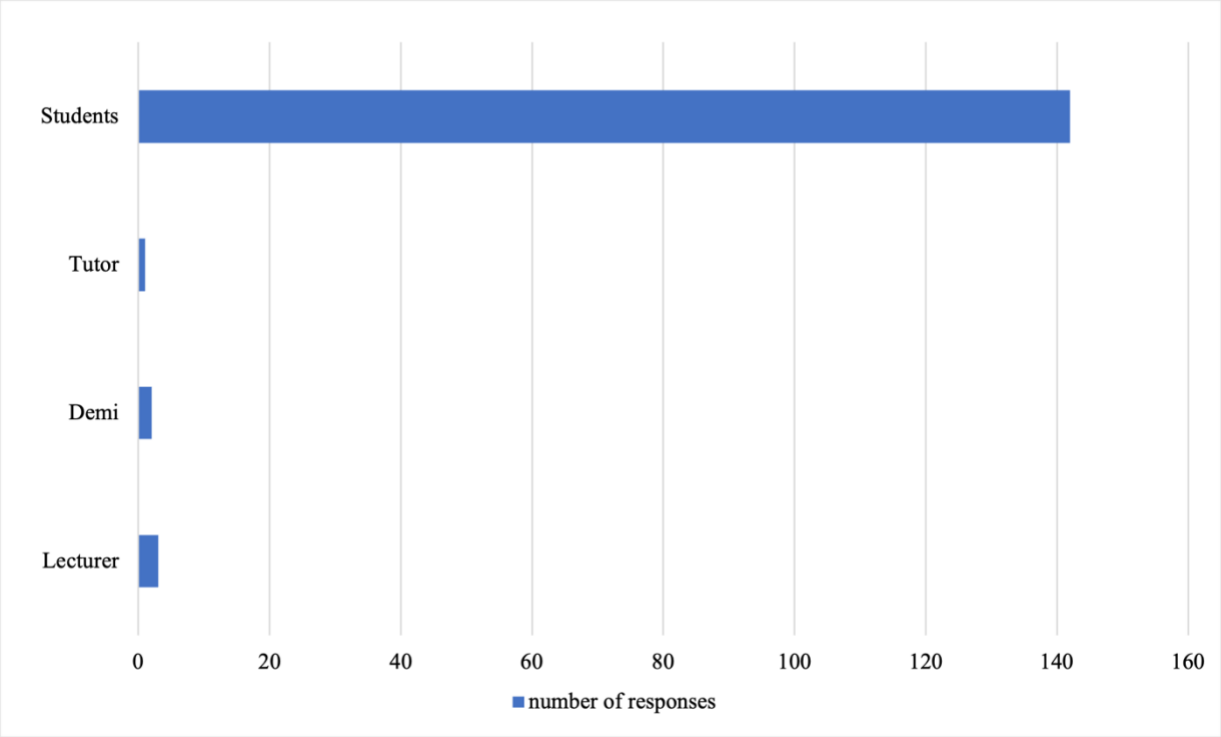

Figure 4.1: The number of completed responses from the survey evaluating current resources and knowledge held by healthcare students on Tygerberg per academic role (student, tutor, lecturer or demonstrator).

4.1.1. Quantitative component: Section A (questions one to eighteen)

Participants were asked if they thought sex was on a spectrum; in total, there were 49% (n=76) "yes" responses, 38% (n=58) answered "no", and 12% (n=19) said they were "not certain". 73 "yes" responses were from students, one from a lecturer, one from a demonstrator, and one from a tutor. 56 of the "no" responses were students, one a lecturer, and one a demonstrator. 18 students and one lecturer responded with "not certain".

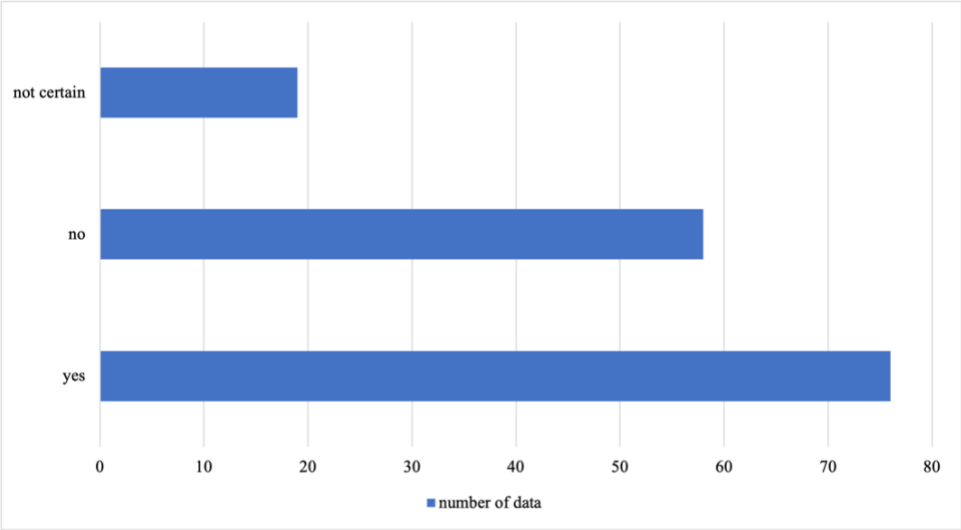

Figure 4.2: The number of participants who answered if, "Sex is on a spectrum", with "yes", "no" or "not certain"

According to figure 4.3, 46% (n=71) of the participants said that an individual could have stereotypically "male" and "female" characteristics across different levels of biological organization. Conversely, 6% (n=9) of participants said that this was not true, while 12% (n=19) of the participants were "not certain". Of the participants who said "yes", one was a lecturer, two were demonstrators, one was a tutor, and 125 were students. One lecturer and eight students said that individuals cannot have this type of biological organization. Finally, one lecturer and 11 students were "not certain".

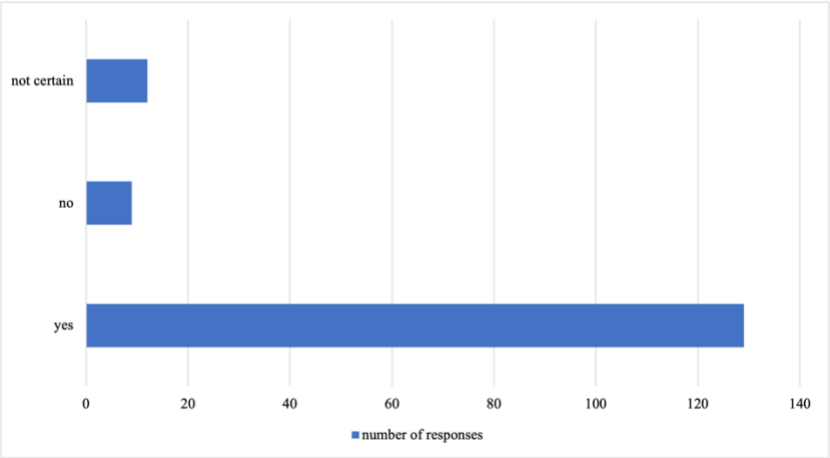

Figure 4.3: The number of participants who answered "yes", "no", or "not certain", when asked if, "An individual can have stereotypically "male" and "female" characteristics across different levels of biological organisation (e.g. xy; male chromosomal, and high estrogen levels; typically female)."

For the third question posed in the survey, participants were asked whether being transgender or nonbinary was a mental illness. Figure 4.4 depicts 7% (n=11) of participants responding "yes", 81% (n=125) of the participants responded "no", while 12% (n=19) of the participants were "not certain". Of the 11 participants who answered "yes", nine were students, and two were lecturers. Furthermore, of the 125 participants who answered "no", 121 were students, one tutor, two demonstrators, and one lecturer. All 19 participants who answered "not certain" were students.

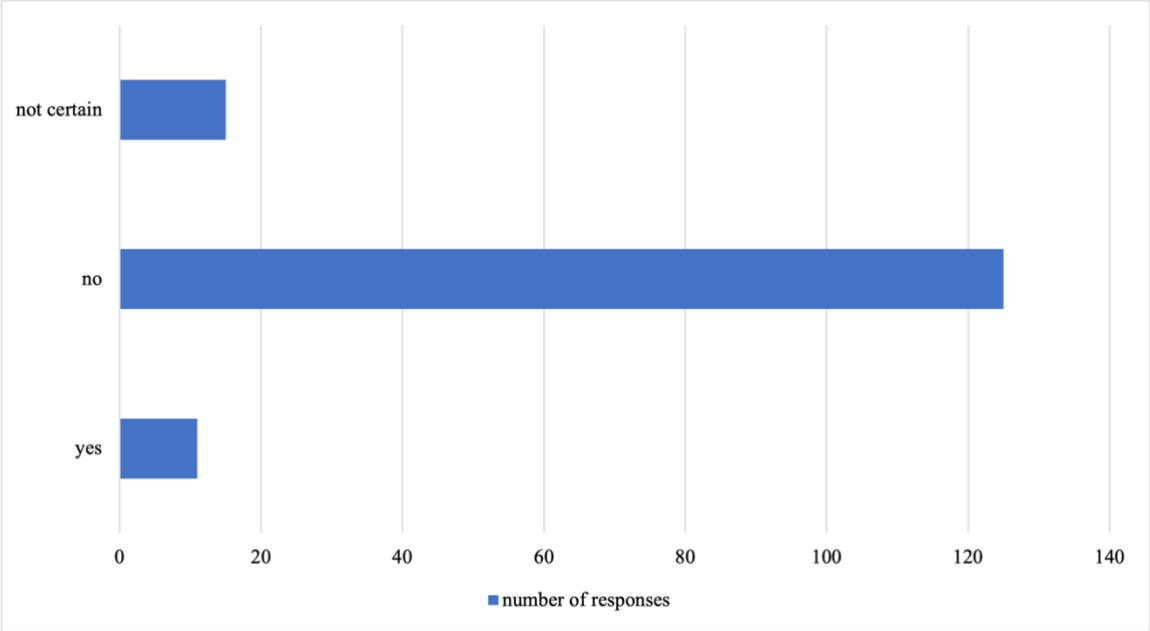

Figure 4.4: The number of participants who answered "yes", "no", or "not certain" when asked if, "Being transgender or non-binary is a mental illness."

As shown in figure 4.5, 81% (n=125) of the participants answered "yes", 6% (n=9) "no", and 10% (n=16) "not certain" when asked whether being transgender or non-binary was considered a mental illness. One tutor, two lecturers, two demonstrators, and 120 students answered "yes". One lecturer and eight students said "no" and the 16 participants who answered "not certain" were all students.

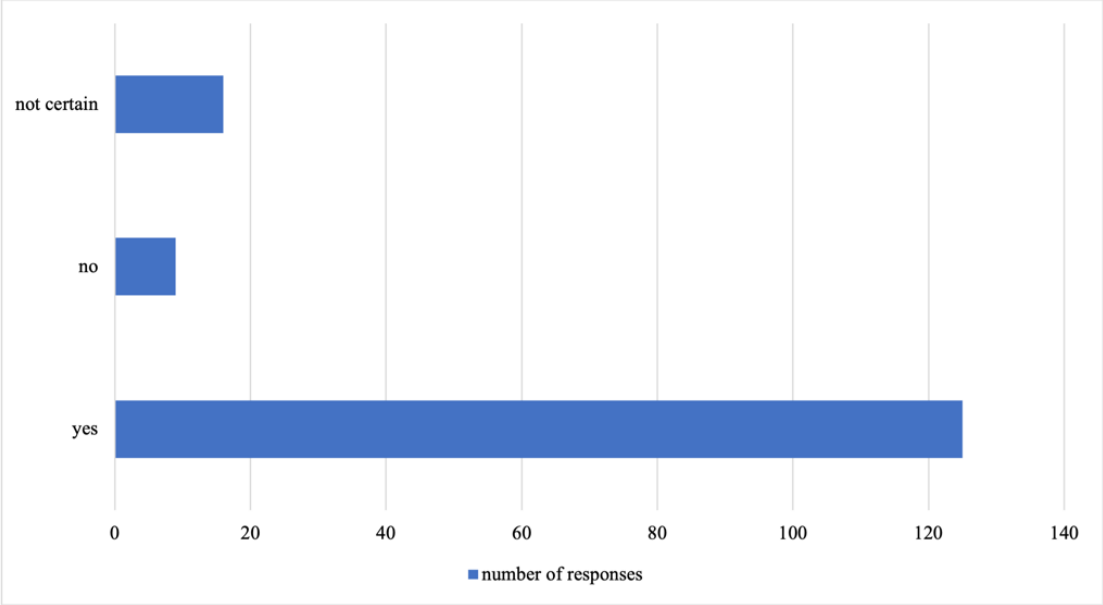

Figure 4.5: The total number of participants who answered with "yes", "no" or "not certain" when they were asked if, "The transgender and non-binary population is a marginalized group, globally."

Figure 4.6 shows that a total of 73% (n=112) of the participants, of which 108 were students, one a demonstrator, and three lecturers, answered "yes" when asked whether transgender and non-binary groups were marginalized. In total, 10% (n=15) of the participants answered "no", all of whom were students. 18% (n=27) of the responses were "not certain", which included 25 who were students, one tutor, and one demonstrator.

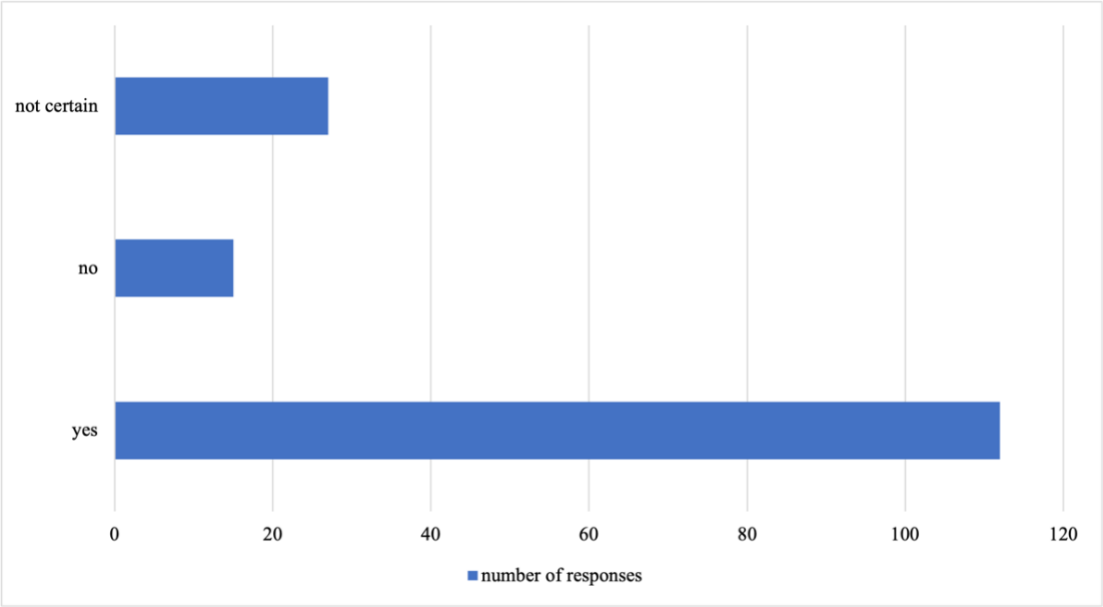

Figure 4.6: The total number of participants who answered "yes", "no" or "not certain" when they were asked if, "Transgender and non-binary patients are at higher risk for conditions such as anxiety, depression and HIV/AIDS."

As seen in figure 4.7, 78% (n=120) of the participants answered "yes" when asked if transgender and non-binary patients experience systemic and structural barriers in the healthcare system. Most of these were students, at a total of 117, one a demonstrator and two lecturers. All 8% (n=12) of the participants who answered "no" were students. 13% (n=20) of the responses were "not certain", with 17 being students, one a tutor, one a demonstrator, and one a lecturer.

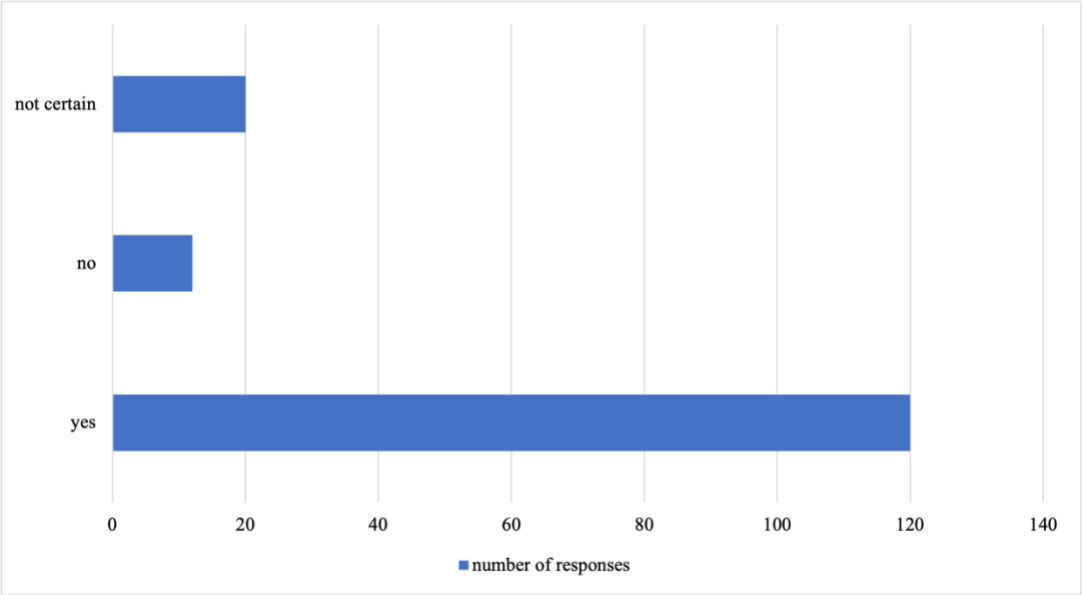

Figure 4.7: The total number of participants who answered "yes", "no" or "not certain" when participants were asked if "Transgender and non-binary patients experience systemic and structural barriers in the healthcare system."

Figure 4.8 shows that 82% (n=127) of the participants said that there is a difference between sex and gender, 12% (n=19) of the participants answered "no" and 5% (n=8) answered "not certain". Of those interviewed for this study, 122 participants who answered "yes" were students, two were demonstrators and three were lecturers. All 19 participants who answered "no" were students. Lastly, seven of the participants who answered "not certain" were students, and one was a tutor.

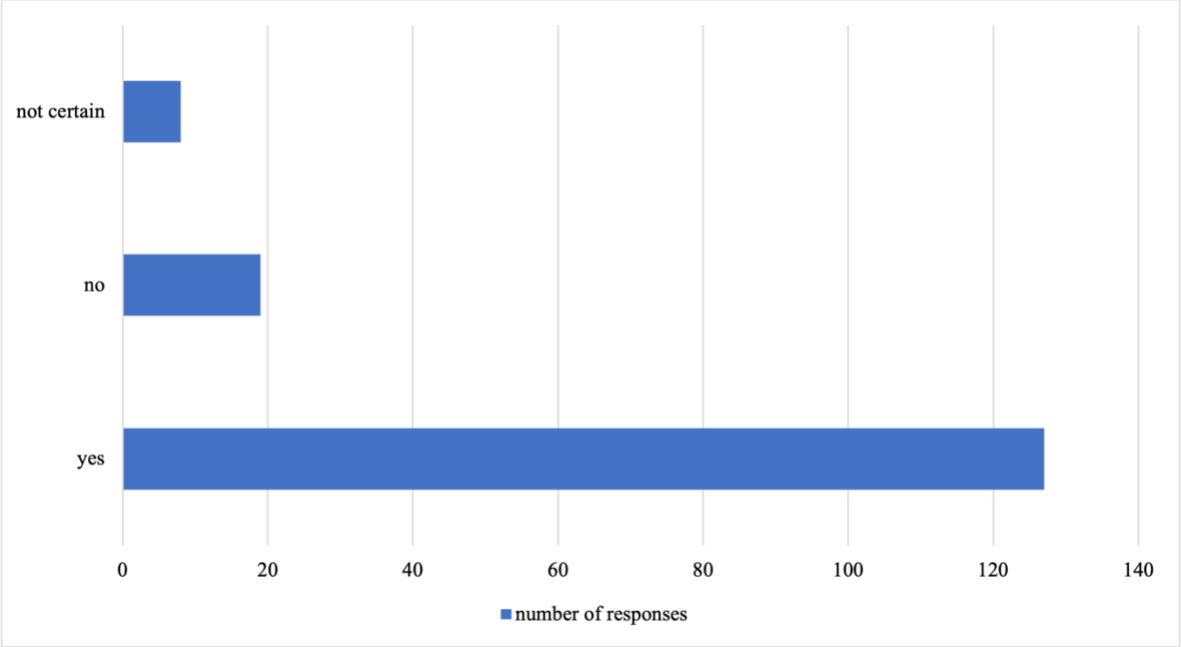

Figure 4.8: The total number of participants who answered with "yes", "no" or "not certain" when they were asked if, "There is a difference between sex and gender."

When asking participants whether they think transitioning needs are cosmetic and not medical, a total of 25% (n=38) of participants answered "yes", 56% (n=86) answered "no" and 21% (n=32) "not certain", as seen in figure 4.9. Of those interviewed for the study, 36 of the 38 participants who answered "yes" were students, and two were lecturers. Furthermore, 84 students, one lecturer, and two demonstrators answered with "no". Lastly, 30 students, one tutor and one demonstrator, answered with "not certain".

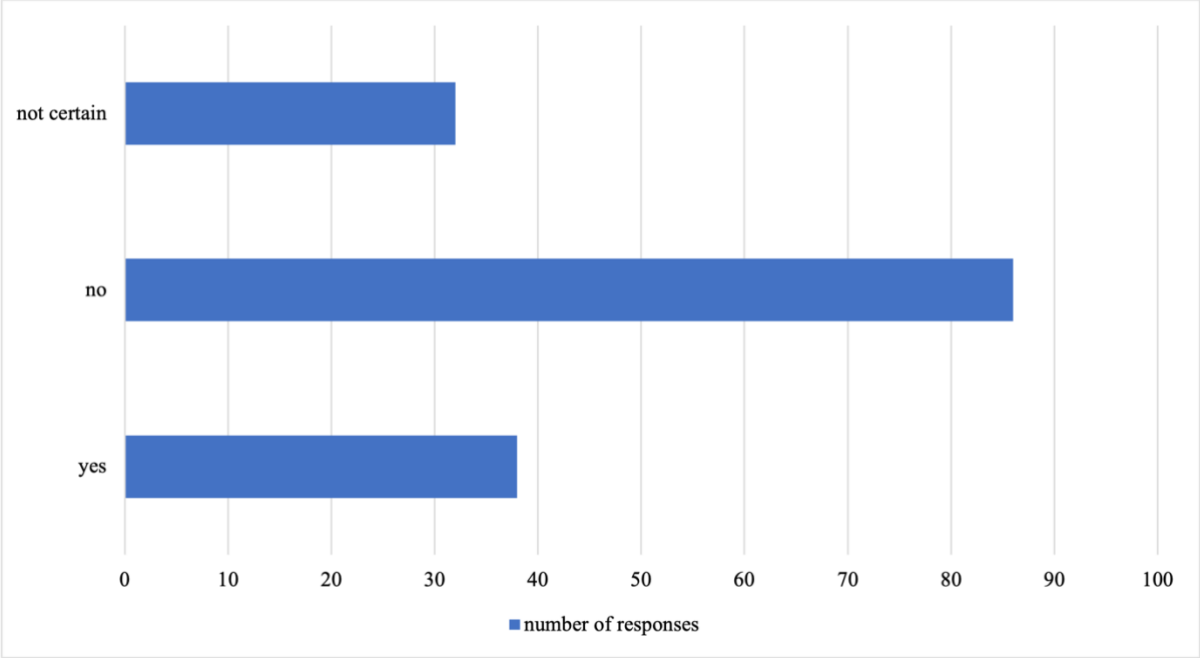

Figure 4.9: The total number of participants who answered "yes", "no" or "not certain" when asked if they think, "Transitioning needs are cosmetic and not medical."

In Figure 4.10, 14% (n=21) of participants answered "yes", 71% (n=110) answered "no" and 14% (n=21) answered "not certain" when asked if transgender and non-binary terminology is taught in pre-clinical lectures. All 21 participants who answered "yes" were students. From the pool of participants who answered "no", 108 were students, one a lecturer and one a demonstrator. Lastly, 17 of the participants who answered with "not certain" were students, two were lecturers, and one was a tutor.

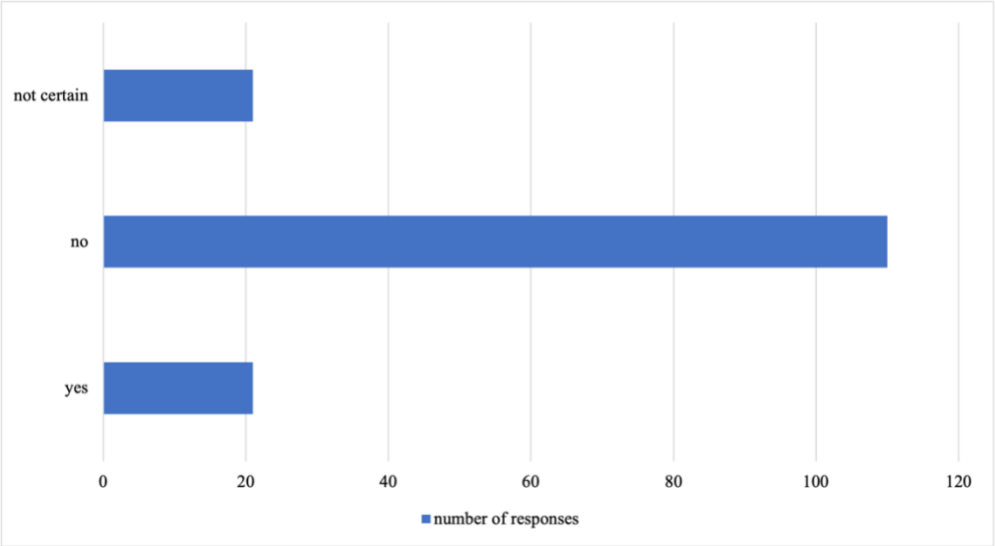

Figure 4.10: The total number of participants who answered with "yes", "no" or "not certain" when asked if, "Transgender and non-binary content is taught in preclinical lectures."

Participants were asked if they think transitioning needs are cosmetic and not medical (total answered "yes", "no" and "not certain" in figure 4.11.) All 10% (n=15) of the participants who answered "yes" were students. In total, 46% (n=71) of the participants answered with "not certain", of which 65 were students, three lecturers, two demonstrators and one tutor. Finally, 42% (n=65) of the participants answered "no", all of whom are students.

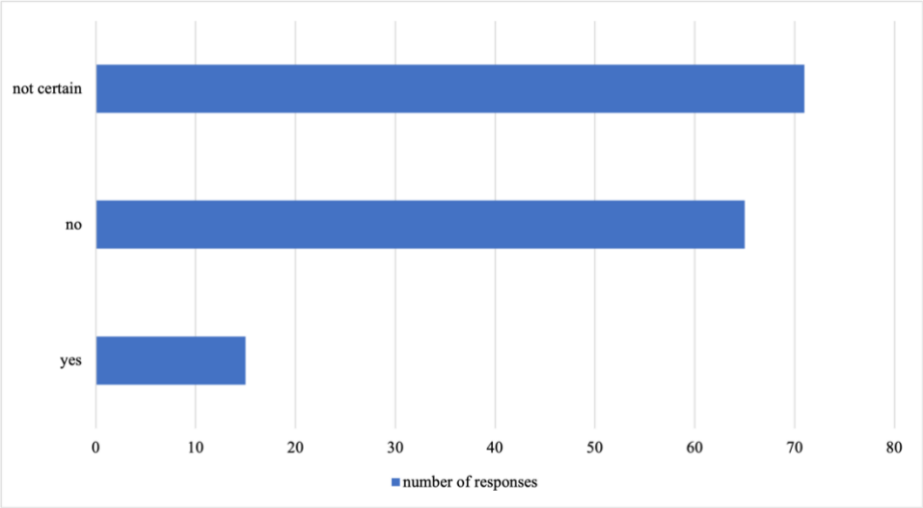

Figure 4.11: The total number of participants who answered with "yes", "no" or "not certain" when asked if, "There are university resources available, which grant access to understanding transgender and non-binary vocabulary."

When asked if teaching different levels of sex variation could improve the understanding of variation in general, 81% (n=125) of participants answered "yes", 10% (n=15) answered "no" and 7% (n=11) "not certain" (figure 4.12). Furthermore, 120 participants who answered "yes" were students, two lecturers, two demonstrators, and one tutor. Moreover, 14 participants who answered "no" were students and one was a lecturer. All 11 participants who answered with "not certain" were students.

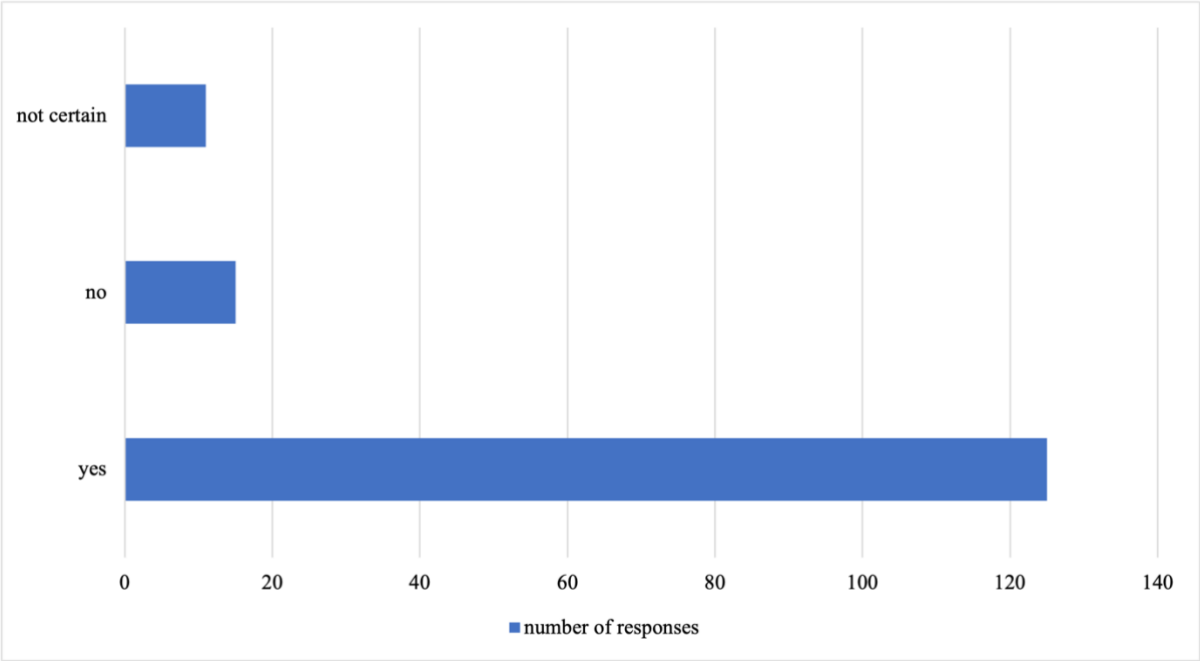

Figure 4.12: The total amount of participants who answered with "yes", "no" or "not certain" when asked if, "Teaching different levels of sex variation could improve the understanding of variation in general."

The next question asked participants if they thought teaching more transgender and non-binary terminology in preclinical blocks would improve and make for more accurate patient diagnoses. In total, 73% (n=112) of participants answered "yes", 13% (n=20) answered "no" and 12% (n=19) answered with "not certain" (figure 4.13.). Of the 112 participants who answered "yes", 108 were students, two lecturers, one demonstrator, and one tutor. Nineteen of the participants who answered "no" were students, and one was a lecturer. Eighteen participants who answered with "not certain" were students and one was a demonstrator.

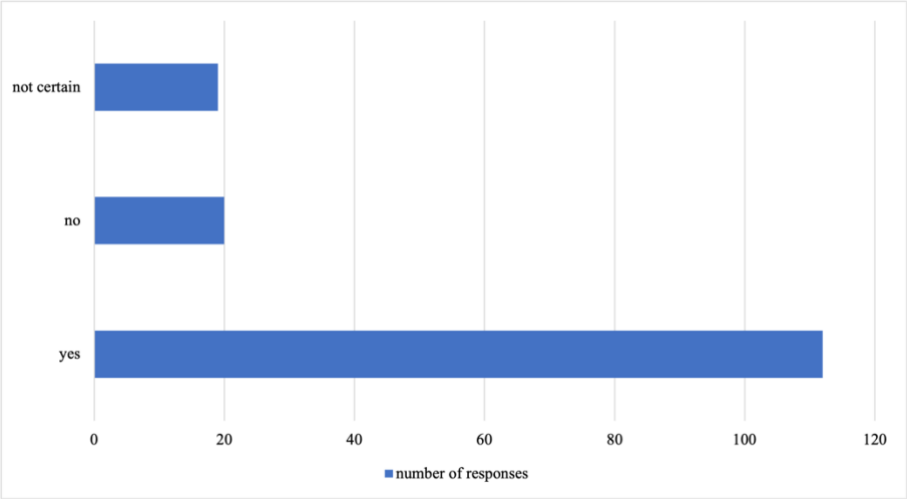

Figure 4.13: The number of participants who answered "yes", "no", or "not certain" when asked if "Teaching transgender and non-binary language in preclinical blocks could contribute to more accurate diagnosis."

In total, 87% (n=134) of the participants answered "yes" when asked if including more transgender and non-binary terminology would improve patient-clinician interaction (seen in figure 4.14). Of the 134, 129 were students, one a tutor, two lecturers, and two demonstrators. Furthermore, 7% (n=10) of participants answered "no", of which one was a lecturer and nine students. All 5% (n=7) of participants who answered "not certain" were students.

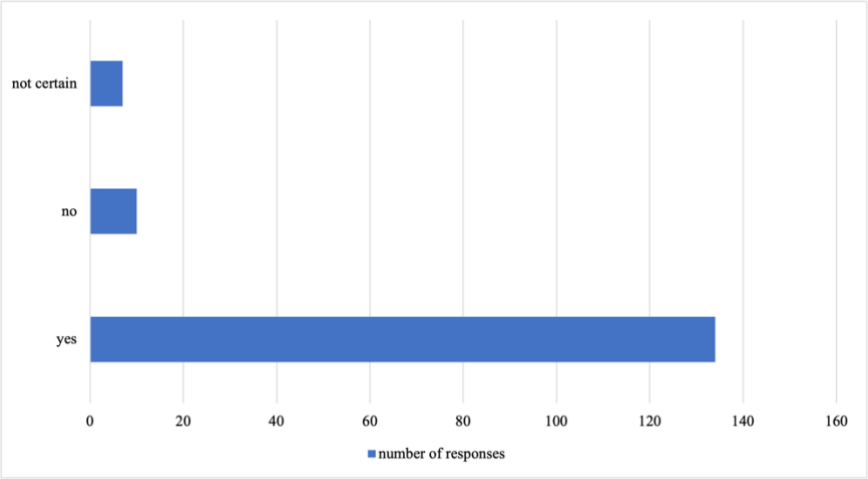

Figure 4.14: The total number of participants who answered "yes", "no" or "not certain" when asked if "Teaching transgender and non-binary language in preclinical blocks could improve clinician-patient interaction."

Participants were asked if the Stellenbosch University Tygerberg campus has a society or extracurricular group available that creates transgender and non-binary awareness. A total of 62% (n=96) of the participants answered "yes", 5% (n=7) answered with "no" and 33% (n=50) with "not certain" (figure 4.15.). Furthermore, 94 of the participants who answered "yes" were students, one a lecturer and one a demonstrator. Six of the participants who answered with "no" were students, and one was a lecturer. Lastly, 47 of the participants who answered with "not certain" were students, one a lecturer, one demonstrator, and one tutor.

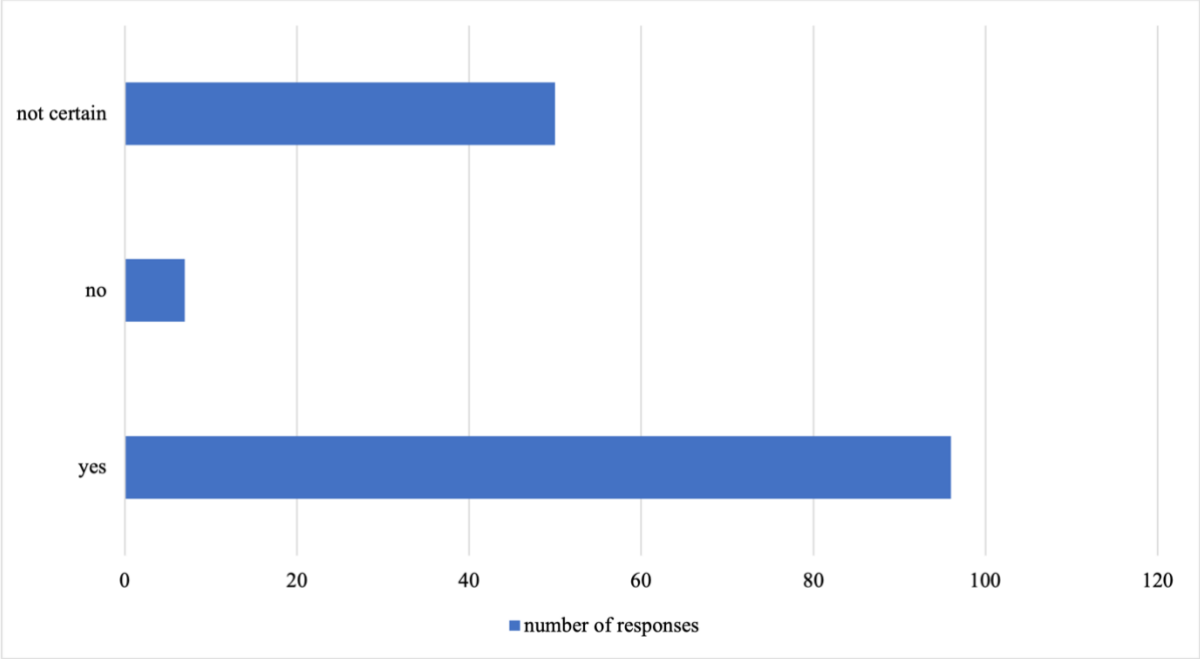

Figure 4.15: The total amount of participants who answered "yes", "no" or "not certain" when asked if, "The medical campus has a society or extracurricular group available that creates transgender and non-binary awareness."

Figure 4.16 shows that 28% (n=43) of participants answered with "yes", 46% (n=70) with "no" and 27% (n=41) with "not certain" when asked if some lecturers include transgender terminology and health into their coursework. All 43 participants who answered "yes" were students. Conversely, 68 of the participants who answered with "no" were students and one a lecturer. Moreover, 37 of the participants who answered with "not certain" were students, two lecturers, two demonstrators and one tutor.

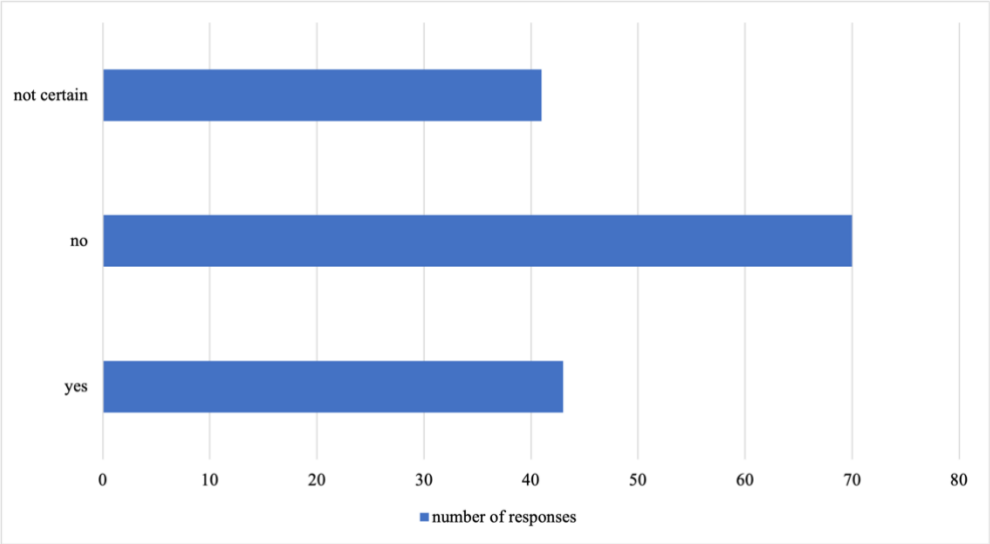

Figure 4.16: The total number of participants who answered with "yes", "no" or "not certain" when asked if, "Some lecturers include transgender and non-binary terminology into their coursework."

Figure 4.17 shows the responses of participants when asked if there is an overlap between anatomy and social sciences. In total 43% (n=66) of participants answered "yes", of which 64 were students, and two were lecturers. Twenty-three percent (n=35) of participants answered with "no", of which 33 were students, one a lecturer and one demonstrator. A total of 32% (n=49) of the participants answered with "not certain". Forty-seven of these were students, one a demonstrator and one a tutor.

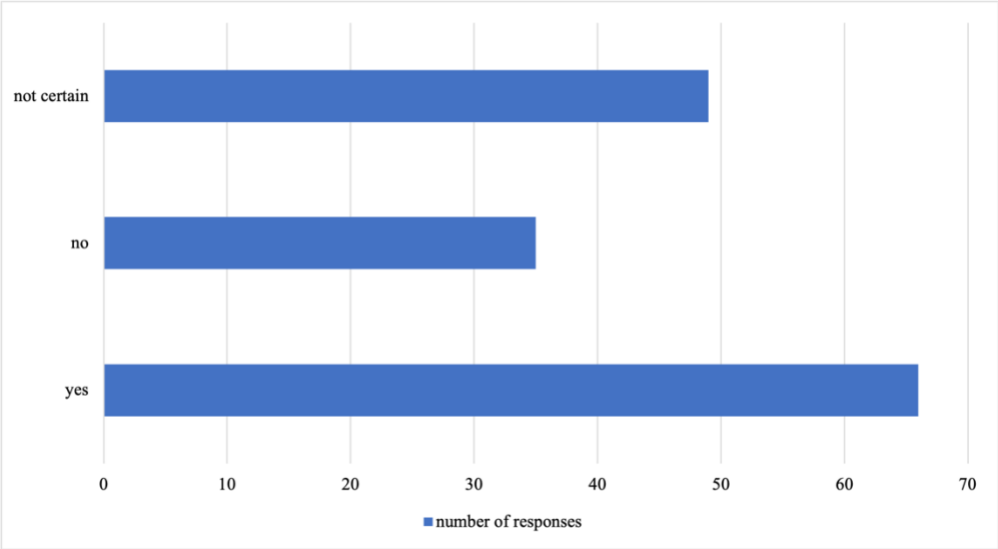

Figure 4.17: The total number of participants who answered with "yes", "no" or "not certain" when asked if, "There is overlap between anatomy and social sciences."

A total of 76% (n=117) of the participants answered "yes", 9% (n=14) answered "no" and 13% (n=20) with "not certain" when asked if they think including an introductory module/short course on transgender terminology would be helpful for future clinicians (figure 4.18). Furthermore, 113 participants who answer "yes" were students, two were lecturers, one a demonstrator, and one a tutor. Moreover, 13 participants who answered "no" were students and one was a lecturer. Lastly, 19 participants who answered with "not certain" were students, and one was a demonstrator.

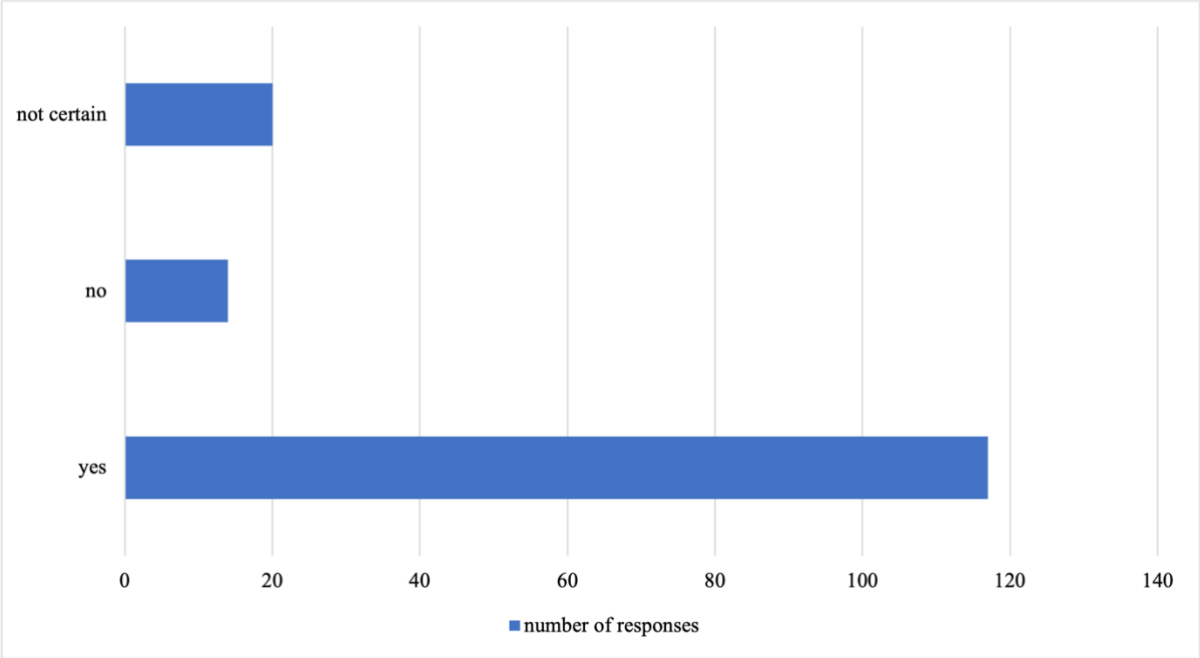

Figure 4.18: The total number of participants who answered with "yes", "no" or "not certain" when asked if they think, "Including an introductory module/short course on transgender terminology would be helpful for future clinicians."

Figure 4.19 depicts the total amount of "yes" "no" and "not certain" answers received by participants who were asked if the undergraduate programme that they are involved in offers an elective on transgender and non-binary health. A total of 2% (n=3) of participants answered "yes" (all were students), 64% (n=98) of participants answered "no" and 34% (n=52) answered "not certain". Ninety-five of those who answered "no" were students, two lecturers and one demonstrator. Of the participants who answered with "not certain", two were lecturers, one a demonstrator, one tutor, and 49 students.

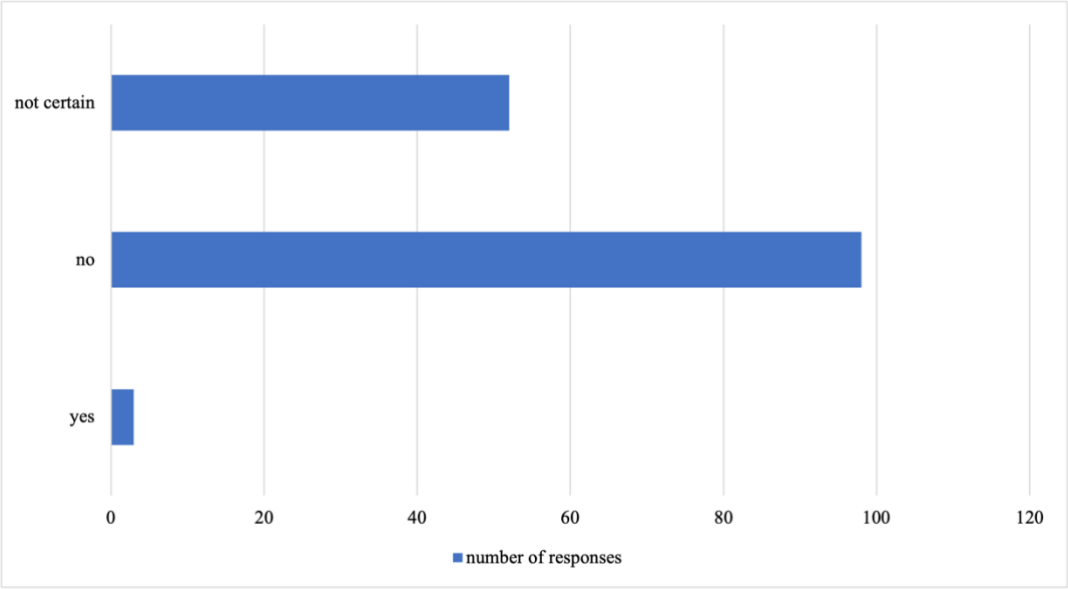

Figure 4.19: The total number of participants who answered with "yes", "no" or "not certain" when asked if, "The undergraduate programme that they are involved in offers an elective on transgender and non-binary health."

4.1.2. Qualitative component: Section B (questions one to seven)

4.1.2.1. Question one: How many hours should be dedicated to teaching transgender and preclinical lectures.

All students answered that there was less than one hour of teaching dedicated to transgender and non-binary focused learning. Most participants answered with zero hours dedicated to transgender and non-binary teachings, with the exception of fewer than 10 students answering with one or less than one hour. Demonstrators and tutors answered with "not certain". Two lecturers answered with zero hours and one lecturer answered with 1-2 hours of transgender and non-binary focused learning through the urogenital module taught in preclinical anatomy.

The lecturer shared, "I know of one lecturer that does this part of her urogenital lectures for an academic program, but I don't know of any others in the university/faculty."

4.1.2.2. Question two: How many hours in total should be dedicated to transgender and non-binary content in preclinical lectures and why?

Participants were asked how many hours should be dedicated to transgender and non-binary content in preclinical lectures and why they think that amount of time is appropriate. The number of hours recommended was varied, ranging between zero and 12. This part of the question did not yield consistent enough findings to give a student-recommended time allocation to transgender and non-binary content. However, students gave very valuable parameters to consider when deciding how much transgender and non-binary content is enough to include in the current medical program.

Most participants responded with positive answers and recommendations on including transgender and non-binary focused teachings into the current medical program. However, one lecturer and fewer than five students answered that it would not be a good idea to include transgender and non-binary focused material into current coursework. A lecturer shared that "your chromosomes define your sex; Therefore, it is not necessary to teach transgender and non-binary focused coursework". This participant later elaborates that treatment is given to a male or a female, regardless of gender. One of the students who does not believe transgender and non-binary content should be included in the current curriculum, answered "0. It's all a hyped-up sham.". Another participant shared that "they phenotypically present as male or female and should be treated in those categories."

From the interviews transcribed verbatim, students answered that the language and coursework on transgender and non-binary related content should not be limited to a specific timeframe, but rather saturated to the point where students have enough insight to understand gender, sex, how to speak to

transgender and non-binary patients, and understand how microaggressions and offences can come across to patients on the gender spectrum. Multiple students mentioned how they only consume non-factual social media information about transgender and non-binary individuals, leading to bias and prejudice.

Students shared:

"Enough to ensure understanding of how micro aggressions come across to patients on the gender spectrum."

"These groups of individuals are just as valuable, important, and a part of society as any other group. Understanding the differences and the nuances can help individuals to better understand these groups of individuals, which will increase the efficacy of the medical treatment they receive- and will also help us as doctors be more accepting of them."

"It takes time to explain it if a person has never heard any of these terms or has never heard any of these terms or has come from a background where it is not discussed or it is discussed but in a non-factual and degrading manner. Every clinician should have positive exposure and information given to them in order to provide the proper care and support for future patients."

"At the moment we consume most of this content from social media and it could eliminate a lot of bias from doctors and teach us facts instead of assumptions from social media."

4.1.2.3. Question three: How could transgender and non-binary content be incorporated in the medical curriculum with the least academic load added to existing coursework?

Students made suggestions about including more transgender and non-binary related content in the current medical program. When addressing feedback from the study survey, question three is divided into three parts. In the first part, students who would prefer transgender and non-binary work incorporated into existing lectures and coursework. The second group recommends coursework separately and solely focusing on transgender and non-binary care. Lastly, a group of participants would rather not have transgender and nonbinary content taught in medical curricula.

The first group suggested that lecturers include transgender and non-binary content into existing lectures and coursework where necessary. Some of the suggestions included having case studies on transgender and non-binary patients in clinical blocks, having a section in the urogenital anatomy system on sex variation in individuals on the gender spectrum and including treatment plans for patients

taking hormone replacement therapy. Overall, participants in this category acknowledged that transgender and non-binary individuals also seek normal treatment and do not only require affirmative-focused treatment. Another suggestion from this group of participants was to include a section in each medical teaching block the same way geriatrics, athletes, or paediatrics is included, for example, with content in each block that is clinically relevant to the specific patient. Moreover, students in this group found it concerning that most clinicians who have been working for years and are now lecturing students would not need to adapt to using more inclusive pronouns in lectures.

Students from this group answered:

"Transgender, non-binary and intersex individuals are a normal part of the patient population. These groups must be included under every topic where relevant and necessary to treatment. Just how elderly, children and athletes… I do think a dedicated introductory lecture is necessary because there is still a lot of ignorance and incorrect terminology thrown around… but the real win would is transgender health is included and normalized within all teachings realistically, it would involve training educators first."

"Necessary language should be included when the necessary for each module."

"We should change and be more aware of the language that we use in lectures."

"Include more variation in the case studies being used. Terminology, medical and surgical implications."

"Include non-binary and transgender patients into case studies."

"Incorporated into current modules when necessary; personal and professional development."

"Transgender and non-binary individuals get the same diseases as other individuals and therefore should be spoken about more in all blocks."

The second group made recommendations that included exclusive transgender and non-binary-focused content. Recommendations include group assignments during the first year of studies, and including transgender and non-binary-focused content as a topic for when students take their Doctors as Change Agent (DRACA) module. This is a module taken in 4th year at Tygerberg Medical Campus where medical students debate ethics and current dilemmas in healthcare. Additional recommendations include introducing a separate lecture on how to approach transgender and non-binary patients, non-

examinable and compulsory quizzes, lectures and podcasts that students can listen to or obtain information from when they need or encounter patients on the gender spectrum in the hospital.

Students from this group answered:

"Do a group assignment on the content."

"Introduction lecture on transgender awareness and how to approach a transgender patient."

"Adding information not to be tested on, but important for clinicals. In frost year we has a module called "become a better doctor" in which this could fit in. They taught us some things about sexuality, but not much on gender spectrum."

"Non-examinable module."

"Assignments instead of assessments, as it promotes critical thinking."

"Podcasts that students can listen to on their own time."

"Adding a slide on variability, with a link to resources."

The final group had the smallest number of responses. It is important to consider and evaluate what this group of participants said, because these are individuals who will treat transgender and non-binary patients, as well as train future medical doctors on how to think and talk about patient bodies. Firstly, a lecturer responded in this category that it should not be included in coursework as current treatment strategies focus on treating someone who is either male or female.

The lecturer said, "medical practice treats patients according to their sex. Even if an individual has cosmetically altered their genitalia or body, patient treatment will be based on their biological sex."

Students responded with comments like "Science is science and biology is biology. Please do not corrupt it with your subjective nonsense.", and "Should be included in the psychology block as a mental health condition."

These responses are very important for the discussion section in the next chapter when we discuss the safety of transgender and non-binary individuals in the healthcare system and why individuals on the gender spectrum avoid healthcare environments. Section 4.2 of the results chapter provides further

insights from transgender and non-binary participants and how they experience treatment and care from doctors and have a lack of exposure to treating patients on the gender spectrum in medical school.

4.1.2.4. Question four: how would including transgender and non-binary content in preclinical lectures translate into a clinical environment?

As with question two, many responses suggest a positive outlook related to transgender and non-binary patients if including more transgender and non-binary content in the current medical program. However, some participants believe no change will come from including more transgender and non-binary content in medical training curricula.

Participants who answered that more inclusive teachings would bring positive change to patient-clinician interactions answered that it would make that patient more comfortable, and the experience less stressful. The participants mentioned that for younger clinicians, navigating the hospital environment is very stressful, and if they could have even the simplest introduction on how to approach transgender and non-binary patients, it would also help put them at ease. Participants also shared that having factually based teachings could alleviate and lessen the marginalization and discrimination of this population amongst healthcare workers. One participant, in particular, mentioned how they have experienced first-hand how a patient on the gender spectrum shies away from disclosing information after being misgendered or mistreated. This information could be very critical in making a diagnosis or prescribing a treatment plan. Furthermore, several participants believe that making teachings more inclusive could lead to more accurate treatment and diagnosis of patients. Finally, it is also important to note that several participants acknowledged that as the world becomes more progressive and inclusive, more individuals will feel safer to be openly transgender and non-binary, and therefore they would need basic training on how to treat patients on the gender spectrum.

Participants shared:

“Help with patient understanding and encounter when dealing with individuals on the spectrum.”

“Improving doctor/patient interaction. Provide safety and comfort to patients.”

“Alleviate and irradiate marginalization”

“A clinician would be able to communicate and relate to their patient better and wouldn’t feel awkward and uncomfortable when it comes to things such as pronouns, testosterone—or estrogen treatment, gender affirming surgery etc.”

"Better treatment of these groups of individuals."

"It will allow clinicians to provide better support for patients. I have seen how closed off a person becomes when a healthcare worker misgenders them. An open and trusting relationship is essential when it comes to healthcare. A person you are treating may not share the full story with you because they do not feel comfortable and then you may misdiagnose a person, leading to further health consequences."

"For areas specific to transgender and non-binary medicine, it would give doctors the preparation, education and expertise to treat this patient group with an equal standard care to any other population group. In non-specific areas, it would hopefully make doctors less ignorant and more inclusive in their language and medical understanding. I would hope it would make transgender individuals less worry to seek care when needed, and results in better management across all health needs."

"More accurate diagnosis and treatment of patients as all of the relevant factors would then be considered and the healthcare student would then be more informed of the context of the patient."

"As the world becomes more progressive and accepting, the reality is that my patients will most likely be transgender or non-binary as a clinician it is my duty to provide holistic care."

When asking if making teachings to medical students more inclusive of patients on the gender spectrum, some participants did not think it would contribute or translate to patient-clinician interaction at all. Participants shared answers such as, "I don't think it can; the clinical environment is largely based on science. The transgender and non-binary ae not scientific." And "We don't see any transgender or non-binary patients in hospital, so any training would be a waste."

4.1.2.5. Question five: What does passive erasure mean?

Passive erasure is the act of erasing a group of individuals or their identity in a way without acknowledging their existence. This question was included as a measure of self-awareness amongst participants who answered the survey. This section will be elaborated on more in Chapter five.

Most participants simply answered, with "I don't know". A few participants answered that it means to discriminate against transgender and non-binary individuals.

4.1.2.6. Question six: In which academic phase/year should transgender and non-binary content be taught?

This question was answered very briefly by participants. Answers included that content be taught in first year, when they have introductory modules and coursework such as "how to become a better doctor." Many participants mentioned that they should be introduced to transgender and non-binary terminology or a workshop before starting their clinical rotations in the first year of medical studies. Students again noted that this coursework should be introduced to the DRACA module and that coursework relating to transgender and non-binary patients should be incorporated into each module as necessary.

Answers from students included:

"First and third year."

"First year – how to become a better doctor"

"Incorporated from first to 6th year"

"During DRACA"

"All of the years. Frist year you learn genetics, it could be introducing and incorporated into every module."

"How we have geriatrics and paediatrics in each theory block, we should have individuals on the gender spectrum as well.

"4th year when the students do DRACA and have a general understanding of medical issues in healthcare."

4.1.2.7. Question seven: What does transitioning mean for a transgender or non-binary individual?

The survey included this question to see how medical students and educators view gender transitioning and whether participants acknowledge a person being transgender or non-binary before medically seeking gender affirmative care. Participants were asked what they thought it meant for transgender and non-binary individuals to transition. Most students believe that transitioning is part of being transgender or what makes someone transgender. Few students acknowledged that individuals are already transgender or non-binary before seeking affirmative medical care. However, some students and

lecturers mentioned that gender affirmative care is cosmetic and that changing someone's "appearance" would not change that person's sex. Most participants did not have this information accessible or available in the medical program.

Responses included:

"Finally becoming who they want to be."

"Confirmation of their true gender."

"Growing and moving into who they are, accepting themselves for who they truly are and want to be."

"Relieving symptoms of body dysmorphia which will release distress."

Examples of negative responses included:

"Changing their aesthetic"

A lecturer shared. "To dress differently to your sex. To undergo cosmetic procedures to look like the opposite sex."

4.2. The transgender and non-binary experience in the healthcare environment

4.2.1. Individual interviews

Sample

Thirteen individuals were interviewed, while data saturation was reached after the ninth interview. Ages ranged between 18 and 53 years of age. In total, eight non-binary individuals, four transgender men, and one transgender woman participated in the individual interviews (see table 4.1 below for detailed age and self-identified gender of each participant).

Table 4.1: The age (from youngest to eldest) and self-identified gender of each of the 13 participants individual interviews were conducted with

	Age	**Self-identified gender**
Participant 1	18	Transgender man
Participant 2	20	Non-binary
Participant 3	21	Transgender non-binary woman
Participant 4	21	Non-binary
Participant 5	21	Transgender man
Participant 6	23	Non-binary
Participant 7	26	Transgender masculine non-binary
Participant 8	28	Transgender woman
Participant 9	28	Transgender man
Participant 10	34	Non-binary
Participant 11	39	Non-binary
Participant 12	42	Non-binary
Participant 13	53	Transgender man

4.2.1.1 Misgendering of non-binary and transgender patients in healthcare environments

All 13 participants reported being constantly misgendered while interacting with healthcare environments. According to the participants, healthcare workers fail to ask patients what their gender

and pronouns are. Many disclose their current gender identity and pronouns, yet healthcare professionals still addressed the participants by their dead names.

A non-binary participant said, ""yes" … all the time. I could probably count on my one hand the amount of times that I have been correctly gendered."

Participants on the gender spectrum expressed that they could tell whether a healthcare worker is maliciously misgendering them. Participants reported that even healthcare workers whom they visit regularly misgender them.

A transgender woman said, ""yes". There is this interesting phenomenon where you can kind of tell and I know a lot of other transgender individuals can tell when someone is misgendering you by accident or on purpose."

A non-binary participant reported, "So for instance the first two weeks of me seeking psychiatric help with them, I was consistently misgendered; regardless of the amount of times I told them. As well as them just brushing off the whole misgendering issue."

Healthcare professionals are not perceived by transgender and non-binary participants to be sensitised in training on language and navigating gender in a healthcare environment, according to the participants interviewed for this study. Clinicians take advantage of cis-gendered appearance to address patients, as expressed by those interviewed. If a patient looks stereotypically male, then the doctor would address the patient as "he/him". Similarly, a patient who looks stereotypically female would be addressed by the pronouns "she/her". None of the participants have been asked what their preferred pronouns are before.

A transgender man said, "I don't pass perfectly as a man, so I guess they just tend to assume I'm a woman and just go for it. The one time I tried to correct a [general practitioner] and told her I'm a dude, she laughed at me."

A transgender man said, "Now remember you have to give out your birthname and also your preferred name. and she called me by my birth name which I did not like at all. and she also called me she in the process of drawing my blood I had marks on my arm from when I was bitten by my dog. and I don't know exactly what it's called, but the injection that woman get to prevent them from getting pregnant… she asked me if that's what the mark is from."

A transgender-masculine non-binary participant shared, “Probably one of the worst one was when I wanted to start testosterone and the only doctor in my area who was on my medical aid insisted, I was a girl and that I was doing this this for attention and this is harmful and unethical. he was shouting the Hippocratic oath at me for wanting to do hormones. you know it’s not natural.”

4.2.1.2. Accessibility of healthcare to transgender and non-binary identifying individuals

Participants reported that healthcare professionals hold an unspoken power over patient treatment. Participants would find themselves censoring how they speak when engaging with doctors to receive treatment, rather than possibly being denied treatment.

A transgender woman said, “So because the person getting the procedure got upset about these questions and the doctors created a situation where, “if you’re not going to treat us politely, then we’re just not going to treat you.”

Participants have also reported that healthcare workers have negative biases towards individuals on the gender spectrum. Patients on the gender spectrum go to healthcare centres to receive care and diagnosis but end up experiencing discrimination, according to the participants interviewed. One participant in particular mentioned that healthcare workers do not distinguish their own beliefs from their profession and practice their beliefs on the patients they treat. The discrimination that patients on the spectrum receive results in patients leaving the healthcare environment without receiving a diagnosis or treatment plan, according to a participant .

A non-binary participant shared, “Okay. So, I had an STI and I went to a public clinic. The nurse. when I was telling her why my problem is she acted rudely and said that, “you gay guys have issues, you guys need us to jump up and high for you. The manner in which she spoke out with me made me feel uncomfortable and as a result I left the clinic.”

A transgender woman reported, “No definitely not. I don’t think the healthcare system is accessible to transgender individuals at all. I think as a whole it is very unfriendly and discriminatory; whether out of malice or just ignorance.”

According to participants, patients on the gender spectrum are often fearful to start treatment for affirming care, as they find themselves always being more knowledgeable than the doctor regarding medication shortages in the country, gender terminology, and what options are available to them for relief gender dysphoria

A transgender masculine non-binary participant shared, "Definitely. I have had to be the expert in every situation with transgender healthcare.

A transgender masculine non-binary individual said, "There's also a nationwide shortage of testosterone and no one is seeming to care or speak about this."

Transgender and non-binary identifying individuals said they find themselves only seeking healthcare when absolutely necessary. Most participants have never physically been removed from a healthcare environment. However, all participants reported a common anxiety of not knowing how you will be treated when seeking healthcare. The only evidence they have is how they were treated in the past, which, according to what was said during the interviews with the participants, was mostly negative.

A non-binary participant said, "I want to acknowledge my privilege, in class, as someone who has access to private healthcare. So, I have never been turned away or even fought in terms of my gender identity. With this being said you should understand; me going to a doctor means that I am near death."

Participants noted that as patients they are often refused affirming care by psychologists and other healthcare workers. Transgender and non-binary patients are actively discriminated against and verbally abused, according to the participants. It is repeatedly mentioned by participants that healthcare workers practice their own personal beliefs onto them as patients.

A transgender-masculine non-binary said, "Probably one of the worst one was when I wanted to start testosterone and the only doctor in my area who was on my medical aid insisted, I was a girl and that I was doing this this for attention and this is harmful and unethical. He was shouting the Hippocratic oath at me for wanting to do hormones. You know it's not natural."

A transgender woman participant reported, "so I have come very close actually… If it wasn't for a friend warning me then that would've happened. So, I was sitting in the waiting room, and I was about a minute away from seeing the doctor. When I mentioned the name of the doctor to my friend and he immediately phoned me and just teals me to leave, because this person was horrible to them for being transgender."

A non-binary participant shared, "but every time when I asked where I am supposed to be going; they would look at my file and see the transgender clinic paper in my file, they would give me a look, hand my folder back, and just not tell me where to go."

A transgender woman reported, "Then of course there is the emotional damage. that comes with being dead name. being misgendered. especially because my legal name hasn't been changed yet. It's still in the process. So, I am deadnamed all the time in the medical aid. So those are some of the big barriers that make me try and avoid going to the doctors unless I absolutely have to. Unless it's critical."

A transgender man said, "it kind of depends on who you are and what you are willing to put up with. But if you're willing to sacrifice your identity and you let them, call you whatever they want then I guess, but it still kind off sucks. But healthcare that is affirming and treats me as I am hard to find."

The medical aid schemes do not provide inclusive coverage for any of the participants interviewed in this study. Some participants report barriers such as documentation and medical aid binary classifications denying access in the form of only covering either "male" or "female" cancers/diagnostic tests. At the same time, anatomical variation does not lend itself to the currently taught specifications of males and females in medical school. Patients who are transgender or non-binary do not have typical "male" and "female" anatomy that is taught in medical school. Transgender men and woman shared their concern of developing cancers typically classified in two separate gender categories. One participant shared that the medical aid could not tell her if she would be covered for both prostate and breast cancer, as the estrogen increases her odds for getting breast cancer and she was born with a prostate.

A transgender woman said, "There is also a cancer cover that I am currently on with platinum life and none of them can tell me if I am simultaneously covered for prostate and breast cancer, because they do not know. But obviously being a transgender woman on estrogen I am at a higher risk for something like breast cancer, but I also still have a prostate. So, the cancer covers only cover "men's cancers" or "woman's cancers" separately. I also know of a lot of individuals who get separated into the wrong wards. I know of a young transgender woman right now that has sorted out her legal identity and she is legally by the laws of this country a female. But because she is transgender, this hospital segregated her from everyone else. And this is illegal, but the hospital doesn't know this is illegal, the psychiatrist also doesn't know. The staff even asked her how she hides her genitals. This is someone who is in a fragile mental space and that had to be booked into this place and is now further segregated and marginalized."

Participants interviewed choose to obtain to privately funded medical care, however this is gatekept by money and very few participants have access to this. Some participants shared that transgender clinics promised them accessible and affordable affirming care and now they find themselves paying out of pocket and being in financial ruin in order to be safe in a healthcare environment. Participants shared that they have some form of power or control by being able to go to another private healthcare provider.

A transgender masculine non-binary participant reported, "My transition has actually financially crippled me. I have dept collectors phoning me because of that all the time. I have had to move to private because it's actually cheaper. And I can't just stop my transition, because I'm like on hormones and everything now. So I've kind of got myself trapped, because I was going into this thing thinking individuals would help me out, like that is what student wellness promised me."

A transgender man said, ""yes". it is accessible. It also depends on where you go. If it is more privately. then it is fine… but if it's public. then it's a different story."

Furthermore, participants shared that not only is affirming treatment very expensive, but most doctors require them to have multiple sessions with a singular healthcare worker to approve their access to getting affirming care. Therefore, if you don't have the money to see a psychiatrist for multiple sessions (who have in the past denied participants of receiving gender afirmative care) and your doctor isn't willing to use the informed consent form system for administering affirming care, then you cannot access affirming care, as explained by one participant. Participants noted that they spend a lot of money to go for evaluations conducted by mental healthcare workers in order to receive screening for affirming care, but spending this money does not mean that a patient will be approved to receive affirming healthcare.

A transgender woman reported, "I have been very lucky to bypass that because my doctor who gives me my hormones trusts me and uses an informed consent system. So going to a psychologist and psychiatrist is very expensive and this just adds to the already very expensive costs. Then on top of this you also have to wonder if the psychologist and psychiatrist is going to be transphobic. because I have had some lovely interactions with mental healthcare workers. but some have treated me horrendously."

Transgender and non-binary individuals find gender dominated departments, such as gynaecology, very distressing. According to several participants, in these environments patients are assumed to be everything surrounding what a "typical" patient in this department should look like. For example, as noted by a participant, in gynaecology and maternity, all patients are typically addressed as "ma'am", "female", or "mothers". Transgender and non-binary individuals do not find these departments to be welcoming or accessible. Participants report extreme dysphoria and complete compromission of their gender identity to receive care in these wards. One participant shared that he is finding himself in a position where he has to choose between going back to the gynaecology ward and feeling suicidal (because he has to compromise his gender identity, which causes him to have suicidal thoughts) or choosing to die from cancer.

A non-binary participant shared, "The anxiety that talks me out of it and tells me I'm fine, "let's just check my temperature tomorrow and see if I'm fine." And if it's like one degree less then it means I'm "fine", I don't have to go see another human being, let's go to clicks. And also, just in terms of my journey with my partner; I would like to carry a child, but the anxiety around being called a mom. You know, walking into spaces with a very "female body" and doing a very "female thing." And in those spaces presenting as a woman or a cis-gendered being. And the dysphoria that is going to be attached to that. So, it would be helpful if there were healthcare practitioners who would understand this. I actually only know of one transgender doctor that I could go to in this country and that could actually help bare a child; so that I could not be called a mother, not be in other spaces with mothers, and them talking about "our" journeys being the same, when I'm not a mother in the room."

A transgender man shared, "I get sent to maternity and like whenever I'm there, because of the content, I'm not completely present. I don't remember what to tell the doctors about my symptoms. I go blank. I'm pretty sure I had a panic attack at some point in the queue, waiting for my appointment... I just started to shake. There isn't a lot of understanding for this. The context of being in a woman's space that was freaking me out, and there wasn't enough appreciation for this. I'm facing this issue now where I would like further treatment that would require hospitalisation and I'm feeling like I'm at a point where I should choose...because, are they going to put me in a gynae ward again? It affects me extremely negatively mentally."

4.2.1.3. Healthcare workers are under educated about transgender and non-binary terminology and anatomical variations

The current belief amongst the participants is that healthcare workers do not receive any training on gender or how to approach, accommodate and treat patients on the gender spectrum. Participants believe it should be standard practice for healthcare workers to be introduced to basic transgender and non-binary terminology. If doctors are introduced to concepts such as gender, then the participants do not find it being translated to them in a healthcare setting. Individuals on the spectrum still get called outdated terms that are considered slurs and violently discriminatory, according to the participants. All participants agreed that teaching healthcare professionals at medical school level basic gender terms and sensitization around anatomical variation in patients on the gender spectrum would make a more significant impact than providing training to older and more experienced doctors.

A non-binary participant shared, "I basically think there is zero education on this".

Participants feel that healthcare workers don't even have the courtesy to ask for pronouns. Furthermore, that doctors do not display having received any form of sensitization training on how to speak or treat

patients on the gender spectrum. This lack of sensitization is not only present when seeking general care, but transgender and non-binary individuals also experience being misgendered and called by their deadname in affirming care clinics, according to the participants.

A transgender woman said, “I think the pronoun is most important. because the name you know. maybe you don’t know. but personally, I am very aware of the pronouns individuals use.” “Cause where I get my medication it’s actually a transgender clinic, but we still get misgendered. ”

A transgender woman reported, “I find that in most instances I have to explain to the doctor about gender.”

A non-binary patient reported, “oh definitely… I know that the terms they use currently are very outdates, for example the word transsexual is actually a slur to most transgender individuals. The terminology that they have and use is incredible outdated and limited.”

A non-binary patient shared, “I think in the first year of medical school already; it should be a well-known topic. There is no longer space for not knowing this information. More and more individuals are feeling safer to be themselves in their spaces and you need to be able to feel safe in many spaces. And if you feel like you can’t go there it’s a problem. I think even just basic thinks like asking instead of assuming would make a big difference.”

Doctors and allied health care professionals practice invasive curiosity when encountering someone who is visibly on the gender spectrum, according to the participants. The participants of the present study found that doctors often ask questions that are very personal and irrelevant to the reason why they are visiting the facility in the first place. Furthermore, the participants expressed that these questions are stressful for patients on the gender spectrum. Individuals in the healthcare field are also unaware of the difficulties in obtaining legal identification that matches your current identity, some participants noted. Several participants have been waiting for their updated identification documents for months and others are in the process of changing their documentation. According to the participants, most transgender and non-binary individuals in South Africa do not even have access to changing their legal identification.

A transgender man said, “At one point I wanted to get my chest surgery. and I asked at the reception where the procedure section is. And they asked me what I want from that side? I told them that I am a transgender man and I would like to register to be on the waiting list to be able to get all my tests done. And then they asked me what that is and why I want that to be done. Now I had to explain myself. You know and they also looked quit confused. maybe they were not inviting to help me. So, I actually had

to wait there for someone who has had surgery there to take me to the section for the other steps. But for me to go back to JHB and do all of that again is very expensive."

A transgender man said, "I definitely think that there is a lack of education withing the healthcare space. Because even when I went for my vaccine; you have to tell them on which other medications you are on, I told them I was on hormone treatment (just in case) and they would as me why. This is a little bit uncomfortable, because it wasn't necessary to ask for the vaccine."

A transgender man said, "I think it's individual questions and stuff about it. Whether it be a reception at the doctor's office or a pharmacist. This is because us of the way I present and my documentation. There's always questioning looks or invasive question, and these affect me."

Often, clinics require patients to divide into male and female queues for screening tests, according to a participant, causing a problem for individuals who are intersex or non-binary. For example, as explained by a participant, individuals who are non-binary or a transgender man, but who would need cervical cancer screening are now faced with a decision to make, "Do I compromise my gender identity and go stand in the queue or do I explain and sensitize the healthcare environment? By doing this the patient is also "outing" themselves and putting themselves at risk of danger."

A non-binary participant shared, "The one time it was compulsory for all female gendered individuals to start with the process where they check for cervical cancer. So, they were actually telling us to separate in male/female queues. They ordered me to stand in the female que to be screened. So, I ended up sensitizing them and telling them that I am not a female, I am non-conforming."

Healthcare professionals present great confusion when performing diagnostic tests on transgender and non-binary patients, according to a participant. Furthermore, participants noted that patients on the gender spectrum are made extremely uncomfortable by invasive questions and remarks about their bodies when doctors find out that they are transgender or non-binary. For example, as explained by a participant, transgender men can have different anatomy to that of a cis-gender man. Technicians doing the scans and other healthcare workers make unauthorized diagnosis and speculations in front of transgender and non-binary patients. Technicians would speculate that their affirming care is the cause of their current medical concern without having any knowledge or jurisdiction to make a diagnosis as such.

A transgender male reported, "there has been huge amounts of discomfort... so because I have cancer that is gynaecological in nature... I've had individuals in the system judge me, because I'm on hormones. And I've had technicians doing the scans say to my face, "you know I wonder if you have cancer

because of this... the hormones." And it made me feel extremely uncomfortable and unsafe. It was a very unpleasant experience going through a diagnostic process and then having individuals wonder in your face... hey, is it because you're on hormones? Like maybe it's your own fault. It felt like I was being blamed for my own condition and it's actually groundless... because they have no reason to think this cancer is hormone sensitive. I had a radiologist do a scan on me and that person wondered out loud if I have cancer because that person is on hormones. It felt like someone was saying... because you did this to your body- see now you've got cancer."

Patients on the gender spectrum are left to feel very uncomfortable and unsafe when medical health professionals present confusion when running typical diagnostic tests, according to a participant. Participants express concern for their safety and trust in the healthcare professional when blatantly expressing lack of knowledge and introduction to anatomical variation present in transgender and non-binary bodies.

A transgender man reported, "on one occasion I had a scan and my paperwork... so my diagnosis caught me mid transition, so I confuse individuals a lot. But my paperwork has been changed and it does state male on my ID. So, I went for a scan and of course the saw things that they wouldn't typically see on a man. So, there was a lot of confusion in the room as to what was going on, on the scan... like this can't be kind of thing."

When healthcare workers encounter someone who is not typically cis presenting they study and observe the patient as a specimen, according to a participant. Moreover, invasive and unnecessary questions are also asked.

A transgender woman said, "I am remembering this one time I went for a blood test at lancelet laboratory for a blood test and there was a nurse, who was obvious about the fact that she could notice that there was a difference between my ID number and how I look. So she was very polite and tried to figure out what I would like to be called, but had no idea how to even approach this conversation or anything about even basic terminology. And again, this is not someone who is being malicious, this is someone who is trying, but who was clearly never taught any of this stuff."

4.2.1.4. Body dysmorphia, gender dysphoria and how doctors fail to understand the mental impact of this on transgender and non-binary patients

Doctors do not present any form of sensitization or understanding of how gender dysphoria impacts the mental health of individuals on the gender spectrum, according to a participant. Participants reported that in some cases being forced to conform to another gender could lead to suicidal ideations.

Transgender and non-binary patients do not find healthcare effective when seeking treatment and being made to feel suicidal. This distress also leads to a distress that makes it difficult for patients to communicate their symptoms. Some participants have shared that they have had panic attacks before.

A transgender male reported, "Being gendered by others with a female identity makes me suicidal. And here I am to fight for my life. and you're putting me here in a context where I need to fight for my life, in a context that encourages suicidal thoughts. It's contradictory. It's kind of like from the beginning I didn't expect things to work. I was given my different room than the chemo room after asking the psychologist to motivate. I found that there was a lack of understanding for what I was going through. They still insisted that I do my consultations in Gynaecology... I don't think they have any appreciation for how much this is affecting my mental space. And they've been doing this from the start. Like what they were offering me as treatment was a complete compromise of my identity"

A transgender woman reported, "The only thig that I can think of would be how expensive transgender healthcare and living as a transgender person is… and a lot of cis individuals don't realise that transgender individuals need hormones and certain procedures are important for your mental health. For a lot of transgender and non-binary individuals hormones are quite literally lifesaving and so because of the massive financial barrier, especially because of the money. The lower income you are, the worse off you are because of how inaccessible it is. So I think how the healthcare system treats there procedures as cosmetic is quite dangerous and is costing lives. I think there needs to be more acknowledgement that some of these procedures are lifesaving."

Doctors are also not knowledgeable enough about the medication that they prescribe to patients on the gender spectrum, according to a participant. Moreover, participants expressed that doctors are not knowledgeable about hormones that lead to weight gain and the psychological impacts of that on the patient.

A non-binary participant reported, "Especially the dysmorphia part. It has led to some things like eating disorders in the past… and when I went into the institution for the first time it was because of a psychotic break. They prescribe me antipsychotics. I explained to them… listen I have this problem with my body, is this going to affect my weight at all? I don't want to say I was lied to, but I was very misleading on the impact that it would have on my body. I gained 20 kg's in the span of two months and when I brought this up as an issue… it was very much dismissed and even though it caused me severe mental distress."

4.2.1.5. Navigating your own affirming healthcare plan as a non-binary patient

Non-binary patients describe their experience of gender affirmative care as being "very scary" and are more reliant on their peers in the community than the actual clinician. They often just go to the clinician because they have the license to prescribe such hormones. The experience of the non-binary participants is that doctors are trained to think that individuals are born a certain sex and if they are transgender gendered then they want to be the opposite sex. This leaves non-binary patients afraid to rely on health practitioners such as endocrinologists to prescribe hormones or develop a gender affirmative care program for them. Participants also find that specialist doctors do not take them seriously when expressing health concerns.

A participant shared, "This was happening in the hospital and there by the hormones department. And I had to explain to her some of the effect of testosterone and what I wanted from the transition. In fact. she didn't even know what the term non-binary meant. She was just going to put me on a female to male transitioning program. And I was like that is not what I wanted, that's not my end goal." The same participant shared, "The healthcare system is very binary and it kind of feels like if you try and explain your own personal existence then they kind of laugh at you. And this hormone doctor… I brought up some very valid concerns regarding certain types of testosterone and she literally laughed at my face…"

We asked participants who identify as non-binary what their biggest obstacle is healthcare and participants on the gender spectrum shared a mutual experience of navigating their own gender affirmative care plan, instead of relying on the doctor's opinion.

"It has mostly just been trying to run my own transgender healthcare, because I'm not running a traditional male to female transition and that's the only one they understand. So, I've had to do a lot of research on my own on what I need and what they should do for me. That's been incredibly stressful."

A transgender man reported, "Yeah, so my partner is non-binary and when they went to the doctor, they first had to explain what non-binary meant that was meant to be prescribing the hormones."

A transgender masculine non-binary person said, "being the more knowledgeable one and telling the doctor, I need this and that tested. And he's having to phone other individuals and I have to text my transgender friends and ask what are they doing/using, and they would be like oh I'm on sustenon and I would ask the doctor can you prescribe me sustenon and he would say… I don't know what that is. And it's just exhausting. I was scheduled to have my top surgery at the end of 2019… and then it wasn't enough for them that I have been on hormones and living as my chosen identity fir years. I had to go to a psychologist and get a letter and that included a lot of additional fees."

4.2.1.6. Compromising your gender identity as a transgender or nonbinary individual to receive equal or any healthcare

Transgender and non-binary participants reported compromising their gender identity to receive healthcare in a safe and equal way, such as cis-gendered individuals. Participants shared that cis-passing individuals on the gender spectrum receive better healthcare. Healthcare is also more readily accessible for patients on the gender spectrum that are more cis parring.

A transgender woman reported, "I was going to pretend to be cis and pretend to be a man. in order to access that healthcare more safely."

A transgender-masc. non-binary woman said, "I have had to pretend to be cis gendered when going to doctors in order to feel safe enough."

Transgender and non-binary individuals who are cis passing receive easier and safer care; many participants report compromising their identity to receive this type of care.

A nob-binary patient reported, "I don't really have much of a choice then to go along with the cis normative process. "

Many participants shared that their legal documentation does not match their current identity yet. To avoid discrimination and to receive quicker and less invasive care, participants in these circumstances would present their gender in a typical way to match their documentation. This would be a complete and stressful compromise of their gender identity. Participants also shared that some forms of healthcare are not accessible if you do not compromise your gender identity. Examples include documentation that would require a patient to be a certain gender in order to receive a particular screening or treatment.

A transgender male participant shared, "I have asthma and I needed to get my prescription. And my details haven't changed yet, so it still had my dead name on it and displayed as female. So, I had to present in a way that would make sense to them. So, I would present as female to match my documents."

Another non-binary patient shared, "Actually "yes", because sometimes you just want to receive your care and go. So, I have done so, because I don't want to be explaining myself all the time. So, when someone misgenders me I pretend as if it never happened. So, then I go, receive my treatment and leave."

A non-binary woman shared, "if they say it's compulsory for me to fill a certain document in that does not comply with my identity or which I do not need, which means they are denying me right of that specific access. But as I said, I had to fight my way and explain to get the specific access to treatment earlier."

Participants stated that patients know the resources and healthcare facilities are there but would rather self-medicate or stay at home to prevent misunderstandings or inconvenience. Participants expressed that it is often a safety concern for transgender and non-binary individuals to compromise their gender identity to receive healthcare.

A non-binary woman shared, "It's a yes and a no. Because yes, the services are there and available, but then there are also barriers. Let's say that there is just a simple service that I need to access, but this thing that like gendering individuals and putting them in boxes acts as barriers, because as I said earlier, it is not every time that you would like to explain yourself. It is rather inconvenient. And simply because of these issues I end up self-medicating rather and only going to the doctor if I am very ill." Also shared, "I think for me one of the biggest obstacles that I have had to face was me desperately needing to be attended by a healthcare professional, who I expected to be knowledgeable of all these issues. And all the diversities in gender. By me going there I expect they are well informed. So, whether you like it or not, each time you find yourself having to explain to the doctor or to come out in some way. It's not an obligation or a need for me to come out every time. Having to do that every time when you are there to desperately receive services then you find yourself having to sensitize and explain."

A transgender man said, "I pretend and go with what they assume just to make things easier."

A transgender man said, "At one point I had to. So, in order to get s script I had to pretend that I was a woman, because of my name not being legally changed yet. And the other time I needed to be attended to and I had to stand up and say I am a female and use my birth name. So, I had to do what I had to do." …" it felt terrible and horrible. Coming out of the person who you are. It felt like gender dysphoria."

A non-binary participant shared, "I feel like I do all the time. And another example of being misgendered, which I didn't mention earlier, is that my wife and I are going through the fertility process. Even walking into the room, everyone just says ladies and I almost resigned myself to just take it, just so that the process can move faster. I actually have a little bit of anxiety before I go to any doctors, dentists etc.; purely because of that issue- of being misgendered and there not being sensitivity about it. So, I wanted to almost leave the gender Identity at home so that I can get out as quick as possible."

A non-binary participant shared, "yeah… whenever after that happened, I had to compromise who I am for healthcare."

A non-binary participant shared, "From my perspective. it's not. Most especially it is not accessible in public clinics and hospitals. I think it's because the staff fails to understand that there are many genders or of the diversity that is there."

A non-binary participant shared, "It's actually just being irritated when you are in the healthcare environment. This experience most of the time forces you to not become yourself. Because of the staff and clinicians, it's always a taboo for a gay man or a non-binary man or transgender to enter such facilities. That forces us to use private institutions, which is very difficult."

4.2.1.7. Safety of transgender and non-binary patients navigating an undereducated system

According to several participants, transgender and non-binary individuals check beforehand or ask other individuals who have visited the same healthcare worker or facility if the environment is transgender and non-binary friendly or not. Participants report that after reception enquiry clinicians sometimes fail to report back if they are willing to treat transgender or non-binary patients.

A 53-year-old transgender male participant said: "I was looking for a GP and someone was enquiring on my behalf whether the doctor would be comfortable working with a transgender person and the doctor just never got back to me."

A non-binary participant reported, "my boyfriend, who's also transgender and he would just go to clicks for blood and things and even there they already give him a look and misgender him and make offhand comments. And that isn't safe… it doesn't feel safe. Like in a room alone with someone who is actively misgendering you. Even though you're supposed to trust that person so much, because they're a healthcare worker."

Another participant, transgender woman reported, "It's always very nerve wrecking to find out if they're transgender friendly. Cause sometimes you just have to get and hope. So the medical aid that I go to has a very small list of doctors that I can go to. So I kind of have to hope if one of them are good. Because sometimes you get recommendations for doctors that are good, but then my medical aid doesn't cover them. And then I'm stuck between. do I go to a place where my medical aid would cover and experience transphobia or do I go to a place that my medical aid won't cover and possibly getting treated better."

Transgender patients would rather pay more and ensure they are safe or have the option to take their money elsewhere than go to a healthcare provider/environment that their medical aid would cover. Doctors would call patient bodies "unnatural" and refuse to prescribe these patients hormones etc.

A transgender woman reported, "I get my hormones from a doctor, who herself is transgender; I pay this out of my pocket. But also, I trust her far more than anyone else in that regard. So I'm rather willing to pay that extra money and make a plan. So I can be safe." Participants feel it is neglected that they dop not only seek gender affirmative care and face many anxieties when seeking general healthcare as well.

A transgender woman reported, "everywhere I go I am afraid of how I will be treated, because really the healthcare system does not care about me as a transgender person. So I am always prepared for the worst... because I have to. Even for the things that aren't necessarily involve me being transgender... the fact that I am transgender... and openly transgender... and very visibly transgender make it very scary to get a prescription for my antidepressants... it's a really scary experience... because even though it doesn't involve me being transgender... it still involves a transgender person being in a medical space and that is a terrifying space to be in."

A transgender man said, "When I joined my current medical aid, I had to pick a primary care provider, so I researched all of the doctors in the network and sent them emails to find out if they are transphobic or do they accept transgender individuals. So, I had to find out who would be safe to name as a primary care provider.

4.2.1.8. Would you say that healthcare is accessible to transgender and non-binary individuals?"

Participants stated that patients find themselves being outed to surrounding patients on almost each visit. Doctors fail to understand how making the patient's identity public exposes transgender and non-binary patients to unknown predigest of other patients, according to a participant. Furthermore, another participant stated that transgender and non-binary patients receive unwelcoming stares from other patients using the same restrooms or hospital room after their gender identify has been made known to the rest of the patients by the healthcare worker.

A non-binary participant reported, "I get very weird looks. Like they keep their distance from me and don't really want to interact."

A transgender male participant shared, "the bathrooms are extremely binary and have been called out by patients previously and that have made me extremely uncomfortable and unsafe."

Patients on the gender spectrum avoid coming out as much as possible for their safety and only talk about their gender affirmative care history in a healthcare context when absolutely necessary. Transgender and non-binary participants find that they have felt unsafe in healthcare environments and at the very least uncomfortable in healthcare environments because of their gender identity. Doctors lack sensitization training and awareness of the transgender and non-binary experience not only in the world, but more specifically in healthcare, according to participants.

A transgender woman reported, "I don't think the healthcare system is accessible to transgender individuals at all. I think as a whole it is very unfriendly and discriminatory. weather out of malice or just ignorance."

A non-binary patient reported, "Generally, when your cis passing like I am you won't run into any problems, you'll just get very funny looks and that's it… kind of passive transphobia. But I know from my other transgender friends that they receive quite a few problems in the healthcare system cause either they don't pass in their preferred identity, or they aren't perceive as being threatening at all. So, they are more likely to receive confrontation. Whether it 'argumentative, but sometimes it has been physical for them. I'm very lucky, but healthcare is not accessible to all transgender and non-binary individuals."

Participants feel alienated and isolated when in healthcare environments. Participants reported that they could not trust healthcare professionals and often feel alone in healthcare spaces. Furthermore, participants stated that this lack of trust makes going to a healthcare space intimidating and individuals on the gender spectrum neglect the seriousness of their health concerns and not going to seek professional help.

A non-binary participant shared, "I was completely alone in this hospital, and I felt so alone in this hospital and like no one was on my side. "

Participants mentioned how healthcare environments are very stressful to navigate because of their gender identity, so they would ask family members to get their medicine or go in their place if possible

A transgender man reported, "Even though I've started hormones and I present more masculine now, my documentation still has my old information. So, I always try to avoid situations like this. I try to get my mom to go for me because situations like this are quite stressful."

Participants express that it is very stressful to go to healthcare environments, because you don't know which type of treatment you will receive or if you will be indeed safe or not. Some participants have shared that healthcare workers have practiced physical violence towards their finds that did not want to risk participating in this study. Participants who were interviewed only reported verbal abuse.

A non-binary participant shared, "you end up walking in there and not knowing which type of treatment you're going to receive. If I felt safe than I would not be hesitating to go to healthcare environments."

Another transgender man reported, "Like putting off appointments and seeing healthcare professionals, because you afraid your identity is going to be compromised. I worry sometimes, because I'm in testosterone, so If I tell a doctor that I am on testosterone then I am outing myself as transgender, which could potentially put me in danger. It's a lot of factors that come down to actually getting myself there because of the fear and the stress of what might happen."

4.3 Recommendations and reflections of Individuals on the gender spectrum for a more inclusive healthcare environment: a Focus group

Sample

Invitations for this focus group session were sent out to participants who participated in the individual interviews. These interviews aimed to evaluate how the binary nature of medicine currently taught to student healthcare professionals translates into the experience of patients on the gender spectrum. The present study chose the 13 participants from the individual interviews for reasons such as; they already meet the inclusion criteria (above the age of 18 years, are transgender and/or non-binary and have had contact with the healthcare system in South Africa), participants previously made their contact details available to the investigators for future studies, and using the same participants from the study in which section 4.3.2.'s questions/topics were formulated from served as an additional form of member checking and how accurately the transcripts were coded, independently from different investigators, from the individual interviews. The sample included, from youngest to eldest; a 20-year-old non-binary, a 21-year-old transgender man, a 21-year-old transgender masculine non-binary, a 34-year-old, non-binary, 39-year-old non-binary, and a 53-year-old transgender man.

4.3.1. Questions/topics formulated from the educational investigation (the survey sent out to health science students, lecturers, practical assistants and tutors who have taken anatomical sciences at Tygerberg medical campus)

4.3.1.1. The incorporation of transgender and non-binary content into the medical program

Students responded to the survey and mentioned that they would want each module to accommodate itself to transgender and non-binary content where necessary. The focus group was presented with this finding and could give their opinion as community members. Individuals in the community expressed that they could get any illness just like any other person and therefore should be included throughout modules where necessary. The focus group also proposed that the healthcare students have a lecture in first year on pronouns and how to talk to patients on the gender spectrum included in the curriculum. The students mentioned that they have a module called, "how to be a better doctor" in first year, which could accommodate transgender and non-binary patients. Participants also mentioned their concerns for how HRT might affect their treatment. This is discussed in more depth later in section 4.3. The main

concern for participants who are on HRT is that doctors understand that symptoms could differently now than according to the sex they were assigned with at birth.

A non-binary participant shared, “So when you are dealing with a specific topic there should be space for transgender and non-binary individuals; like for elderly etc. I do however think there should be a one on one for medical students as well, just as an introduction. That whole thing of not assuming the person who has entered your doctor’s office is a specific gender and actually teaching how to ask for pronouns or gender identity before you even start to consult.”

Another non-binary participant shared, “When symptoms present differently in different sexes especially, it's important to bring sex and gender into the conversation. Discuss queerness and gender alongside other demographics like age etc.”

Participants shared that they want their bodies to be normalized in medicine. And don’t want further isolation or “othering” in a healthcare environment. The focus group agreed that incorporating transgender and non-binary bodies as a demo graph (just as elderly, athletes, pregnant woman etc.) where necessary, then it would minimize othering of the community.

A non-binary participant shared, “Well just that you said that they asked for you know for information on transgender bodies to be throughout the modules, that was important, because that would’ve been my answer. I don’t want and don’t think it’s a good idea for me to be put in a box or at the end of a chapter; when I’m equally affected by the entirety of the book, if that makes sense.”

Another non-binary participant shared, “I don’t enjoy the assumptions that there is only he and she in the world. I want to exist, and I would like to be acknowledged.”

4.3.1.2. Fact based learning

Context: Students expressed that they think that incorporating fact-based information into the medical program could be a means to combat negative or personal biases towards individuals on the gender spectrum cumulated from social media.

The focus group acknowledged the advantages and disadvantages of learning about how the gender-diverse community would like to be treated through social media. However, all participants agreed that fact-based learning should be a standard practice in training healthcare workers to ensure neutrality towards the community.

The advantages of using social media to learn how the gender-diverse community would like to be treated were fewer than the disadvantages. Participants shared that learning directly from the community is a rich and unfiltered opinion directly from the "source". Many individuals do not interact with or have individuals on the gender spectrum in their daily lives and can access individual, lived experiences from the community through social media.

A transgender man mentioned, "So if you're learning from social media, you are probably learning from the first hand lived experience of transgender individuals, which is a benefit of social media. Because you can learn from transgender individuals through social media how transgender individuals would like to be treated."

Disadvantaged of using social media to learn how the gender diverse community would like to be treated were acknowledged by the focus group. The focus group agreed that on social media "anyone can say what they want." Participants shared that within a community there are individuals with their own opinions. Therefore, all transgender and non-binary individuals would not necessarily agree on everything.

A transgender man said, "The other drawback is that it is taken less seriously and also anyone can say whatever they want."

Furthermore, participants also expressed concern about transgender and non-binary visibility and representation on social media. The focus group agreed that social media does not represent all of them. It was mentioned that influencers have access to more resources, such as sponsors and money, and do not show when they are not at their peak performance or health on social media. The group acknowledged that there might be an influencer who shares this, but they are not as visible and represented as cis-gendered influencers.

A transgender man shared, "I'm just wondering to what degree transgender individuals in social media actually represent all of us. You know, it's kind of like looking at a movie star and thinking, "does that human represent all of humanity." I think they tend to be individuals who have had more successful transitions for one; and who possibly don't have intersectional problems, which I do. And were also not necessarily individuals who are as ill as I am. So, I don't necessarily think that there are individuals very reflective of me in social media. It's not a good place to get your information from."

Finally, the focus group acknowledged the influence of social media algorithms. Participants explained how capitalism is incorporated into social media and, therefore engage with more content that resonates with your personality on your generated social media explore page, as a marketing scheme. Furthermore, it was mentioned that information gained from social media should still be double checked, and the group did not feel that individuals do that and should be taught fact-based learning in the curricula.

A non-binary participant shared, "Social media algorithms can form echo chambers that reinforce your own biases, however. So, it would be good to have objective and factual discussions built into curricula."

4.3.1.3. Misgendering and withholding of information

Context: Some students expressed that when patients on the gender spectrum are misgendered or erased(discriminated) against then they can see patients withhold information or withdraw from the clinician. This could lead to crucial information towards making a diagnosis and treatment plan being lost.

Several students mentioned in their survey response that mistreatment such as misgendering or dead naming a patient made them close off their body language and could've withheld important information critical for the final diagnosis. These findings were shared with the focus group, and they were asked how they react when this happens and if this has ever happened to them.

The answer was unanimous. All the participants admitted having done this at some point in time during a consultation. The group shared that as soon as this happens, they feel very uncomfortable and would prefer to leave the environment, which is now hostile. Participants mentioned how clinicians do not understand the power dynamic between doctor and a marginalized patient.

A transgender man shared, "There isn't a scrap of doubt that I have done this. I've been in the unfortunate position of having to go to a gynaecology department and I was so uncomfortable that I am certain I didn't tell them half of the things that I should've. So yeah, absolutely, I was uncomfortable. It wasn't that I was directly misgendered, it was the context that misgendered me, and you know I just couldn't cope. So, I was just aiming to get in and get out as fast as possible and I did not tell the doctors half of the things that were happening."

Another transgender man shared, "Same. I needed a pap smear and got turned away because they thought I was male."

Further elaborating on the power clinicians hold over patients, a participant mentioned two options that are followed generally: Either you comply with the identity they provide you and possibly receive the wrong medicine (this participant was referring to how HRT treatment can affect symptoms and treatment of disease) or you correct the clinician and be labelled as a "difficult" patient. The focus group agreed with this participant. Another participant followed by saying they felt bullied.

A non-binary participant shared, "had an experience of this happening where I went to a doctor for a physical injury and ended with being sent to a psych department because I had an incredibly bad panic attack from being misgendered and deadnamed and pretty much gaslit into this doctor deciding I was being abused and was mentally ill over my reaction to their transphobia."

4.3.1.4. What does transitioning mean to participants in the focus group?

Participants started with the mention that transitioning is unique for each transgender and/or non-binary person. Some of the most common responses included that "it is my right" and "transitioning was a choice to live". The group shared that doctors assume there are "lines" and preconceived ideas of what transitioning should look like for individuals on the gender spectrum. Difficulties that cis-gender standards cause participants was more expressed amongst the non-binary participants; however, the entire group did share this notion after it was mentioned. Participants mentioned that asking what the patient expects from their own transition is the preferred method of starting treatment. Not the other way around.

A non-binary participant shared, "I think it's interesting, because there aren't any lines for us that me draw when it comes to medically transitioning or transitioning in general, but cis individuals do them all the time. And they don't have to do anything really to access it. They can just ask for it and get it. So it's interesting how certain things are called transitioning for us, but not for anyone else. And then obviously transitioning is different for all of us. I mean I've experienced a lot of going to the doctors and them kind of assuming that I have this timeline that I have all of these plans that I actually have no interest in doing for myself. So, I think the important thing to note is that transition is unique to everyone."

Another non-binary participant shared, "I was going to go to something similar as well. Around what it actually means to transition. So, for someone like myself who is non-binary or gender

queer; medical transition is not something that is very high up on my list. Transitioning should not only fit into a box where it's about changing certain things about the physical body, and I think for me transition is the minute you decide to live as your authentic self. Also, when a patient comes to you and they disclose that they are transgender or non-binary. Your next thought or question should not be did you have "the" surgery on your mind. It needs to literally be not an assumption thing. It's literally a point where you pause and you enquire from the person in front of you what you need. It is an experience that is unique to the individual."

4.3.2. Questions/topics formulated from 13 individual interviews held with individuals on the gender spectrum, above the age of 18 years and have had contact with the healthcare system (phenomenon of interviews; how the binary nature of anatomical sciences affects their experience in healthcare)

A thorough report of qualitative investigation requires the researcher to mention how questions changed, were removed or were added. One of the questions/topics from section 4.3.2. was omitted from the focus group as it was answered when presenting the focus group with question/topic 4.3.2.2. The omitted question would've been, "How do you feel about doctors outing patients or discussing their medical transitioning in front of other patients? Does this make you feel unsafe?"

4.3.2.1. "Cis-passing individuals" in healthcare environments

Context: "Cis-passing individuals" on the gender spectrum report better treatment, accommodation and care in healthcare environments than individuals who do not typically present or "pass" as cis-gendered.

Firstly, participants did not feel that this question was suitable or inclusive of non-binary participants. The investigator shared that a non-binary participant from the individual interviews often pretended to be a man because they would receive much better treatment that way and with minimal effort. The focus group then continued with this topic.

A participant share that they got sick in the "middle" of their personal "medical transitioning goal" and did not pass well. It is important for context to mention that the condition was gynaecology related. As their treatment progressed, so did their medical transitioning journey. When he asked for a gender-affirming ward and care plan, the doctors made him out to be "difficult" and "unnecessary". They could not understand why he did not want to tolerate the same treatment.

This transgender man said, “I’m sad to say, but it’s just the way it is. I don’t pass that well. So you know, nobody really thought anything of it and it was up to me to really make a noise. I think they don’t understander the distress, because when you do get misgendered it's just not as visible, because to the eye you look like you fit in with the ladies and so I don’t think I was taken as seriously.” He also mentioned, “I’m sad to say, but it’s just the way it is. I don’t pass that well. So, you know, nobody really thought anything of it and it was up to me to really make a noise. I think they don’t understander the distress, because when you do get misgendered it's just not as visible, because to the eye you look like you fit in with the ladies and so I don’t think I was taken as seriously.”

A non-binary participant brought up a point made in earlier conversation, “In terms of not being cis passing. You kind of have two options. You either have to just go with it, being misgendered. This takes a tall and can actually cause medical problems for you if you are on HRT (hormone replacement therapy) and you know, you’re not getting the treatment you need because you’re being treated as a woman whereas you need the treatment for a man because your body is different than a woman’s. and if you do correct them, then they’re pretending like you’re making a big deal out of nothing, or you are causing a scene or trying to be difficult. You know, where they kind of see you as non-compliant basically, you get treated like a difficult patient.”

The group agreed with this participant that you are at the clinician’s mercy and often have to make identity compromises to receive any treatment. This does not necessarily involve the correct treatment; participants mentioned how HRT could affect your body’s form and function to be different from your assigned sex at birth.

4.3.2.2. What type of sensitization would the community find urgent in healthcare?

Participants immediately responded in the comments, “Ask before you assume!!!” The group shared with each other that clinicians who ask inappropriate questions during consultation expect them to feel grateful for their “willingness” to learn. The group felt that it is inappropriate to study and learn from them as patients who are there to seek care, in some cases it was mentioned to be critical care.

A transgender man shared, “I’m a patient and I needed to be a patient (in a very critical condition) and you know I was asked to play educator and I was also asked to play advocate.”

A non-binary participant shared, "I was asked certain things like how does it make you feel to be on testosterone and things like that- in an oncology appointment. I was actually really offended, I'm busy fighting for my life and you expect me to educate you on what these transgender stuff is about. It was certainly in a sense of, oh aren't you happy that I'm trying to learn. I'm happy their trying to learn, but it was just inappropriate do that in a hugely intense oncology appointment, when I'm fighting for my life. You're taking up my consultation time with education that I am supposed to give to you."

Participants felt that if not necessary, the patient should not have to talk about their transitioning experience with the clinician. It was mentioned to be uncomfortable and inappropriate by the focus group. The focus group also shared that they often must come out to the reception staff because the forms they must fill out are not accommodating. Everyone agreed that being out like that in public is a risk to their safety.

A non-binary participant shared, "The number of times I had to out myself to the receptionist because I'm asking for clarity on the forms on stuff like; do I need to put my legal name on here or things like that. Or asking how do I need to fill in these forms. You kind of need to put yourself on the spot and it can put you in kind of a dangerous position."

4.3.2.3. Cis normative hospital environments

Context: How can cis normative environments such as maternity, gynaecology, urology and other wards be more inclusive for transgender and/or non-binary individuals?

The focus group spoke more about the role of the staff in these environments, which is the following question/topic, however some points were made on how the environment could be more inclusive for gender-diverse patients. A participant mentioned again how they were turned away from the maternity ward when they were booked for a scan there. The participant felt that someone could have phoned ahead, or if staff has been more knowledgeable, then this would not have happened. Participants with reproductive capabilities mentioned how childbirth should not be centred as the main goal of all individuals with ovaries and a uterus. The focus group agreed that form and function should be the main priority in a ward and not just gender/sex. The topic of HRT and how this changes your form and function arose again. The group did not feel that clinicians consider this as a serious factor in treatment and diagnosis. Finally, the group also reiterated that the forms they must fill in do not provide them space in healthcare environments. This would be a major relief for the participants going into a

healthcare environment, as they mentioned earlier how discussing the form with reception each time puts their safety at risk.

A nonbinary participant shared, "I think depending on the context' focusing more on the function and just the biology of what is going on over just gender. Instead of referring to female parts or male parts, be specific about what you are talking about. Keeping in mind the ways that any medication or treatment that you might be taking can impact form and function. Because I think it's very important for these doctors specifically, o how HRT is going to be affecting your body."

4.3.2.4. Besides for the healthcare environment, how could healthcare workers make you feel more comfortable?

After discussing how healthcare environments could be more inclusive, we addressed how healthcare workers could be more accommodating to patients on the gender spectrum. The focus group did not have a detailed response and acknowledged that each patient's experience and context will differ . However, the group did come up with a solution. They felt that most of their negative encounters could have been avoided if clinicians just asked the patient more questions instead of assuming. Participants shared how they would choose their treatment plan based on what would be the safest and least dysphoric, which does not mean choosing the best treatment for you and your health.

A transgender man shared, "A lot of the issues I had could've been prevented if someone just had a conversation with me right at the beginning to determine what I was comfortable with. I was panicking about my diagnosis and wasn't in a space where I could just stand up and say no. Things like if I get hospitalised, would I be in the male ward or the ladies ward. Things like that were not asked to me, were not put up front to me. It let to me making decisions about my treatment that I chose based on the fact that I don't want to be in a ladies ward. They did not ask, did not make arrangements, did not ask me what I would be comfortable with. They just needed to have a conversation right in the beginning instead of waiting for me to start screaming and shouting. Have a conversation."

Chapter 5: Discussion

5.1. Resources and recommendations made from students and anatomical staff at Tygerberg Medical Campus, Stellenbosch University

Sample

A cross-sectional survey was distributed to 2085 individuals on Tygerberg medical campus. One hundred and forty-eight students, one tutor, two practical assistants or demonstrators and three lecturers completed the survey in full (n=154). The sample includes students who are taking anatomical sciences or took anatomical sciences as part of their degree programme, tutors, practical assistants or demonstrators, and lecturers of anatomical sciences, at Tygerberg Medical Campus, Stellenbosch University. The response rate constitutes 7% of the total number of individuals who received the survey.

Introduction

In the following section, the results based on section A of the survey will be discussed. As stated previously, section A is composed of the cross-sectional survey sent out to healthcare students, tutors, practical assistants and lecturers involved in anatomical sciences at Tygerberg Medical Campus, Stellenbosch University. Statistical comparison tests were not performed on the results, however, the percentage of "yes", "no" and "not certain" answered per question are compared. The response rate was 7% (N=154). Nevertheless, the sample reflects participants who were purposefully selected by inclusion criteria. Moreover, responses are from a diverse group of students in relation to healthcare degree programmes being undertaken at Stellenbosch University. Considering that this is the first study of its nature conducted in a South Africa context, many valuable phenomena can be explored and discussed through the 154 survey responses. Questions were grouped together, depending on the overarching theme once coding was complete. The phenomena being explored, "Current recourses, knowledge and attitudes of healthcare students and anatomical educators at Tygerberg medical Campus, Tygerberg."

5.1.1. A quantitative evaluation of current knowledge and resources held by healthcare students, tutors, practical assistants, and lecturers involved in anatomical sciences at Tygerberg medical campus, Stellenbosch University

Questions 9, 10, 14, 15, and 18 are grouped together to explain why healthcare workers are underequipped to include transgender and non-binary individuals within healthcare.

Students were asked in question nine, "Is transgender and non-binary content taught in preclinical lectures?"; and 86% (n=131) of the total sample responded with "no" or "not certain".

Question ten asked, "Are here university resources available, which grant access to understanding transgender and non-binary vocabulary?", and only 12% (n=15) responded with "yes".

When asking participants if, "the medical campus has a society or extracurricular group available that creates transgender and non-binary awareness?" only 62% (n=96) of participants answered "yes" and 34% (n=50) answered with "not certain".

In question 15 only 28% (n=43) of participants answered with "yes" when asked if, "some lecturers include transgender terminology and health into their coursework?"

Finally, only 0.02% (n=3) of participants said "yes" that, "the undergraduate program that I am involved in offers an elective on transgender and non-binary health", at question 18.

Responses to these four questions show that the healthcare curriculum at Tygerberg Medical Campus, Stellenbosch University, either does not have sufficient resources available regarding transgender and non-binary healthcare, or students and educators are simply unaware of how to access such resources. The lack of transgender and non-binary content within curricula could be why transgender and non-binary patients do not feel safe in health care environments. In essence, doctors are either not provided adequate resources on how to treat transgender and non-binary patients or are not willing to engage with this material (Jansen, 2009, Reygan & Francis, 2015).

Individuals who identify as transgender and/or non-binary are generally at a much higher risk of experiencing inadequate health care treatment (Bolderston & Ralph, 2016; Luvuno, Mchunu, Ncama, Ngidi & Mashaba-Thompson, 2019). Therefore, it is important to include more transgender and non-binary content in medical curricula, which can drastically improve the clinical environment for both patient and health care provider (Štrkalj & Pather, 2020). If medical students are equipped with a broader understanding of gender and sexual diversity, then both health care provider and patient could experience less discomfort. Moreover, health care providers would diagnose and treat patients on the entire gender spectrum and provide more inclusive treatment overall. Inevitably, healthcare would be far more inclusive for patients on the gender spectrum, where the emphasis would rely on treating all patients fairly and equally, regardless of identity or ideology.

Question seven and eight further evaluated on participants knowledge regarding the transgender and non-binary community. Question seven asked whether participants understood that "There was a

difference between sex and gender.". Of the participant responses, 20% (n=27) responded with either "no" or "not certain".

In question eight students were asked, "Transitioning needs are cosmetic and not medical.". Only 56% (n=86) of participants said "no", and 44% (n=70) responded with "yes" or "not certain" with 24% (n=38) of 154 participants answering "yes".

Clayton and Tannenbaum (2016), Harrington (2016), and Štrkalj and Pather (2020) note that sex as a biological classification is in contrasted to gender, which is constructed from the social, environmental, cultural, and behavioural factors and choices that influences one's identity. If clinicians understand how gender contributes to a patient's identity, then gender affirming care and needs can be vastly improved. A more inclusive understanding of gender and sex can aid in a more congruent understand of a patient's gender and sex, and aid in understanding and treating gender dysphoria or gender incongruence (Clayton & Tannenbaum, 2016; Harrington, 2016).

Building on question eight, and specifically whether transitioning needs are medical or cosmetic, it is important to understand medical aid cover as it relates to gender affirming care. Currently, no South African medical aid provider covers gender affirming care. Gender affirming treatment continues to be registered as cosmetic procedures. However, as mentioned by participants in section 4.2, healthcare professionals do not realise is the lifesaving affects associated with gender affirming treatment and care.

Participants from the individual interviews mentioned how gender dysphoria causes distress to the point of suicide. If clinicians understood the distress that patients experience from gender dysphoria, then patient-clinician interaction and trust could improve tremendously. Individual interview participants mentioned how dysphoria raises their anxiety. As a result, individuals end up tolerating poor treatment they receive in order to leave the healthcare environment as quick as possible. Luvuno *et al.* (2019) reports that this blatant erasure of transgender and non-binary patients, ultimately results in individuals on the gender spectrum avoiding healthcare environments entirely.

Cooper, Russell, Mandy and Butler (2020) mention that societal shifts will improve the well-being of transgender and gender diverse individuals. Furthermore, current societal responses to transgender individuals, such as misgendering, can exacerbate their negative feelings towards their bodies and their gender, adding distress to the existing experience of gender dysphoria (Cooper *et al.*, 2020). Students should be introduced to more inclusive understandings of "sex" and "gender". Understanding a patient's gender would assist healthcare practitioners in understanding where on the sex spectrum their patients would feel most gender affirmed. Therefore, treating and diagnosing patients on the entire gender

spectrum more accurately. Terminology on gender could easily be incorporated into a urogenital anatomy lecture, where sex is also discussed, providing an ideal opportunity to contrast these two terms.

The first question presented to the participants was, “Sex is on a spectrum”. Most students answered “yes”. However 40% (n=58) responded with “no” and 13% (n=19) with “not certain”. Sex has been proven to be a spectrum and many biological variations of sex exist (Bergman, 2011; Štrkalj, Spocter & Wilkinson, 2011; Štrkalj, 2016; Parker, Larkin & Cockburn, 2017). According to Štrkalj & Pather (2020), including sex variation teachings in anatomical sciences could improve accuracy of diagnosis and treatment plans. This is a basic anatomical teaching that should be taught to medical students in addition to all other forms of anatomical variation (Bergman, 2011; Štrkalj *et al.,* 2011; Štrkalj, 2016; Parker *et al*., 2017).

The second survey question in section A was “An individual can have stereotypically “male” and “female” characteristics across different levels of biological organization (e.g., xy; male chromosomal, and high estrogen levels; typically female).” Most students agreed that this is possible. However, more than 20% (n=21) of the student participants answered with either “no” or “not certain”. This question is important for medical students to understand, and students do not report this understanding or having this knowledge.

Aintsworth (2015) and Haig (2019) describe about the michrochimerism of sex expression in humans and how sex is far too complex to be defined in a binary nature. Aintsworth (2015) explains that individuals can have different classifications of “male” and “female” characteristics on different levels of biological organisation, illustrated in figure 5.1. The different levels of organisation refer to chromosomes, hormone levels, secondary sex characteristics, and external genitalia (Aintsworth, 2015). Haig (2019) further elaborates on how secondary sex characteristics can be expressed as a mixture of typically “male” or “female” defined phenotypes. He calls this mixture a “mosaic of features”, resulting from gene expression level (Haig, 2019). Maybe add an explanation

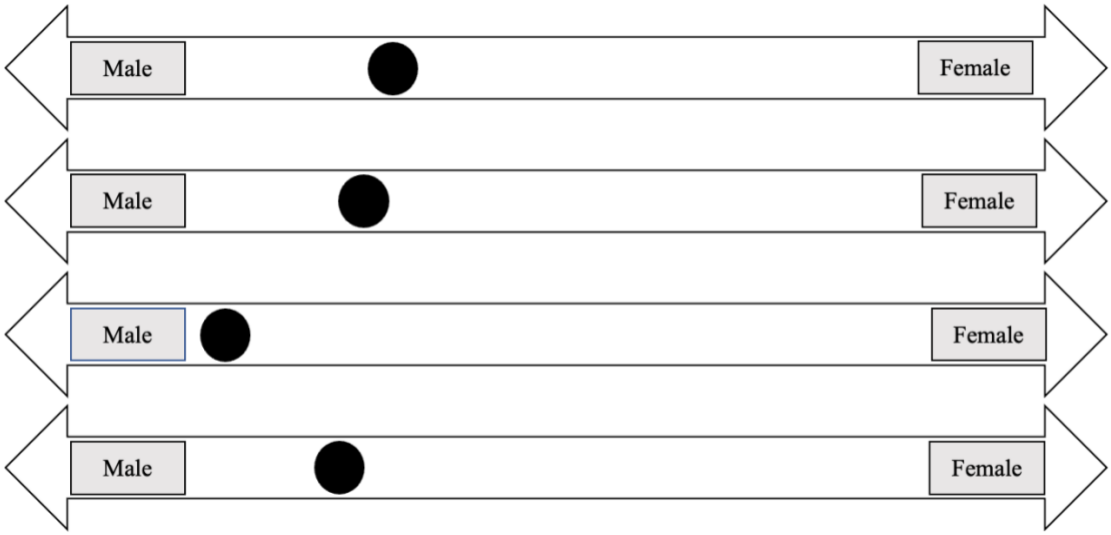

Figure 5.1: An Illustration of a possible michrochimerism example, interpreted from Haig 2019 and Aintsworth, 2015.

A recent publication by Easterling & Byram (2022) sheds light on how patients and educators experience anatomical language in healthcare practice. The inclusion of a "primer on Sex and Gender" at the Midwestern Medical School was included in the anatomical sciences component of the medical curriculum, in an effort to eliminate possible misconceptions about sex and gender and set the standard for following lectures on how to communicate about bodies in an inclusive manner. The goals were to reinforce that gender and sex are not binary, to show students how to talk about bodies in an inclusive manner, and finally, to explain how cisgendered discourse on sex and gender is impacting transgender and non-binary patients. Their study found that transgender patients benefited from informative resources, non-gendered language, language tailored to patient level of understanding, and that healthcare providers need not generalise about individual bodies based on their anatomy and assigned sex at birth. Therefore, if medical students are taught, in modules like anatomy, that sex is indeed on a spectrum, then attitudes towards transgender and non-binary participants could improve. Ultimately, this could provide safer healthcare environment for transgender and non-binary patients healthcare.

From question three, "transgender a mental illness?", less than 0.1% (n=9) of the participants answered with "yes" and 0.1% (n=16) of the participants were "not certain". Even though most students agreed that being transgender is not a mental illness, adverse and negative views must be adequately addressed in healthcare education. Only studying cisgendered bodies continues to portray an "us" versus "them" or a "normal" versus "abnormal" perspective amongst medical students. Healthcare training should emphasise that the diagnosis *transsexualism* has been removed from the International Classification of Diseases (ICD) -10 and has been replaced with gender incongruence. Similarly, the World Health Organisation (WHO) refers to *transsexualism* as an outdated term and should not be used in current

practice. This new title moves the diagnosis from chapter six (Mental and behavioral disorders) to chapter 17 (Conditions related to sexual health) (Rodrigues, Granda & González, 2018). These changes were released and presented in 2019, at the World Health Assembly, with the understanding that the new changes would be enforced in 2022 (Rodrigues *et al.*, 2018).

Similarly, the diagnosis 'gender identity disorder' was removed from the Diagnostic and Statistical Manual of Mental Disorders (DSM) -5 in 2013 by the WHO and replaced with gender dysphoria (Rodrigues *et al.*,2018). The DSM-5 which terms gender incongruence as gender dysphoria defines this as," distress that may accompany the incongruence between felt or expressed gender and the gender assigned" and with the diagnostic criteria of, "a marked incongruence between the felt gender and the primary and/or secondary sexual characteristics (or in young adolescents, the anticipation of secondary sexual characteristics)."

To directly quote from the WHO's online forum, "The bulk of the changes centred around the moving of "gender incongruence" from a classification of mental health to one of sexual health. In 2020, we have a better understanding of the issues surrounding this condition, and they are not related to a mental health condition. Treating gender incongruence in a mental health chapter was causing additional stigma for an already stigmatized condition. WHO officials added the hope that adding this condition to a sexual health chapter of the ICD codes would "help increase access to care for health interventions" and "destigmatize the condition." Being on the gender spectrum is not a mental illness, as both the DSM and ICD make clear, and future healthcare professionals should know this when treating patients from the LGBTQI community. Exposing students to variants of sex early in their medical education could lead to normalising all bodies on the gender spectrum in healthcare.

Question four asked whether "The transgender and non-binary population is a marginalized group, globally". Overall, 20% (n=9) of the group said "no" or were "not certain", while 80% (n=125) responded with "yes". The following question was also based off marginalization of the non-binary community, "Transgender and non-binary patients are at higher risk for conditions such as anxiety, depression and HIV/AIDS". Finally, when asking whether "Transgender and non-binary patients experience systemic and structural barriers in the healthcare system", 77% (n=112) of the student participants answered "yes", and 23% (n= 42) answered "no" or "not certain".

Clinicians work with many marginalized groups, which is why it is important to understand possible patient barriers to ensure efficient doctor-patient interaction. Time and resources are scarce in the healthcare environment and having better and more efficient patient trust and interaction would save clinicians and patients a lot of time and resources. The concept of understanding patient backgrounds, using consultation time efficiently and creating a high-quality healthcare environment was published in

the textbook, "Patient Safety and Quality: An Evidence based Handbook for Nurses." (Stone, Hughes & Dailey, 2008).

Luvuno, Ncama and Mchunu (2019), mention that the gender diverse community is not acknowledged in the healthcare environment. This erases their identity in healthcare environments and leads to structural barriers and active exclusion of transgender and non-binary patients. This exclusion results in the gender diverse community avoiding healthcare facilities. Healthcare workers should know that transgender and non-binary individuals have unique health risks, such as an increased risk of mental illness, substance abuse, suicide, and HIV infection (Reisner, Radix & Deutsch, 2016). Students aren't taught about these issues and aren't exposed to patients and bodies that are representative or inclusive of the entire gender spectrum. Therefore, students rarely learn about bodies that are not typically "male" or "female". Bodies of individuals who do not meet a cisgendered society's phenotypical standards are viewed as "abnormal", "cosmetic" and "not real", which further erase the identities of the gender diverse community in healthcare. Introducing students to variations in sex, within anatomical sciences curricula, could provide a biological basis and understanding for the appropriate treatment of gender diverse individuals.

Finally, questions 11, 12, and 16 will be jointly discussed. These questions were used to gather the opinions of participants on whether more transgender and non-binary content should be incorporated into current medical curricula. Eighty-one percent (n=125) of the participants agreed that "Teaching different levels of sex variation could improve the understanding of variation in general" (question 11). Furthermore, 71% (n=112) of the participants believe that "Teaching transgender and non-binary language in preclinical blocks could improve clinician-patient interaction and could contribute to more accurate diagnosis." (question 12). Finally, question 16 was asked to see if healthcare students and educators understand that "There is overlap between anatomy and social sciences". Fifty-seven percent (n=84) of the participants answered with either "no" or "uncertain".

As indicated by this group of questions, students, educators, tutors, and practical assistants would like to see more transgender inclusive education incorporated into the medical curriculum at Tygerberg Medical Campus, Stellenbosch University. However, more than half of the student participants did not acknowledge that social sciences and medicine overlapped. In 'The Relevance of Social Science for Medicine' edited by Senberg and Klinman, sixteen different authors emphasize that individuals' social networks influence their patterns of help-seeking and clinical outcome. Therefore, it is important for doctors to understand how cultural models of pathogenesis affect symptom formation, especially in the African context. Symptom expression differs amongst genders in a similar way that is differs between cultures. Different diagnostic criteria have been developed for different genders because of how differently they express symptoms. Therefore, if students are equipped with the knowledge of gender

and sex in anatomy, as modelled by Easterling & Byram (2022), this would abolish barriers that are created by preconceived ideas of gender and sex. Moreover, this would lead to a more accurate treatment of patients who are transgender and/or non-binary. As continually suggested from Štrkalj & Pather, anatomical sciences could prove to be an early medical school intervention to introduce gender diverse content to healthcare students (2020).

Conclusion

The lack of clinical competency of medical practitioners with transgender and non-binary patients has been identified as a significant barrier to healthcare for this community (Pitts, Couch, Mulcare, Croy & Mitchell, 2009; Riggs, Coleman & Due, 2014). Štrkalj & Pather (2020) and more recently Easterling & Byram (2022), believe that anatomy could lead the teaching about gender ideology and sex, by providing a scientific foundation for these concepts and prepare students to engage with the complexity of the evolving concept of sex and gender. This would lead to a broader appreciation of patients who are transgender and/or non-binary, when encountered in the healthcare environments. Teaching sex and gender in a non-binary manner as proposed by Štrkalj & Pather (2020), and Easterling & Byram (2022), could indeed lead to a greater understanding of variation in general, more accurate diagnosing and treatment, and better patient-clinician interactions.

5.1.2. A qualitative evaluation of current knowledge and resources held by healthcare students, tutors, practical assistants, and lecturers involved in anatomical sciences at Tygerberg medical campus

Introduction

Participants had the opportunity to answer question from Section B in free text format. Section B of the survey comprised of seven questions. The phenomenology paradigm was used to analyse and code data from each question. The phenomenon explored in section B included "resources available" to medical students as well as "current knowledge and attitudes" held by healthcare students and anatomical educators.

5.1.2.1. The current dedication to transgender and non-binary content into the medical program at the Faculty of Medicine and Health Sciences, Stellenbosch University.

In question one of this section students were asked, "How many hours in total are dedicated to teaching transgender and non-binary content in preclinical lectures" The majority (n=144) of participants answered between zero and one hours; However, one lecturer responded with one to two hours in the urogenital anatomy programme. Reflected in question two of this section in the survey ("How many hours in total should be dedicated to transgender and non-binary content in preclinical lectures and why?"), it proves difficult to determine an exact number of hours to include transgender and anatomical sciences in preclinical teachings. However, looking at medical schools globally, in the United States and Canada, a low baseline of hours dedicated to LGBT (Lesbian, Gay, Bisexual and Transgender) has been determined at 5 hours in preclinical content (Obedin-Maliver, Goldsmith, Stewart, White, Ma, Transgender, Breman, Wells, Fetterman, Garcia & Lunn, 2011; Dowshen, Nguyen, Feiler & Margo, 2014; Hayes, Blondeau & Bing-You, 2015). Comparatively, Tygerberg Medical Campus has an even lower inclusion rate than comparable international preclinical medical teachings (Obedin-Maliver, Goldsmith, Stewart, White, Ma, Transgender, Breman, Wells, Fetterman, Garcia & Lunn, 2011; Dowshen, Nguyen, Feiler & Margo, 2014; Hayes, Blondeau & Bing-You, 2015).

5.1.2.2. The incorporation of transgender and non-binary content into the medical program at the Faculty of Medicine and Health sciences, Stellenbosch University.

In question two, students and educators were given the opportunity to give their opinion regarding how many hours of preclinical teaching should be dedicated to transgender and non-binary content. Student recommendations varied between zero to twelve hours. Findings were too varied to determine a realistic

mean recommendation from the participant responses. However, in elaborating on their answers, valuable parameters for transgender and non-binary content were provided by student responses. Students shared that they would like lecturers to educate them on topics such as gender, sex, and how to speak to and treat patients who are not cisgender. Students mentioned that a specific time frame cannot be predicted. However, student participants would like to be equipped with enough knowledge to facilitate a discussion or debate on these pertinent topics, at the very least.

Participants felt that they needed more factually based knowledge incorporated into the curricula regarding the transgender and non-binary community. Currently, student participants obtain most of their knowledge of the community from social media. Research has shown that interventions in education focused on LGBT health improves the knowledge, attitudes, and awareness of students (Sanchez, Rabatin, Sanchez, Hubbard & Kalet, 2006; Kelley, Chou, Dibble & Robertson, 2008; Erikson & Safer, 2016). According to our survey responses, interventions were considered vital, as a lecturer and a group (n=9) of student participants shared inaccurate opinions related to transgender and non-binary individuals. Unfortunately, this inaccuracy in a healthcare setting further contributes to erasure of transgender and non-binary identities (Wilson *et al.*, 2014; Luvuno *et al.*, 2019). Students called it a "hype up sham" and a lecturer elaborated further, stating that they believe a patient's chromosomes determine their sex and that gender should not be considered. Simple interventions to a medical curriculum, like including at least one lecture with a follow-up assessment on transgender healthcare have proven to increase the skill levels and decrease discomfort of patients and medical students treating transgender and other patients on the gender spectrum (Vanderleest & Galper, 2009; Safer & Pearce, 2013). Such interventions could be easily implemented in a module at Tygerberg Medical Campus, such as the urogenital anatomy system.

Štrkalj & Pather (2020) mention that the two most common arguments against including gender diverse content into medical curricula are, firstly, that the programme is already content heavy, and secondly, prevalence (how many transgender and non-binary patients are encountered in the South African healthcare system). Resultantly, these two arguments need to be discussed at length.

Firstly, Ncama, Luvuno, Ngidi, Mchunu & Mashamba-Thompson (2019) conducted a systematic review of all evidence-based healthcare interventions for LGBT individuals in South Africa. In this study, the authors mention that current data on the South African LGBT population is sparse (Luvuno *et al.*, 2019). Demography, such as sexual orientation, gender and gender identity data are not collected in population surveys or national census. Furthermore, these identifiers were excluded from the 2022 national census survey, more recently (Republic of South Africa, 2022). As a result, we do not presently know the prevalence of transgender and non-binary individuals in South Africa.

Importantly, prevalence should not have to justify equal healthcare provision and treatment for transgender and non-binary individuals. According to the South African Bill of Rights, section 27 states that everyone has the right to access healthcare services and that no one may be refused services or treatment or inferior care because of gender or sexual status (Republic of South Africa, 1996). Secondly, and by recommendation from transgender and non-binary participants from the individual interviews and students, including gender diverse representation within the medical curricula would not necessarily increase curricula content. The goal would be to equip students with critical thinking skills, encouraging discussions and acknowledging that all patients should be treated with respect and care, regardless of their views or ideologies. The inclusion of pronouns after names in educational case studies or a "primer slide" at the start of an academic block, introducing standards of care, are simple ways of creating more inclusive curricula. Easterling & Byram (2022) use the term "primer slide" to describe an introductory lecture or slide in a lecture, which explains and sets the standard ways in which healthcare practitioners should talk about bodies in healthcare.

Štrkalj & Pather (2020) go on to suggest not including a third gender or sex, that a continuum should be incorporated between the male and female sexes. According to Davids (2015), the reason for avoiding a third gender option is that over 25 variations of intersex have been classified over the past decades. Therefore, a distinct third sex, such as intersex, would be difficult to precisely determine. Table 5.1 shows an adapted version of work published in the journal of anatomical science education (Štrkalj & Pather, 2020). This table is an example of how to incorporate transgender and non-binary content throughout medical curricula, at Stellenbosch University.

Table 5.1. Examples of sex-defining traits that could be taught as a continuum in between the typical male and female characteristics. (Adapted from Štrkalj & Pather; 2020).

Sex defining characteristics	**Typical male**	**Examples of a continuum between typical female and male phenotypes**	**Typical female**
Phenotypical sex, general	Scrotum, penis, epididymis, vas deference, testicles, seminal vesicles	Ovotestes, fused labia, enlarged clitoris, male internal genitalia with female external genitalia in a genotypically XY person	Vagina, uterus, cervix, oviducts, ovaries, clitoris, labia majora and minora

Reproductive tract anatomy	Prostate, vas deferens	Paramesonephric ducts, Hemi-uterus, Unicornuate uterus	Uterine tubes, uterus
External genitalia anatomy	Penis, scrotum	Vaginal hypoplasia, microphallus, hypospadias, vaginal agenesis	Clitoris, labia majora and minora
Secondary sexual characteristics	Increased facial hair	Gynecomastia, hirsutism	Increased abdominal fat, larger breasts
Bony pelvis anatomy	Acute angle between inferior pubic ramus (-70 degrees), heart-shaped pelvic inlet with sacral promontory further	Android pelvis, anthropoid pelvis, platypelloid pelvis	Larger pelvic outlet, higher and more pronounced iliac crests, obtuse angle between inferior pubic ramus (-90-100 degrees)
Sacrum anatomy	Narrow, long straighter, and has a pronounced sacral promontory	Range of variation between the typical male and typical female	Wider, shorter, more curved posteriorly and has a less pronounced promontory
Acetabulum anatomy	Faces more laterally	Range of variation between typical male and female	Wider apart in females than in males, faces more anteriorly
Gait anatomy and biomechanics	Lower limb can move forwards and backwards in a single plane	Range of variation between the typical male and typical female	Lower limb swings forward and inward, from where the pivoting head of the femur moves the leg back in another plane

In question 3, we asked healthcare students what they thought would be the most realistic way of incorporating transgender and non-binary inclusive language and training into Stellenbosch University medical curricula. In the results section (chapter 4), responses were divided into three groups. Firstly, students who recommended transgender and non-binary content be incorporated into existing coursework. Secondly, students suggesting that transgender and non-binary content be taught as a

separate module in the curricula. Lastly, a small group (n=10) of participants who shared that transgender and non-binary content not be incorporated into the medical curricula.

The first group of individuals were the majority (n=135) of the participants. Suggestions from this group included case studies featuring genderfluid individuals, including sex variation in anatomy, including sections on how HRT can affect symptoms and treatment, including a more inclusive demography for individuals on the gender spectrum, and including more inclusive pronouns on campus.

Individuals on the gender spectrum should not be othered in healthcare because they interact with healthcare for more needs than just gender-gender affirmative care (Reisner *et al.*, 2016). Individuals across the gender spectrum get influenza, experience fractures, cancers, and a variety of other illnesses. Therefore, the identities of transgender and non-binary individuals should not be erased from medical blocks or modules where applicable and relevant. Examples of case studies could be transgender men or non-binary individuals needing pap smears or the treatment of cervical cancer.

Moreover, intersex patients should not be overlooked. Babies born with a mutation of the SRD5A2 gene on the short arm of chromosome two have a 5-∝-reductase 2 (5∝RD2) deficiency, which leads to underdeveloped genitalia. This occurs because this enzyme, 5∝RD2, is responsible for the conversion of testosterone into dihydrotestosterone. Dihydrotestosterone, in turn, is responsible for the development of external genitalia. An insufficient amount of dihydrotestosterone leads to underdeveloped genitalia. This variability in genital representation is reported to appear as labia majora with an enlarged clitoris and are assigned as female at birth. After the onset of puberty, the enlarged clitoris appears more like a penis. In addition, there is an onset of secondary “male” sex characteristics (Sasaki, Ishii, Hori, Amano, Homma, Sato & Hasegawa, 2019).

In question six, participants indicated in which academic year or phase transgender and non-binary content could be incorporated. First year was an option (in a module called, “how to be a better doctor”), a workshop in third year before starting with their clinical rotations, the Doctors as Change Agent (DRACA) module in fourth year, and finally, in each module, where applicable. Students displayed willingness and interest in including more transgender and non-binary content into the medical program at Tygerberg Medical Campus. Anatomical sciences, as mentioned throughout chapter five, has enough evidence-based resources, now internationally accumulated, to broaden the transgender and non-bindery offering at Stellenbosch University.

The second group of students recommended that there should be a separate, stand-alone module in first year or before students enter clinical training in their third year of medical education. Many of these participants (n=127) mentioned that they would still want transgender and non-binary content

incorporated throughout their medical training, where applicable. However, these participants mentioned that they would want an introductory, stand-alone module, focused on gender as a spectrum within the healthcare context. Participants mentioned examples, such as group assignments during first year. For instance, including transgender and non-binary healthcare as a topic when they do DRACA, a separate lecture on how to approach and speak to transgender and non-binary patients, non-examinable content with compulsory quizzes, and podcasts that they can go through as a resource for when they encounter patients on the gender spectrum in a clinical setting. Including a separate lecture could be an ideal situation for students to engage with a community member or specialist on transgender and non-binary treatment and care. As noted earlier, the international cohort studies curriculum researchers found that small interventions helped students become more comfortable with treating patients on the gender spectrum and benefitted the patient's health too (Vanderleest & Galper, 2009; Safer & Pearce, 2013).

The final participant group for question three (of section B) came from students and a lecturer who did not feel that including transgender and non-binary content within curricula was necessary. These participants believe that transgender and non-binary individuals "cosmetically" alter their appearance and "cannot" be treated in a way that is not linked to the sex assigned at birth. Students, in this group, believe that being on the gender spectrum should be treated as a mental health condition and that it is not a scientific enough practice to be incorporate into medical curricula. These participants further attest to an urgent intervention needed for medical curricula at Stellenbosch University. Current educators and future healthcare practitioners do not have factually based knowledge available on campus or in the curricula. These transphobic beliefs threaten already vulnerable patients. Transgender and non-binary erasure of this nature makes it clear as to why transgender and non-binary individuals do not feel safe in healthcare environments (Kelly *et al*., 2008; Safer and Pearce, 2013; Ncama *et al*., 2019). Healthcare students need to be taught that HRT can alter a patient's biological form and function (Cavanaugh, Hopwood, Gonzales & Tompson, 2015; Hiransuthikul, Janamnuaysook, Himmad, Kerr, Thammajaruk, Pankam, Phanjaroen, Mills, Vannakit, Phanuphak, Phanuphak, Red Cross, 2019).

Intersex bodies should not be seen as abnormal and in need of being "corrected". Both the DSM-5 and ICD-10 have transgender or non-binary removed from the mental and behavioural disorder chapter. Attitudes displayed by this group of participants are transphobic, which actively discriminate and erase gender diverse identities (Rodríguez *et al*, 2018). Gender affirming care is still registered as cosmetic care by medical aids in South Africa; However, gender affirming care is lifesaving health care for transgender and non-binary individuals. Misgendering and erasure of one's identity causes life threatening distress and dysphoria (Cooper *et al.*, 2020). Students in healthcare curricula, who participated in this survey, displayed a lack of exposure to transgender and non-binary material.

Exposing students to variations in sex, could contribute to an evidence-based incorporation of transgender and non-binary content into medical curricula.

5.1.2.1. Do students, lecturers, tutors and practical demonstrators think including transgender and non-binary content into the current medical curricula would translate into clinical practice?

Question four asked participants how they think including transgender and non-binary participants would translate into clinical practice. Again, there were both positive and negative responses to this question. Students acknowledged that both healthcare practitioners and patients would both be more comfortable interacting in a professional manner in healthcare. This finding is in accordance with research conducted by Vanderleest & Galper (2009), and Safer & Pearce (2013), conducted at medical schools in the Canada and the United States, respectively. Safer & Pearce (2013) reported that once curriculum content was added to the endocrinology unit of the Boston University second-year pathophysiology course regarding rigidity of gender identity, treatment regimens, and monitoring requirements, there was a positive shift in the views of the second-year students compared with views of students not exposed to the same curriculum change. After incorporating these content change to the unit, second year students self-reported a 67% drop in discomfort in transgender content and an increased willingness to care for transgender patients (Safer & Pears, 2013). A similar intervention could prove just as significant after incorporating more sex variation and gender fluid content in the anatomical sciences programme at Tygerberg Medical Campus.

Moreover, participants shared that more evidence-based information could lessen discrimination of the transgender and non-binary population and that more accurate diagnosis and treatment could result from curricula changes. One participant mentioned that they witnessed a patient withhold vital information from their clinician and disengage from the process after the patient was misgendered.

A small group (n=10) of participants felt that transgender and non-binary individuals and their concerns are not “scientific” and that they have not encounter patients on the gender spectrum in the clinical environment. Again, justification of treatment and education should not be based on prevalence rates (Štrkalj & Pather, 2020). Attitudes, discomfort, and skillset improve as a result of exposure to transgender and non-binary content, more specifically in fields such as endocrinology (Safer & Pears, 2013). Therefore, anatomical sciences could follow the lead and incorporate more transgender and non-binary content into current curricula to create more positive attitudes amongst healthcare students at Tygerberg Medical Campus.

Question five investigated participant understanding of passive erasure. This terminology is used when describing minority groups which are excluded in public systems by lack of acknowledgment of existence in relevant system (Luvuno *et al.*, 2019). It is important for healthcare professionals to acknowledge the holistic component in medicine and how social sciences overlaps with medicine. Different cultures and backgrounds, societal expectations and norms and different social contexts aid in how individuals present or develop their symptoms (Braveman & Gottler, 2014). Therefore, teachings of social science and how marginalized groups move in healthcare cannot be ignored. The transgender and non-binary community faces marginalization and discrimination globally and healthcare providers and educators should be aware of this when encountering a patient from this community (Reisner *et al.*, 2016). Most participants answered with "I don't know" and given such a response, the inclusion of basic terminology and knowledge regarding marginalization of social groups should be included in the healthcare curriculum.

Finally, in question seven participants were asked what transitioning means for transgender and non-binary individuals. It is valuable to know how healthcare students view transitioning, as this can tell a lot about their attitudes towards patients on the gender spectrum. Students reported that participants are born a certain sex or gender and then change their assigned gender later in life. This definition is synonymous with historical transphobic teaching of individuals on the gender spectrum in medicine. Using phrases like, "she was a man, and now she's a woman." indicate a cisnormative way in which individuals view the world. Individuals assume that everyone is cisgender, and the world is designed for cisgender individuals (Lees 2017; Matthyse, 2017). Therefore, it is important to educate medical students on transgender and non-binary individuals and lived experiences. University and other educational environments need to be more inclusive of individuals who are not cisgender and views that do not conform to the predominant cisgendered way of thinking. This could improve the overall attitudes of healthcare students in relation to how they treat individuals on the gender spectrum. Including sex as a continuum in the anatomical sciences programme is one way of indicating to medical students that transgender and nonbinary bodies are real, normal, and should be valued.

Conclusion

This section has discussed recommendation, attitudes, beliefs, and current knowledge held by healthcare students and anatomical educators at Tygerberg Medical Campus. In total, less than an hour of teachings was reported to be dedicated to transgender and non-binary content. This is well below the international minimum mean of five hours. Participants gave parameters on how much transgender and non-binary content should be incorporated into medical curricula. Negative attitudes and transphobic ideologies were found in some of the responses. Students seem to have very little to no exposure to transgender and non-binary content throughout their training. This is evident in responses that were not

evidence-based, rather revealing personal bias. The present study agrees with Štrkalj & Pather (2020) that anatomical sciences could be a small, yet affective intervention to include more transgender and non-binary content into healthcare training by including more variations of sex in teachings and contrasting important sex and gender terminology.

5.2. The effect of binary medical teachings on transgender and nonbinary individuals in South African Healthcare: individual interviews with community members

Sample

A total of thirteen individual interviews were conducted. However, data saturation was reached after we conducted nine interviews. Our participants ranged in age from 18 to 53 years. In total, four transgender men, eight non-binary individuals, and one transgender woman participated in the individual interviews. The present study can report that this is the highest know non-binary representation in qualitative within a South African medical context.

Introduction

The individual interviews were coded according to the phenomenology paradigm. The theme explores the effect of sex and gender binary teaching in medical school on transgender and non-binary patients within healthcare. The aim was thus to engage with the first hand, lived experiences of transgender and non-binary individuals in South African healthcare. Participants were recruited by the primary investigator and advertised through Gender Dynamix's social media platforms. Themes were independently coded by the primary investigator and a research consultant. Structural and textual descriptions were formulated under each theme in chapter four and will be discussed in section 5.2. This section is comprised of seven themes that emerged from the individual interviews.

5.2.1. Theme one: The misgendering of transgender and non-binary patients in healthcare

Participants from the present study, in South Africa, do not experience healthcare practitioners to be sensitized to the transgender and non-binary community. Transgender and non-binary individuals are misgendered in healthcare environments, not only by accident, but with malicious intent. Participants from the South African gender diverse community reported that they can tell when doctors misgender them on purpose or not. Patients on the gender spectrum are gendered according to how they present physically to healthcare workers; even after stating their gender and preferred pronouns. Transgender and non-binary patients do not have safe spaces in healthcare and their identities continue to be erased by health care practitioners globally (Jobson *et al*., 2012; Reisner *et al.*, 2016).

Medical students should be sensitized and trained on how to navigate a conversation with individuals who are on the gender spectrum; patient care and respect should be the default treatment for all. There are many examples and educational tools available online, which are peer reviewed and regularly updated. Examples include those from the Fenway Health Institute, an LGBTQI-focused health institute in the United States, which provides evidence-based resources, treatment guides, and protocols for the training of medical students when working with transgender and non-binary patients.

Furthermore, the World Professional Association for Transgender Health (WPATH) have published and made numerous resources freely available, particularly the "Standards of care for transgender and gender non-conforming individuals" (World Professional Association for Transgender Health, 2022). The textbook editors, committees, and entire systematic process of developing content is freely available in addenda sections, ensuring full transparency and accountability. The WPATH has released a statement that their 8th edition of the "Standards of Care" will be released in the year 2022. This textbook acknowledges that transgender and non-binary care is interdisciplinary and addresses communication, marginalisation, and the history of transgender and non-binary healthcare globally. These guides do not only address gender affirmative care strategies but provide information about barriers to access faced by this vulnerable community globally, explain gender ideologies and sex, provide strategies on how to document names and pronouns alongside legal names, and supplement the reader with dialog format examples of conversations between patients and healthcare worker.

Therefore, the delivery of more inclusive medical curricula would not be a cumbersome process as there are already freely available resources. More than the time taken to integrate these vital resources into an already established curriculum, a mind shift changes away from what Francis and Reygan (2015) refer to as "bitter knowledge" would be the biggest hurdle to overcome, especially for a South African population, that is overwhelmingly conservative and refuse to let go of inherited and archaic notions of sexuality and gender identities (Jansen, 2009, Francis & Reygan, 2015).

5.2.2. Theme two: how accessible is healthcare to transgender and non-binary identifying individuals?

Transgender and non-binary participants find South African healthcare to be discriminatory and inaccessible. Members from the transgender and non-binary community censor how they speak to healthcare workers. This is a protective mechanism to ensure that they are not refused treatment. There is a very evident power dynamic that exists between healthcare workers and patients in a healthcare environment. Numerous studies highlight that this power dynamic is often abused when working with transgender and non-binary patients (Angoff, Duncan, Roxas & Hansen, 2016; Laurenzi, Skeen, Rabie,

Coetzee. Notholi, Bishop, Chademana & Tomlinson, 2021). Moreover, healthcare practitioners in South Africa discriminate against transgender and non-binary patients and do not distinguish their personal beliefs from the professional environment (Reisner *et al.*, 2016, Luvuno *et al.*, in 2019). The present study differentiates itself form available literature in that this study including non-binary participants and did not only focuse on reproductive needs. Transgender and non-binary individuals do not only access affirmative and reproductive care. The present study took this into account while developing the problem statement.

Participants reported that patients on the gender spectrum only go to healthcare environments when they are already at a critical medical state or do not seek healthcare at all. Transgender and non-binary participants found that they were often more knowledgeable than certain health care workers. This is a serious concern for transgender or non-binary patients interacting with healthcare systems. Transgender and non-binary individuals do not deserve second-tier medication or to be treated as "guinea pigs" for trialing unknown or poorly understood interventions or treatment regiments (Fenway Health Institute, 2022; World Professional Association for Transgender Health, 2022).

Furthermore, transgender identities are gatekept by medical health professionals. Transgender and non-binary individuals struggle to change their identification document at the South African Department of Home Affairs without documentation from a medical practitioner, making healthcare stressful to navigate, as it requires dead naming and misgendering (Republic of South Africa, 2022). The WPATH have international guidelines for frontline healthcare workers, which include how to work with transgender and non-binary patients (World Professional Association for Transgender Health, 2022). These guides go on to include examples of patient interactions and how to navigate communication with a patient who has a different name in their medical file. Again, there are relatively modest ways available for health care workers to engage with transgender and non-binary patients. These interactions can go a long way towards making healthcare inclusive for all. Similarly, these are convenient ways to incorporate much needed tools within the education system, so that our future health care practitioners are better prepared to practice well-rounded and inclusive medicine.

According to our study participants, public healthcare facilities in South Africa are not inclusive of individuals on the gender spectrum. Participants know of instances that have been violent and where health care workers have refused to treat patients on the gender spectrum. Therefore, most participants shared that they would rather seek private healthcare and choose to take their money elsewhere when facing transphobia and other forms of discrimination.

Aside from healthcare workers themselves, holistic care components such as care posters and directives, or informational pamphlets, for example, found in healthcare facilities cater for cisgender health and

rehabilitation. In maternity wards, for example, posters are centered around women with reproductive capabilities instead of any individual with reproductive capabilities. In this way, transgender and non-binary individuals continue to be excluded from public health and holistic care resources.

Importantly, we reiterate the importance of addressing "passive erasure" in the student survey. Not including transgender and non-binary individuals in areas like reproductive healthcare is passively erasing the identities and experiences of transgender and non-binary individuals in healthcare.

Currently, there are many more examples where cisgender healthcare and resources are prioritised. These include instances when transgender men are refused gynaecological support, specifically yearly pap smear examinations, or being allocated to a women's ward when receiving gynaecological treatment. These instances further enhance exclusion within healthcare settings and contribute to gender dysphoria which can lead to mental distress, self-harm, and suicide (Reisner *et al*, 2016; Luvuno *et al.*, 2019).

The example mentioned above reinforce the continued lack of gender diversity and inclusion in healthcare. Current transgender and non-binary healthcare need significantly surpass the inclusion of transgender and non-binary teaching in anatomical sciences; However, Štrakjl & Pather (2020) believe that teaching components, like sex as a spectrum, to medical students could start the conversation and introduce medical students to the greater complexity of diversity and diverse views within the healthcare system. Transgender and non-binary individuals deserve to be catered for within the healthcare space, and all possibilities and options of inclusion should be prioritised.

5.2.3. Theme three: Healthcare workers are undereducated about transgender and non-binary terminology

The participants from the transgender and non-binary community do not perceive healthcare workers to be knowledgeable about transgender and non-binary individuals and their care. Participants report that doctors do not display basic understanding of gender, sex, or drug interactions related to HRT. Furthermore, participants report that clinicians refer to patients using outdated and transphobic slurs, which is in line with research conducted by Luvuno *et al*. (2019). Participants in the present study would like more effective training of language, gender, sex, and sensitisation of healthcare workers towards marginalised groups. These alterations will make healthcare safer for transgender and non-binary individuals. Again, we refer to resources like those available through WAPTH, which would enhance health care education and promote inclusive practices at Stellenbosch University.

Transgender and non-binary identities continue to be passively erased in healthcare systems, globally, and this is no different for the South African context (Reisner *et al.*, 2016; Luvuno *et al.*, 2019). According to our cross-sectional survey results, one reasons for such erasure could be the lack of adequate resources and training in healthcare. Participants report that doctors do not ask for their pronouns or preferred names. Rather, doctors use consultation time to study and inspect transgender and non-binary bodies once they disclose this private and sensitive information. These perverted practices should be rooted out of healthcare systems and health care practices.

Patients on the gender spectrum repeatedly encounter conflict when healthcare facilities only cater to binary notions of sex and gender. According to our participants, an example of exclusionary practices is when healthcare facilities only provide queue options for cisgendered individuals. This practice others and erasures transgender and non-binary identities and experiences. A suggested way to mitigate this is to divide queues into form and function, symptoms, and treatment-related concerns. The archaic and exclusionary practices associated with this binary system enforces binary notions of gender, even if individuals are labelled and categorized according to sex. Moreover, two categories for sex continue to be exclusionary, and exclude more nuanced and contemporary views associated with the biology of sex.

To reiterate, sex and gender cannot be studied in mutually exclusive healthcare contexts (DuBois & Shattuck-Heidorn, 2021). Moreover, gender and sex cannot be separated in society as one of the affirming factors of gender is sex (Morais, Bernardes & verdonk, 2022). DuBois & Shattuck-Heidorn, (2021) argue that "sex/gender" should be viewed as one when interacting with patients as "biosocial" factor that could influence the heath of an individual. Doctors and diagnostic technicians do not display any encounter of variations in sex in their work that they do when performing scans and history taking on transgender and non-binary individuals. Rather, participants report being called "unnatural" or "cosmetically" modified. Transphobia has no place in healthcare, as stated in section 27 of the South African Bill of Rights, which demands that every person in South Africa should receive equal and accessible healthcare. Patients should never have to find themselves in a position where they are teaching their health care practitioners about their own care and treatment. Moreover, transgender and non-binary patients should never have to undermine themselves or put up with degrading practices when seeking and receiving medical treatment.

5.2.4. Theme four: Healthcare workers do not understand body dysmorphia and body dysphoria and the impact these have on transgender and non-binary individuals

Participants reported that they constantly find themselves in situations where they have to compromise their gender identity in order to receive any form of health care. This causes immense distress for

transgender and non-binary patients. Participants mentioned refusing to go to hospitals and, instead, choosing the quickest treatment plan available based community-related and relayed experiences that cause the least amount of gender dysphoria. Transgender and non-binary patients experience suicidal ideations and panic attacks because of interactions with medical practitioner. An Australian survey, comprised of 928 transgender individuals, reported a suicide rate that was 10 times higher amongst transgender individuals compared to cisgendered individuals (Zwickl, Wong, Dowers, Leemaqz, Bretherton, Cook, Zajac, Yip & Cheung, 2021). From the same survey, self-reported self-harm attempts were 63% higher than suicide rate for transgender individuals. Persistent erasure and social exclusion cause elevated feelings of shame, hopelessness, and isolation – factors associated with self-harm and suicide amongst transgender and gender diverse individuals (Lombardi, Wilchins, Priesing & Malouf, 2002; Rodriquez, Agardh & Asamoah, 2018). Omitting variations in sex and gender from anatomy curricula is a form of erasing transgender and non-binary identities. The bodies, identities, and experiences of individuals on the sex and gender spectrum are just as valid and real as those of cisgender individuals.

5.2.5. Navigating your own affirming healthcare as a non-binary patient

Being non-binary is not the same as being transgender; However, someone who is transgender can identify as non-binary (Phillips, 2001: 6016-6020). The present study has the highest known sample size of self-identified transgender and non-binary men compared to currently available South African literature (Luvuno *et al.*, 2019). In the present study, a unique theme derived from non-binary participants is that non-binary patients rely more on themselves and their community to guide their own gender affirming care practices. Non-binary patients do not place the ownness on health care professionals when seeking out and acting on gender affirming practices. Therefore, this theme elaborates further on the experiences of non-binary individuals in navigating their own health care practices.

Patients who identify as non-binary find gender affirmative care very daunting and isolating. One of the biggest obstacles non-binary participants experiences is explaining their identity to their doctors. There aren't any biological demarcations to definitively understand the non-binary concept or understand how a non-binary person "should" look. In fact, there aren't clear biological demarcations for any person on the gender spectrum, especially when transgender and non-binary individuals are viewed from cisgendered perspectives and cis-normative mindsets.

Most gender affirming care protocols provide HRT guidelines on transitioning from male to female or *vise versa* (Fenway Health Institute, 2022; World Professional Association for Transgender Health,

2022). However, the idea of medically transitioning to present as the opposite sex is also an outdated notion (van der Grift, Elaut, Cerwenka, Cohen-Kettenis, De Cuypere, Richter-Appelt & Kreukels, 2017). Current models of medical transitioning adhere to a rigid binary notion. However, these models exclude individuals who do not view surgical intervention as their most important path through the transition process. individuals from the transgender and non-binary community want to be heard and asked about their goals regarding the transition process. A non-binary participant mentioned that their only current goal is starting a family without the fear that their identity will be erased. However, there isn't space in the current South African healthcare system for this participant to receive the appropriate health care and start a family. When entering maternity or gynaecology wards, them and their partner are referred to as "mothers", which exacerbates experiences of gender dysphoria.

Listening to the patient and taking the time to understand their gender identity would help clinicians better understand where on the sex spectrum patients would feel most affirmed with their gender. The goal of gender affirmative care is to treat gender dysphoria and relieve patient distress, not cause more distress (Fenway Health Institute, 2022; World Professional Association for Transgender Health, 2022). Introducing sex as a spectrum through the anatomy curriculum could equip medical students with more knowledge on different options or outcomes of gender affirming care options. Therefore, benefiting both the patient and healthcare worker.

5.2.6. Compromising your gender identity as a transgender or non-binary person to receive equal healthcare

Our study participants report that they must compromise their gender identity to receive health care treatment. In the previous sections we discuss how misgendering and identity erasure contributes to suicidality and self-harm amongst transgender and non-binary individuals. However, we have not discussed how social pressures influence the detransitioning of individuals who are transgender or non-binary. Detransitioning is when an individual who has already transitioned returns to a gender that they were assigned at birth. In news reports and social media, detransitioning has been stigmatised and summarised as an "I told you so" statement or a "mistake", especially from the cisgendered perspective (Turban, Almazan & Keuroghlian, 2021).

In 2021, a mixed-methods study was published in the journal of the American Academy of Child and Adolescent Psychiatry, investigating the factors leading to "detransition" among transgender and gender diverse individuals in the United States. (Turban *et al*., 2021). Nearly twenty-eight thousand individuals completed the survey. Thirteen percent of the individuals who completed the survey reported a history of detransitioning. However, 83% of the individuals who reported to have a history of detransitioning,

had all reported at least one external driving factor which contributed to their decision. Therefore, the myth of "regretting" transitioning is a horrible stigma that should be removed from healthcare.

The world only accommodates for cisgendered individuals and their experiences, and gender diverse individuals are suffering because of this (Jobson *et al*, 2012; Reisner *et al*., 2016; Luvuno *et al*, 2019). Medical students need urgent educational intervention and exposure to more than one or two variations of sex as the norm. Davids (2015) has identified over 25 variations of intersex. However, clinicians are still performing "normalising surgeries" at birth to "correct" babies with natural sex variations (Štrkalj & Pather, 2020). Štrkalj & Pather (2020) have published examples of how sex can be introduced as a continuum or spectrum in anatomical sciences. Therefore, introducing evidence-based learning into medical curricula will assist in debunking negative stigmatisation of individuals on the gender spectrum and their bodies and experiences.

5.2.7. The safety concerns of transgender and non-binary individuals navigating an undereducated healthcare system

Transgender and non-binary individuals seeking healthcare in South Africa do not have the convenience of approaching any public or private healthcare facility without thinking or enquiring about their safety concerns (Reisner *et al*, 2016; Luvuno *et al.*, 2019). Participants reported that they constantly enquire, beforehand, whether the health care worker is willing to treat someone who is transgender or non-binary. Often, receptionists are confused by this enquiry and unable to provide an answer. Participants have reported doctors reciting the Hippocratic oath at them and making transphobic statements. For these reasons, patients on the gender spectrum prefer self-medication and are willing to take risks rather than deny their identities.

By the time transgender and non-binary individuals seek healthcare treatment, they are already in an advanced stage of illness. Moreover, individuals experience additive mental health distress as a result of exclusionary health care practices and transphobic practitioners. Therefore, transgender and non-binary participants do not experience public healthcare as accessible, rather relying on more costly options within the private healthcare system.

Individuals on the gender spectrum face financial strain when seeking out health care, paying exorbitant fees to find transgender and non-binary inclusive facilities and practitioners. In the South African healthcare system, participants find that private healthcare is far more inclusive compared to our public healthcare system. Moreover, accessing gender affirmative care only exacerbates the financial burden as these treatment options are not covered or subsidised by medical aid schemes. Patients on the gender

spectrum should not be forced to seek and pay for private healthcare when access to public health care resources are a human right.

Already suffering patients should not receive poor healthcare, compared to the treatment that cisgendered individuals receive. Participants on the gender spectrum shared that they would ask family members or friends to make their appointments, pick up medicine at the pharmacy, or go to healthcare environments beforehand to make sure that it was safe. Furthermore, participants report that their bodies are still pathologized and that transgender and non-binary individuals are treated for mental health rather than their actual concerns. Thus, clinicians should receive adequate training on how to welcome transgender and non-binary individuals into their practices. The more evidence-based learning medical students receive about transgender and non-binary individuals, the less room there is for stigmatisation and discrimination of this highly marginalized community within healthcare.

Conclusion

The common thread throughout all themes presented include that health care practitioners continue to engage in transphobic practices, which erases transgender and non-binary identities and experiences. Furthermore, health care practitioners refuse to acknowledge and account for how these actions continue to impact and exacerbate transgender and non-binary health.

The present study found that South African individuals from the gender diverse community want gender inclusive education and training incorporated within the medical curricula. The lack of evidence-based learning and exposure to the transgender and non-binary community has led to many discriminatory beliefs and stigmatisation of patients on the gender spectrum. Therefore, individuals on the gender spectrum are repeatedly misgendered, refused from healthcare environments, face financial exclusion from healthcare, are left to plan their own gender affirming care, have their identities gatekept, and constantly fear further healthcare setbacks by virtue of accessing healthcare.

Overarchingly, intervention is urgently needed to address these pertinent setbacks in healthcare. The addition of gender inclusive education resources continues to show a marked improvement in healthcare practices. Moreover, these practical and straightforward additions to Stellenbosch University medical curricula can bring about much needed change in the South African context.

5.3. Recommendations and reflections of individuals on the gender spectrum to a more inclusive healthcare environment: a Focus group

Sample

Six individuals were part of the focus group session: two transgender men, and four non-binary individuals. Only one focus group was held, as all questions/topics were saturated after the 40-minute focus group session. The six individuals were invited to join the focus group session from the thirteen participants who were part of the individual interviews. Invitations were only sent to these thirteen participants, because one of the goals of the focus group was to triangulate some of the findings from the individual interviews and campus survey.

Introduction

The following focus group questions/topics were developed based on the coded data from the individual interviews and the campus survey. The aim of the focus group session was to triangulate some of the findings from the campus survey and individual interviews in a natural group environment, and explore new and unanswered questions/topics from previous investigations. Questions/topics were reviewed by the primary investigator's supervisor and the research consultant.

5.3.1. Questions/topics formulated from the educational investigation (survey sent out to health science students and educators at Tygerberg Medical Campus, Stellenbosch University)

5.3.1.1. Incorporating transgender and non-binary content into medical curricula

Transgender and non-binary individuals do not only seek gender affirming care. Therefore, transgender and non-binary individuals should be included in every medical block within the curricula. Student participants agreed to this addition in the curriculum and the focus group participants agreed. Transgender and non-binary components are necessary in areas like cardiology, endocrinology, urogenital anatomy, and any other specialisations that require transgender and non-binary focused interventions. In the same way that newborns, children, pregnant woman, athletes, and geriatrics are prominently feature in medical curricula, transgender and non-binary individuals can be incorporated in the same way.

According to student and focus group participants, included transgender and non-binary content should not be option, but rather compulsory for all students. This information is necessary to equip healthcare workers with skills and knowledge necessary to consult and treat all patients on the gender spectrum. Additional resources, like web links to internationally accredited online resources, must be available wherever possible, for constant referral.

Moreover, student and focus group participants believe there should be a first-year module which addresses transgender and gender diverse language and terminology. Content on sex, gender, pronouns, and dead names, to name a few areas, would make healthcare workers more comfortable with this content and future interaction with gender diverse patients. Moreover, patients on the gender spectrum will benefit from more inclusive practices and treatment in healthcare.

Focus group participants emphasised that the incorporation of transgender and non-binary content must not encourage the otherling of transgender and non-binary bodies. More specifically, focus group participants discouraged the use of words like "normalise" because it reinforces the idea that their bodies are not normal.

It is not a new that transgender and non-binary individuals experience poorer health outcomes and have more unique health risks than cisgendered individuals (van Heesewijk, Kent, van de Grift, Harleman & Muntinga, 2022). Transgender and non-binary health inequities include increased rates of cancer, poorer cardiovascular health, higher incidences of chronic disease, sexually transmitted diseases (STI's), substance misuse, and mental health concerns (Streed, Hedian, Betram & Sisson, 2016; Underman, Giffort, Hyderi & Hirshfield, 2016; Lo & Horton, 2016; Park & Safer, 2018; Taylor, Condry & Cahill, 2018). Boston University offered an elective clinical rotation for services that provide clinical care to transgender individuals. A pilot survey was sent out pre- and post-elective. Students who reported "high comfort" when treating transgender patients increased from 45% to 80%, while students who reported "high" knowledge of treating transgender patients increased from 0% to 85% (Park & Safer, 2018). Boston University School of Medicine included similar transgender content in their endocrinology block and knowledge levels increased from 63% to 93% amongst students. Students reported improved attitudes, and decreased discomfort levels, when treating transgender patients (Erikson & Safer, 2016).

In 2008, Kelly *et al*. (2008), published research explaining how medical students could be sensitised about transgender individuals and taught standards of care that was transgender inclusive. Their objective was to teach students how to establish preferred patient name and pronouns with good rapport and sensitivity, obtain a complete patient history, including current medication use, and incorporate the patient's preferred name and history in developing an appropriate treatment plan. Student and focus

group participants suggest that this literature could serve as an excellent example of standard care practices in first year. An example of introducing transgender and non-binary content throughout medical curricula could include a "sex as variation" component in the urogenital anatomy module. However, there are many other modules and platforms to make curricula more inclusive at Stellenbosch University.

4.3.1.2. Fact based learning

Context: Students expressed that they think that incorporating fact-based information into the medical program could be a means to combat negative or personal biases towards individuals on the gender spectrum cumulated from social media.

Student survey participants shared that they want to be exposed to evidence-based resources, as most of their transgender and non-binary knowledge is derived from social media. Focus group participants agreed that evidence-based knowledge is necessary. They felt that transgender and non-binary bodies are not visible in South African society, and it is easy to develop negative bias towards the gender diverse community, especially from misleading sources on social media platforms.

Focus group participants mentioned that there are social media "workers" who provide valuable information about first-hand transgender and non-binary needs and experiences. However, this content doesn't necessary represent all individuals and experiences within the gender diverse community. A transgender male expressed that he never sees individuals like himself on the internet. More specifically, he said, "transgender individuals who don't pass cis gender standards and get sick or don't have money", are not well represented or common in society. Participants agreed that evidence-based learning would provide a neutral and objective perspective on transgender and non-binary individuals. Educational components should focus on societal barriers faced by transgender and non-binary individuals and the importance of acknowledging and validating these experiences.

Focus group participants mentioned some negative aspects associated with social media, specifically how algorithms exaggerate pre-existing interests and bias. These techniques are used to increase user engagement on social media platforms (The Social Dilemma, 2020). A social media algorithms curate content based on previous engaged (Reviglio & Agosti, 2020; Saurwein & Spencer-smith, 2021). Therefore, curating a specialised and marketed explore page for each user using a social media application. Transgender individuals are not visible in society due to constant erasure and discrimination from systemic societal barriers (Liszewski, Peebles, Yeung & Arron, 2018; Buss, Le & Haimson, 2022). Introducing evidence-based information into current medical curricula at Stellenbosch university could provide a neutral and objective transgender and non-binary learning strategy (Sanchez *et. Al.*, 2017).

According to Štrkalj & Pather (2020), teaching sex variation could provide a biological introduction of transgender and non-binary bodies to healthcare professionals.

5.3.1.3. Misgendering and withholding of information

Context: Some students expressed that when patients on the gender spectrum are misgendered or erased(discriminated) against then they can see patients withhold information or withdraw from the clinician. This could lead to crucial information towards making a diagnosis and treatment plan being lost.

Transgender and nonbinary individuals have many reasons to feel unsafe within healthcare. Globally, patients on the gender spectrum face erasure and discrimination (Reisner *et al.,* 2016). When the trust between a patient and clinician is broken, the patient is unlikely to share personal information (Streed, Hedian, Betram & Sisson, 2019). Previously, South African healthcare intervention research reported discrimination in the form of physical abuse, verbal abuse, denial of entry, refusal of treatment, and the erasure of LGBT identities in healthcare. These interventions are systematically compiled in a literature review article published by Luvuno *et Al.,* (2019).

In our survey, student participants mentioned observing examples of information being withheld that could often have been critical in diagnosing and treating patients. Resultantly, patients on the gender spectrum who were mistreated suffered fatally. Clinicians don't often understand the power dynamic between themselves and patients, Moreover, that abusing this power dynamic is dangerous and life threatening for transgender and non-binary (Angoff *et al*., 2016; Laurenzi *et Al.,* 2021). By incorporating a transgender and non-binary component in medical curricula modules, like endocrinology, internal medicine, pharmacology, nursing, and clinical electives has shown significant improvements in student attitudes towards the transgender and non-binary community (Safer & Pearce, 2013; Taylor, Condry & Cahill, 2018; Park & Safer, 2018; Streed *et al*., 2019). Anatomical sciences could incorporate a small, yet effective transgender and non-binary intervention in medical curricula, which could promote patient inclusive education, treatment, and care (Štrkalj & Pather, 2020).

5.3.1.4. What does transitioning mean to the focus group

Finally, students were asked what they think it means to transition. Focus group participants were asked the same question to investigate cisnormativity amongst healthcare students at Tygerberg Medical Campus. Students predominantly answered by saying that transgender individuals are born a certain gender and then change to another gender. However, these views of transgender individuals and experiences are outdated and continue to conform to the cisnormative notion of binary gender and

binary gender expressions (Davis & Greenstein, 2009). Individuals are not born a certain gender, but rather assigned a certain gender. Babies do not choose a gender at birth, but rather, are assigned a gender by health care workers or parents and family members.

Similarly, focus group participants shared their views of transitioning. Firstly, the group acknowledged that transitioning could have a different meaning for each person on the gender spectrum and differ from on transgender person to the next. Moreover, participants shared that transitioning is someone's right and means "choosing life", or "choosing to be who you are, yourself". The group highlighted that there are no physical or medical transitioning "lines" for transgender and non-binary individuals. Rather, these "lines" are created by a cisnormative society so that they can understand transgender and non-binary individuals and experiences. These lines could exacerbate gender dysphoria and pressure patients into medically transitioning or detransitioning (Turban, 2021).

Non-binary participants shared that medical transitioning is often not a priority for them. Moreover, doctors get taught narrow views about a transgender man or transgender woman. However, the gender diverse community does not hold such narrow views about transitioning and transgender individuals. Štrkalj & Pather (2020) suggested that gender and sex should be taught alongside each other in anatomical sciences (2020). If clinicians have a better understanding of their patient's gender, they will better understand what their patients would like to get out of gender affirming care and treatment. Overall, this approach can ease experiences of gender dysphoria and related stress (Štrkalj & Pather, 2020). Sex can affirm one's gender and cannot be studied in isolation. This could be a possible strategy on how anatomical sciences could overcome cisnormativity in medical curricula.

5.3.2. Questions/topics formulated from individual interviews

4.3.2.1. "Cis-passing individuals" in healthcare environments

Context: "Cis-passing individuals" on the gender spectrum report better treatment, accommodation and care in healthcare environments than individuals who do not typically present or "pass" as cis-gendered.

Participants from the focus group shared that transgender and non-binary individuals who do not phenotypically present as a "man" or a "woman" in society, generally have to choose between two types of treatment options in healthcare. The first is being called a "difficult" patient and treated accordingly. Alternatively, a patient must compromise their gender identity but face the fear of receiving the incorrect diagnosis and treatment. Focus group participants reported neglect or continuously correcting

their pronouns. Resultantly, clinicians classified these patients as either being "confrontational" or "sensitive".

Erasing transgender and non-binary identities in healthcare is dangerous and life threatening. Transgender and non-binary individuals have unique susceptibility for many health risks, such as increased likelihood for HIV, mental illness, cardiac- and oncological-related health concerns, discrimination, and abuse (Reisner *et al*., 2016). Moreover, there is always the possibility of receiving inadequate or incorrect diagnoses and treatments. Reasons for inaccurate prescriptions might include HRT drug-drug interactions or other physical changes in the body due to gender affirmative care, in reference to the unaccounted HRT treatment outcomes (Hiransuthikul *et al.*, 2019). Introducing medical students to sex as a spectrum would prepare healthcare professionals to not only expect cisgendered presenting patients or cisgender-associated pathologies.

5.3.2.2. What type of sensitization would the community find urgent in healthcare?

Participants understand that policy development and curricula changes could take months to implement. Sensitisation included documentation, privacy, professionalism, and empathy. Transgender and non-binary individual's legal identities are gatekept by medical health professionals (Sallans, 2016). Changing your identification document and medical aid information involves months of administrative processing, money, and a letter from your respective gender affirming healthcare providers (Department of Home affairs Website). The South African Department of Home Affairs requires gender affirmative care evidence from a healthcare provider to change legal documentation. However, this does not mean that the identity of the individual is not valid.

Fenway Health Institute provides scenarios and example of conversations on how to navigate documentation and asking for pronouns as well as preferred names for patients who have not yet been able to change their legal documentation (Fenway Health Institute, 2022). For example, instead of denying a patient's identity, one could ask, "could your file possibly be under a different name?" The next step would be storing or documenting this information in a way that does no deadname or misgender the patient in future. Furthermore, these conversations are often held in a public space and threat patient privacy and safety. Patients on the gender spectrum would prefer to keep this sensitive information private, for their own safety. If basic interventions and knowledge, previously discussed, could be incorporated into the training of healthcare students, then transgender and non-binary patients would have less hesitation when seeking out healthcare. Patients would prefer health care workers not assume their needs. Inclusive education and breaking traditional binary concepts would provide health care workers with the perspective needed to practice inclusive medicine (Van der leest, 2009; Taylor *et al.*, 2017; Parker & Safer, 2018; Streed *et al.*, 2019).

4.3.2.3. Cis normative hospital environments

Context: How can cis normative environments such as maternity, gynaecology, urology and other wards be more inclusive for transgender and/or non-binary individuals?

Generally, healthcare environments erase transgender and non-binary identities and experiences (Sallans, 2016; Reisner *et al.*, 2016). Transgender and non-binary individuals do not have spaces in which to exist or access adequate healthcare. Transgender and non-binary individuals do not always identify as "mothers" or "fathers" and should not have to conform to these cisgendered definitions or roles.

There are many examples of educational and healthcare resources that continue to exclude transgender and non-binary individuals. For example, table 5.2 shows the current gender inclusive language in perinatal services for birthing parent protocols, while Table 5.3 provides the co-parent or second biological parent's referral protocol, both used in Brighton & and Sussex University hospitals, in the United Kingdom (Green & Riddlington, 2020).

Table 5.2. The current Gender inclusive language in perinatal services parent referral protocol used in Brighton & and Sussex University hospitals, United Kingdom, Adopted from Green & Riddington, 2020.

Previous term	**New term**	**Previous example**	**New example**
"Breastfeeding"	"Breast or chest feeding"	"The value of breastfeeding as food, protection and comfort"	"The value of breast/chestfeeding as food, protection and comfort"
"Breastmilk"	"Human milk" or milk from the feeding mother or parent" or "breast or chestmilk"	"Nutrients in breastmilk are unique"	"Nutrients in human milk are unique"
"Her"	"them" or "their" and possible replacement of "woman" with "person"	"The screening nurse contacts woman to inform her of the outcome, to discuss follow up care"	"The screening nurse contacts woman or person to inform her of the outcome, to discuss follow up care"

"Maternal"	"Maternal and parental" or "maternal/parental"	"Check the maternal pulse every hour"	"Check maternal or parental pulse every hour"
"Maternal" or "maternity"	"maternity" or "Perinatal"	"Maternal care is a human right"	"Perinatal care is a human right"
"Maternal consent"	"Informed consent"	"Maternal consent is given to continue"	"Informed consent is given to continue"
"Maternal notes" or "maternity notes"	"Handheld notes" or "Antenatal/Labour and Birth care/Postnatal Care Record"	"We should document this information in the maternal notes"	"We should document this information in the Postnatal care record"
"Mother/s"	"Mother/s and/or birthing parents"	"The mother's vitals should be taken"	"The mother or birthing parent's vitals should be taken"
"She"	"They" could be a more appropriate pronoun to use when replacing "woman" with "woman or person"	"When a woman signs a consent form, then she should be fully briefed on what she is signing for"	"When a woman/person signs a consent form, then they/she should be fully briefed on what she is signing for"
"Woman"	"Woman" or "Person"	"Please make sure to weigh the woman for their combined screening test"	"Please make sure to weigh the woman or person for their combined screening test"

Table 5.3 The current co-parent/second biological parent referral protocol used in Brighton & and Sussex University hospitals, United Kingdom, Adopted from Green & Riddington, 2020

Previous term	**New term**	**Previous example**	**New example**
"Father"	"Parent" or "co-parent"	"The baby's father can offer skin to skin contact to the baby"	"The Co-parent can offer skin to skin contact to the baby"
For antenatal screening: "Father"	"Father or second biological parent."	"Repeated screening tests should be recommended to the	"Repeated screening tests should be recommended to the

		baby's father if tested previously once"	baby's father or second biological parent, if tested previously once"

There are individuals on the gender spectrum who want families, too, and deserve to start their own families in a medically supervised way, similar to standards of care that cisgendered woman receive. Inadvertently, cis-normative medical education does not include thinking critically related to transgender or non-binary healthcare, or the many ways in which the gender diverse community is marginalised or excluded in healthcare. Anatomical sciences could accompany other gender inclusive disciplines and include the sex and gender spectrum in its teachings (Štrkalj & Pather, 2020). This could prepare healthcare workers to think critically and beyond societal norms associated with sex and gender (Van der leest, 2009; Taylor *et al.*, 2017; Parker & Safer, 2018; Streed *et al.*, 2019).

5.3.2.4. Besides for healthcare, how could health care workers make transgender and non-binary individuals feel more comfortable?

Focus group participants reported that they would like doctors to focus more on form and function as opposed to a patient's gender. Health care workers easily dismiss transgender and non-binary identities. However, transgender and non-binary experiences could provide crucial information for symptom presentation or prescribing a treatment plan (Sanchez *et al.*, 2019; Hiransuthikul *et al*., 2019). Focus group participants mentioned how healthcare workers ask unnecessary and invasive questions during consultation. For example, when a patient presents with a broken arm, the focus should be on the form and function of the treatment. However, transgender and non-binary focus group participants shared how doctors would start asking questions about their gender affirming care and medical transitioning, rather than questions related to why the patient is there. Invasive questions include information on their genitalia and question like, "how far are you with your transition."

Transgender and non-binary individuals seek healthcare for professional medical advice, not to be studied, objectified, and harassed. Expanding medicine beyond cisgendered patients, instead including and representing the entire population will prevent discrimination and exclusion of "othered" identities and experiences (Van der leest, 2009; Taylor *et al*, 2017; Parker & Safer, 2018; Streed *et al.*, 2019). Štrkalj & Pather (2020) have drafted a framework on how anatomical sciences could incorporate transgender and non-binary bodies into anatomy curricula. Rethinking the sex binary and teaching sex as a spectrum could provide biological proof and validate gender diverse bodies in healthcare education. This would create a more inclusive environment for transgender and non-binary individuals in the South African healthcare system (Safer & Pearce, 2013).

Conclusion

The focus group triangulated findings from the cross-sectional survey and individual interviews. Furthermore, questions and topics were explored further where content was not sufficiently covered in the cross-sectional survey and individual interviews. Medical students from Tygerberg Medical Campus, as well as the Gender diverse community of South Africa, who participated in this study, would like to see the incorporation of transgender and non-binary individuals and experiences throughout medical curricula.

Furthermore, student health care providers should be equipped with proper sensitisation training, and standards of care for transgender and non-binary individuals These and many other components should be introduced into curricula. Participants believe these changes would combat the current erasure of transgender and non-binary bodies in healthcare. Moreover, these additions would improve clinician attitudes towards patients on the gender spectrum. Improved attitudes could lead to better trust and interactions between healthcare workers and patients on the gender spectrum.

Moreover, welcoming more gender diverse patients within healthcare environments would prevent fatal self-performed healthcare practices. Furthermore, increased relationships between patients on the gender spectrum and healthcare workers could make for more accurate diagnosis and treatment of patients. Transgender and non-binary individuals could be visible and many live could be saved by incorporating small, yet effective transgender and non-binary components into medical curricula at Tygerberg Medical Campus.

Chapter 6: Conclusion

The present study can report that there is no transgender and non-binary content provided in medical curricula at Tygerberg Medical Campus, Stellenbosch University. Furthermore, South African transgender and non-binary participants report that they experience healthcare workers to lack gender diverse language, knowledge, and care. Ultimately, inadequate understanding and education of transgender and non-binary identities and experiences makes South African healthcare dangerous and inaccessible for transgender and non-binary individuals. The focus group confirmed that healthcare students and gender diverse individuals would like to see transgender and non-binary content included throughout the entire medical curriculum, where necessary, as well as an introductory workshop in first year or before clinical exposure, which critically evaluates gender diverse care and sensitises students to gender diverse experiences.

Cis-normative medicine and binary ideologies are deeply embedded in current medical curricula and training at Tygerberg Medical Campus, Stellenbosch University. Erasure of transgender and non-binary bodies perpetuates the harmful and exclusionary reality of gender diverse individuals. Transgender and non-binary bodies and experiences are real and normal. Therefore, these bodies and experiences should be introduced and feature prominently within medical curricula.

The present study believes that anatomical sciences should become inclusive of all bodies in healthcare, introducing sex as a "continuum" or spectrum, as suggested by Štrkalj & Pather (2020). Urgent intervention is required, to ensure the future safety of transgender and non-binary patients in South Africa. Acknowledging the existence of transgender and non-binary individuals within the medical training of future healthcare professionals could save thousands of lives and prevent many healthcare risks. Healthcare, and equal healthcare services are a constitutional right in South Africa (Republic of South Africa, 1996). Therefore, no marginalised group should be excluded from these services, especially that of the transgender and non-binary individuals.

The present study acknowledges that collecting data online, via Zoom, could present difficulties in creating a natural environment during interviews. However, conducting interviews online allowed individuals from across the country to participate in the present study. Therefore, improving the representation of the transgender and non-binary community in South Africa. We would also like to acknowledge that out data collection instruments were not officially piloted on a random and smaller sample before doing our large-scale data collection. However, thorough review of literature and the development of our data collection tools were explained in chapter three for full transparency.

The present study design was one of the first in the country that sought to connect how binary medical education is affecting the gender diverse community in healthcare. Therefore, our recommendation is to further explore these themes and expand on our findings. These findings could prove vital in the area of public health research and healthcare access, acknowledging that healthcare continues to exclude transgender and non-binary patients.

Representing all individuals and experiences in holistic healthcare would improve patient interaction and treatment and make healthcare more accessible overall. Overarchingly, inclusionary practices in healthcare education have the power to save lives and prevent many avoidable casualties.

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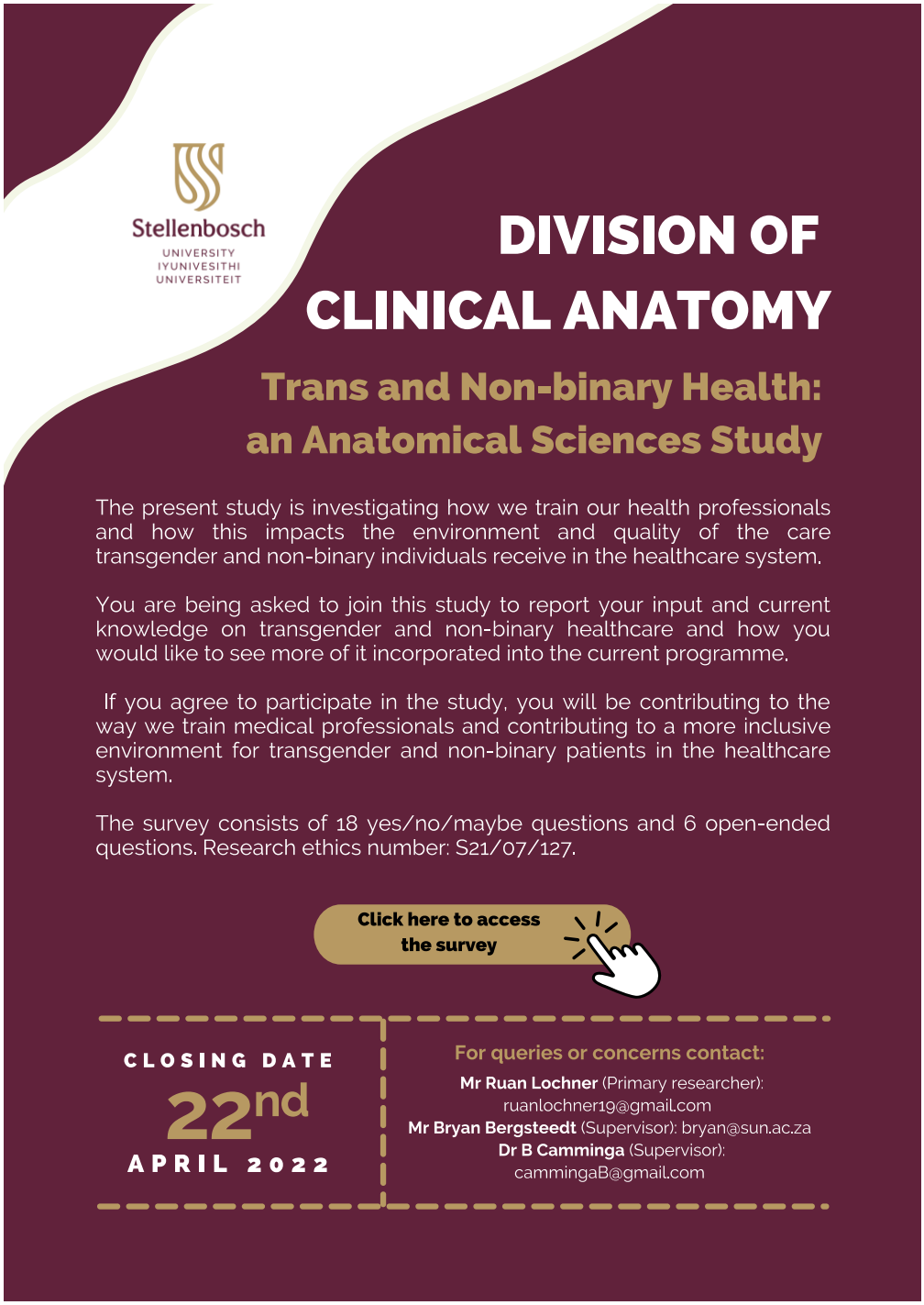
Addendum

Addendum 1. The Advert sent to the Division of Clinical Anatomy to evaluate the current transgender and non-binary knowledge held by students, tutors, lecturers and practical assistants (demi's)



Addendum 2. The Cross-sectional survey sent to students, lecturers, tutors and practical assistants (demi's)

Evaluation of the Transgender and Non-binary knowledge and resources in the Anatomical Sciences program of Stellenbosch University

Thank you for your interest in this present study, evaluating the inclusivity of anatomical education and the transgender and non-binary health care content currently taught at Stellenbosch University. The information provided by the following questionaire will help to create a more inclusive environment in the South African health care system for transgender and non-binary individuals.

This questionaire consists of 18 yes/no/uncertain and 6 open-ended questions that will evaluate the current transgender knowledge and the need for transgender terminology within the relevant Stellenbosch University curricula and broader South African healthcare and system.

Your identity will remain anonymous to the researchers. Only the role of the participant in relation to anatomical sciences will be disclosed.

1	Sex is on a Spectrum.	☐ Yes	☐ No	☐ Not certain
2	An individual can have stereotypically "male" and "female" characteristic across different levels of biological organization (e.g. xy; male chromosomal, and high estrogen levels; Typically female).	☐ Yes	☐ No	☐ Not certain
3	Being transgender or non-binary is a mental illness.	☐ Yes	☐ No	☐ Not certain
4	The transgender and non-binary population is a marginalized group, globally.	☐ Yes	☐ No	☐ Not certain
5	Transgender and non-binary patients are at higher risk for conditions such as anxiety, depression and HIV/AIDS.	☐ Yes	☐ No	☐ Not certain
6	Transgender and non-binary patients experience systemic and structural barriers in the healthcare system.	☐ Yes	☐ No	☐ Not certain
7	There is a difference between sex and gender.	☐ Yes	☐ No	☐ Not certain
8	Transitioning needs are cosmetic and not medical.	☐ Yes	☐ No	☐ Not certain
9	Transgender and non-binary content is taught in preclinical lectures.	☐ Yes	☐ No	☐ Not certain
10	There are university resources available, which grant access to understanding transgender and non-binary vocabulary.	☐ Yes	☐ No	☐ Not certain
11	Teaching different levels of sex variation could improve the understanding of variation in general.	☐ Yes	☐ No	☐ Not certain

12	Teaching transgender and non-binary language in preclinical blocks could improve clinician-patient interaction could contribute to more accurate diagnosis.	☐ Yes ☐ No ☐ Not certain
13	Teaching transgender and non-binary language in preclinical blocks could improve clinician-patient interaction.	☐ Yes ☐ No ☐ Not certain
14	The medical campus has a society or extracurricular group available that creates transgender and non-binary awareness.	☐ Yes ☐ No ☐ Not certain
15	Some lecturers include transgender terminology and health into their coursework.	☐ Yes ☐ No ☐ Not certain
16	There is overlap between anatomy and social sciences.	☐ Yes ☐ No ☐ Not certain
17	Including an introductory module/ Short course on transgender terminology would be helpful for future clinicians.	☐ Yes ☐ No ☐ Not certain
18	The undergraduate programme that I am involved in offers an elective on transgender and non-binary health.	☐ Yes ☐ No ☐ Not certain
1	How many hours in total are dedicated to teaching transgender and non-binary content in preclinical lectures?	_____
2	How many hours in total should be dedicated to transgender and non-binary content in preclinical lectures and why?	_____
3	How could transgender and non-binary content be incorporated in the medical curriculum with the least academic load added to existing coursework?	_____
4	How would including transgender and non-binary content in preclinical lectures translate into a clinical environment?	_____
5	What does passive erasure mean?	_____
6	In which academic phase/year should transgender and non-binary content be taught?	_____
7	What does transitioning mean for a transgender or non-binary individual?	_____
	Please choose your participatory role in Anatomical sciences.	◯ Student ◯ Tutor ◯ Demi ◯ Lecturer ◯ Technical staff

Addendum 3. Cross sectional survey consent form

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR ONLINE SURVEYS/QUESTIONNAIRES

SEX AS A SPECTRUM: INCLUSIVE ANATOMICAL EDUCATION AND THE TRANSLATION THEREOF IN CLINICAL PRACTICE

We would like to invite you to take part in a research project which is in Partial fulfilment of my MSc in Anatomy degree; and involves the completion of an online questionnaire. Your participation is **entirely voluntary,** and you are free to decline or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed questionnaire online, you will no longer be able to withdraw your responses as there will be no way of linking your responses back to you. However, your email address will be kept on our password protected database until the lucky draw is completed and will then be replaced with a new random number and removed from our databases.

The present study is investigating how we train our health professionals and how this impacts the environment and quality of the care transgender and non-binary individuals receive in the health care system. You are being asked to join this study to report your input and current knowledge on transgender and non-binary healthcare and how you would like to see more of it incorporated into the current program.

You will be asked to tick a couple of boxes on our short survey and to give some open-ended feedback at the end. This questionnaire will not take longer than 20 minutes to complete.

If you agree to participate in the study, you will be contributing to the way we train medical professionals and contributing to a more inclusive environment for transgender and non-binary patients in the healthcare system. You will also automatically enter a lucky draw, of which five lucky winners will win a free coffee from Vida e Café. Should you agree to participate in the present study, then you would only have to disclose your current degree programme and academic year. If you are not a lecturer, student, tutor, or practical assistant involved in anatomical sciences at Tygerberg Medical Campus, then please do not respond to this email.

NOTE: Afrikaans and IsiXhosa versions of the survey are available upon request.

Please feel free to contact the primary researcher, Mr. Ruan Lochner (ruanlochner19@gmail.com) or supervisors Mr. Bryan Bergsteedt (bryan@sun.ac.za), and Dr. B Camminga (cammingaB@gmail.com) if you have any concerns or questions about the present study and it's participation.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can phone the Health Research Ethics Committee at 021 938 9677/9819 if there still is something that concerns you about how this study is being conducted, or if you have a complaint.

You will receive a copy of this information and consent form for you to keep safe that you can download in Pdf format. Only the primary investigator, Ruan Lochner and supervisors, Mr. Bryan Bergsteedt and Dr. B Camminga will have access to the data once collected.

By clicking START SURVEY you are confirming that you are over 18 years old and have read and understood the above explanation about the study, and that you agree to participate. You also understand that your participation in this study is strictly voluntary.

Addendum 4. Social media recruitment flyer designed and distributed by Gender Dynamix

Recruitment for MSc in Anatomy Study

The way anatomy is taught to medical students directly impacts the quality of healthcare Transgender and Nonbinary people in South Africa receive. Current global professional recommendations based on research evidence from fields in psychiatry, surgery, paediatrics and endocrinology suggest the need for more inclusive language which takes into account Transgender and Nonbinary people, their experiences and their bodies. South Africa has no such recommendations, in part due to a lack of research in patient experiences with medical professionals and language around bodies in medical environments.

Are you over 18?
Transgender or nonbinary?
Have experience accessing any form of healthcare in South Africa?

I would like to talk to you about your experiences as part of a study on..... The results will be used to motivate for more inclusive terminology in the anatomical program of Tygerberg Medical Campus. Training future doctors how to create a safer environment for the Transgender and Non-binary community in healthcare environments

Participants will be fairly compensated
If you would like to be a part of this study, then please contact Ruan Lochner
Cell: 064 518 1784
Email: ruanlochner19@gmail.com

Addendum 5. Individual interview participant information leaflet and consent form

TITLE OF RESEARCH PROJECT:	
SEX AS A SPECTRUM: INCLUSIVE ANATOMICAL EDUCATION AND THE TRANSLATION THEREOF IN CLINICAL PRACTICE	
DETAILS OF PRINCIPAL INVESTIGATOR (PI):	
Title, first name, surname:	**Ethics reference number:**
Mr. Ruan Lochner	S21/07/127
Full postal address:	**PI Contact number:**
Francie van Zijl Drive, Tygerberg, 7505, Cape Town, South Africa	0645182784

We would like to invite you to take part in a research project in partial fulfilment of my Msc in Anatomy degree at Stellenbosch University. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff any questions about any part of this project that you do not fully understand. It is very important that you are completely satisfied that you clearly understand what this research entails and how you are involved. This interview will take no longer than thirty minutes. Also, your participation is **entirely voluntary,** and you are free to decline to participate. In other words, you may choose to take part, or you may choose not to take part. Nothing bad will come of it if you say no: it will not affect you negatively in any way whatsoever. Refusal to participate will involve no penalty or loss of benefits or reduction in the level of care to which you are otherwise entitled. You are also free to withdraw from the study at any point, even if you do agree to take part initially. Please feel free to contact the primary researcher, Ruan Lochner (ruanlochner19@gmail.com) and supervisors Mr. Bryan Bergsteedt (bryan@sun.ac.za), and Dr. B Camminga (cammingaB@gmail.com) if you have any concerns or questions about the present study and its participation.

The Health Research Ethics Committee at Stellenbosch University has approved this study**.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, the South African Guidelines for Good Clinical Practice (2006), the Medical Research

Council (MRC) Ethical Guidelines for Research (2002), and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

What is this research study all about?

The present study is composed out of two research strategies (one doing a survey of the anatomy program at Tygerberg Medical Campus and the latter, bringing the experience of the Transgender and Non-binary individuals in the healthcare system to research) that would combine data to introduce more gender discussion in the training of future medical professionals.

Why do we invite you to participate?

We invite the participant to be part of the present study to evaluate how the anatomical language, regarding sex, has affected the experience in health care. Therefore, each participant must be above the age of 18 years, self-identify as non-binary or transgender and has had contact with the healthcare system. Your role in the present study is to answer the questions in the semi-structures interview to the best of your capability so that we as a research team could combine the experience of you and fellow participants and understand how Transgender and Non-binary patients experience the healthcare environment. Sharing this experience with the medical field could create more conversation around gender and create a more inclusive environment for patients that are on the gender spectrum.

What will your responsibilities be?

The participant's responsibilities would be to answer the questions honestly and to vocalise any discomfort of need to withdraw from the present study.

Will you benefit from taking part in this research?

The information obtained from the interviews could be used to re-evaluate the anatomical science curriculum taught in the medical programmes in South Africa. This could create a more inclusive environment for transgender and non-binary individuals in the South African healthcare system, as well as result in more accurate care of these patients.

Are there any risks involved in your taking part in this research?

These interviews will require participants to relive past experiences in the health care system, therefore having the potential to trigger individuals psychologically. A psychologist will be available on site while the interviews are being conducted.

Your interview will only be a voice call over the zoom platform. No video will be recorded, and names will stay anonymous to the primary investigator. Your interview will however be recorded and stored on a password protected storage space to be transcribed at a later stage.

If you do not agree to take part, what alternatives do you have?

Participants cannot be forced to take part in the present study and if they would like to not agree or withdraw at any stage, then the participant would be free to do so.

Will you be paid to take part in this study and are there any costs involved?

Research participants will be provided with a data bundle to conduct the interview over Zoom platform. The participants will also be provided with access to psychological debriefing resources if needed.

Declaration by participant

By signing below, I ……..……. agree to take part in a research study entitled (insert title of study here).

I declare that:

- I have read this information and consent form, or it was read to me, and it is written in a language in which I am fluent and with which I am comfortable.
- I have had a chance to ask questions and I am satisfied that all my questions have been answered.
- I understand that taking part in this study is **voluntary,** and I have not been pressurised to take part.
- I may choose to leave the study at any time and nothing bad will come of it – I will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan that we have agreed on.

Signed at (*place*) .....…....…….. on (*date*) ……...…….. 2022.

....

Signature of participant **Signature of witness**

Declaration by investigator

I *(name)* ……..…… declare that:

- I explained the information in this document in a simple and clear manner to ……..
- I encouraged him/her to ask questions and took enough time to answer them.
- I am satisfied that he/she/they completely understands all aspects of the research, as discussed above.
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.)*

Signed at (*place*) .....…....…….. on (*date*) ……...…….. 2022.

....

Signature of investigator **Signature of witness**

Permission to have all anonymous data shared with journals:

Please carefully read the statements below (or have them read to you) and think about your choice. No matter what you decide, it will not affect whether you can be in the research study, or your routine health care

When this study is finished, we would like to publish results of the study in journals. Most journals require us to share your anonymous data with them before they publish the results. Therefore, we would like to obtain your permission to have your anonymous data shared with journals.

Permission for information with other investigators:

Please carefully read the statements below (or have them read to you) and think about your choice. No matter what you decide, it will not affect whether you can be in the research study, or your routine health care.

In order to do the research, we have discussed, we must collect and store and the information from the interview conducted. We will conduct the interview right away. We will ask you to confirm if what we as researchers interoperated from the data is correct and authentic to you as an individual. This will be done through a combined session with other participants. Once we have done the research that we are planning for this research project, we would like to store your information. Only the researchers involved in the present study will be able to access the data from the interviews. To protect your privacy, we will replace your name with a unique study number. We will only use this code for your sample and information about you. We will do our best to keep the code private. It is however always possible that someone could find out about your name, but this is very unlikely to happen. Therefore, we would like to ask for your permission to share your answers and information with other investigators.

Tick the Option you choose for anonymous data sharing with journals:

I agree to have my anonymous data shared with journals during publication of results of this study

☐ Signature_____

OR

I do not agree to have my anonymous data shared with journals during publication of results of this study

☐ Signature_____

Tick the Option you choose for sharing samples and/or information with other investigators:

I do not want my sample and/or information to be shared with other investigators

☐ Signature_____

OR

My sample and/or information may be shared with other investigators for further analysis and future research in a field related to … [*describe the field of your study, e.g., diabetes research*]

☐ Signature_____

Addendum 6. Semi-structured individual interview questions

Individual interviews questions

1. Do you consent to this interview being recorded?
2. Please state your name and age.
3. Which gender do you identify as?
4. Have health care workers even misgendered you?
5. Have you ever been denied access to health care because of your gender identity? If so, do you feel comfortable explaining the scenario?
6. Did you ever have to compromise your gender identity to receive health care?
7. From your experience, do you think that health care is accessible to transgender and non-binary identifying individuals (e.g., locating you in the ward according to your correct gender)?
8. Have you ever felt unsafe in the health care system?
9. Do you experience that health care workers are under educated about transgender and non-binary terminology/biology?
10. Do you think that all health professionals should be introduced to basic transgender and non-binary terminology?
11. What are some of the biggest obstacles that you have faced in health care because of the set gender categorizations?

Addendum 7. Focus group topics/questions

Topics/questions generated from the cross-sectional Survey

1. Do you think transgender and non-binary resources should be incorporated throughout every module in medical school or should it have its separate module?
   For example. The students mentioned that in each block they have a section for athletes, elderly(geriatrics), pediatrics etc.…
2. Students expressed that they get most of their knowledge of transgender and non-binary individuals from social media and having factual based information in the medical program could improve clinician's attitudes towards the community. What are your opinions regarding this statement?
3. A student mentioned how they have seen patients on the gender spectrum turn shy and end up withholding important information for the diagnosis from the clinician when being misgendered or mistreated. Have you experienced this before? How do you react when a doctor misgenders or denies your gender identity?
4. What does transitioning mean to you as someone on the gender spectrum?

Topics and questions generated from the individual interviews

1. Can participants who are not perceived as cis passing share how they think their treatment differs from individuals who are more cis passing in a healthcare environment?
   Context: doctors see individuals who are a variation of typical cis anatomy as someone who is not complete or fully transitioned.
2. What type of sensitization would you see as urgent in current training of healthcare workers towards patients on the gender spectrum?
   Context: Pronouns etc. Participants found doctors always asking many questions that are not necessarily relevant to why they are seeking treatment.
3. How do you think cis normative environments such as maternity, gynecology, urology and wards could be more inclusive or transgender and non-binary individuals?
4. Besides for hospital and healthcare policies. How could doctors make you feel more comfortable/safer in a healthcare environment?

Addendum 8. Focus group participation information and consent leaflet

Participant information leaflet and consent form: Focus group

TITLE OF RESEARCH PROJECT:	
SEX AS A SPECTRUM: INCLUSIVE ANATOMICAL EDUCATION AND THE TRANSLATION THEREOF IN CLINICAL PRACTICE	
DETAILS OF PRINCIPAL INVESTIGATOR (PI):	
Title, first name, surname:	**Ethics reference number:**
Mr. Ruan Lochner	S21/07/127
Full postal address:	**PI Contact number:**
Francie van Zijl Drive, Tygerberg, 7505, Cape Town, South Africa	0645182784

We would like to invite you to take part in a research project in partial fulfilment of my MSc in Anatomy degree at Stellenbosch University. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff any questions about any part of this project that you do not fully understand. It is very important that you are completely satisfied that you clearly understand what this research entails and how you could be involved. This group session will take no longer than thirty minutes. Also, your participation is **entirely voluntary,** and you are free to decline to participate. In other words, you may choose to take part, or you may choose not to take part. Nothing bad will come of it if you say no: it will not affect you negatively in any way whatsoever. Refusal to participate will involve no penalty or loss of benefits or reduction in the level of care to which you are otherwise entitled. You are also free to withdraw from the study at any point, even if you do agree to take part initially. Please feel free to contact the primary researcher, Ruan Lochner (ruanlochner19@gmail.com) and supervisors Mr. Bryan Bergsteedt (bryan@sun.ac.za), and Dr. B Camminga (cammingaB@gmail.com) if you have any concerns or questions about the present study and it's participation.

The Health Research Ethics Committee at Stellenbosch University has approved this study**.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of

Helsinki, the South African Guidelines for Good Clinical Practice (2006), the Medical Research Council (MRC) Ethical Guidelines for Research (2002), and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

What is this research study all about?

The present study is composed out of two research strategies (one doing a survey of the anatomy program at Tygerberg Medical Campus and the latter, bringing the experience of the Transgender and Non-binary individuals in the healthcare system to research) that would combine data to introduce more gender discussion in the training of future medical professionals. We have used data obtained from both our individual interviews and the student survey to create a set of question we would like to get further understanding from in a focus group session. Each focus group would have between 4-6 participants.

Why do we invite you to participate?

We invite the participant to be part of the present study to evaluate how the anatomical language, regarding sex, has affected the experience in health care. Therefore, each participant must be above the age of 18 years, self-identify as non-binary or transgender and has had contact with the healthcare system. Your role in the present study is to discuss the topics in the focus group session to the best of your capability so that we as a research team could combine the experience of you and fellow participants and understand how Transgender and Non-binary patients experience the healthcare environment. Sharing this experience with the medical field could create more conversation around gender and create a more inclusive environment for patients that are on the gender spectrum.

Different from the individual interviews, the focus group session is responsible to confirm if the data was correctly coded and themes were described in a manner that is objectively congruent to how each participant experienced the phenomenon. Furthermore, we have found data in both the individual interviews and the student surveys that we think you as a community member could explain to the world a bit better.

What will your responsibilities be?

The participant's responsibilities would be to discuss the topics honestly and to vocalise any discomfort of need to withdraw from the present study.

The focus group discussion would require the participant to agree or disagree with the themes coded from the transcript and to add or take away any information that is not objectively shared between how each participant shares the phenomenon to each other.

Will you benefit from taking part in this research?

The information obtained from the interviews could be used to re-evaluate the anatomical science curriculum taught in the medical programmes in South Africa. This could create a more inclusive environment for transgender and non-binary individuals in the South African healthcare system, as well as result in more accurate care of these patients.

Are there any risks involved in your taking part in this research?

These interviews will require participants to relive past experiences in the health care system, therefore having the potential to trigger individuals psychologically. A psychologist will be available on site while the interviews are being conducted.

Your interview will only be a voice call over the zoom platform. No video will be recorded, and names will stay anonymous to the primary investigator. Your interview will however be recorded and stored on a password protected storage space to be transcribed at a later stage.

Please be aware that other participant will know your identity, as it displays on the screen whilst in a zoom call. However, when we transcribe the interview we will replace each participant's name with a number, e.g., Participant 1.

If you do not agree to take part, what alternatives do you have?

Participants cannot be forced to take part in the present study and if they would like to not agree or withdraw at any stage, then the participant would be free to do so. Will you be paid to take part in this study and are there any costs involved?

Research participants will be provided with a data bundle to conduct the interview over Zoom platform. The participants will also be provided with access to psychological debriefing resources if needed.

Declaration by participant

By signing below, I ……..……. agree to take part in a research study entitled (insert title of study here).

I declare that:

- I have read this information and consent form, or it was read to me, and it is written in a language in which I am fluent and with which I am comfortable.
- I have had a chance to ask questions and I am satisfied that all my questions have been answered.
- I understand that taking part in this study is **voluntary,** and I have not been pressurised to take part.
- I may choose to leave the study at any time and nothing bad will come of it – I will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan that we have agreed on.

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 2022.

....

Signature of participant **Signature of witness**

Declaration by investigator

I *(name)* ……..…… declare that:

- I explained the information in this document in a simple and clear manner to ……..
- I encouraged him/them/her to ask questions and took enough time to answer them.
- I am satisfied that he//they/she completely understands all aspects of the research, as discussed above.

- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.)*

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 2022.

....

Signature of investigator **Signature of witness**

Permission to have all anonymous data shared with journals:

Please carefully read the statements below (or have them read to you) and think about your choice. No matter what you decide, it will not affect whether you can be in the research study, or your routine health care

When this study is finished, we would like to publish results of the study in journals. Most journals require us to share your anonymous data with them before they publish the results. Therefore, we would like to obtain your permission to have your anonymous data shared with journals.

Permission for information with other investigators:

Please carefully read the statements below (or have them read to you) and think about your choice. No matter what you decide, it will not affect whether you can be in the research study, or your routine health care.

In order to do the research, we have discussed, we must collect and store and the information from the focus group session. We will conduct the focus group session right away. We will ask you to confirm if what we as researchers interoperated from the individual interviews are correct and authentic to you as an individual. Once we have done the research that we are planning for this research project, we would like to store your information. Only the researchers involved in the present study will be able to access the data from the interviews. To protect your privacy, we will replace your name with a unique study number. We will only use this code for your sample and information about you. We will do our best to keep the code private. It is however always possible that someone could find out about your name, but this is very unlikely to happen. Therefore, we would like to ask for your permission to share your answers and information with other investigators.

Tick the Option you choose for anonymous data sharing with journals:

I agree to have my anonymous data shared with journals during publication of results of this study

☐ Signature_____

OR

I do not agree to have my anonymous data shared with journals during publication of results of this study

☐ Signature_____

Tick the Option you choose for sharing samples and/or information with other investigators:

I do not want my sample and/or information to be shared with other investigators

☐ Signature_____

OR

My sample and/or information may be shared with other investigators for further analysis and future research in a field related to … [*describe the field of your study, e.g., diabetes research*]

☐ Signature_____