# Exploring identity development in adolescents living with type 1 diabetes: A critical review


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Dissertation accepted in fulfilment of the requirements for the degree Master of Arts in Research Psychology at the North-West University


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## ACKNOWLEDGEMENTS

‘Please Lord, help me get one more…’ Desmond Doss.

‘For I’, says the Lord, ‘will be a wall of fire all around her, and I will be the glory in her midst.’ – Zachariah 2:5. Firstly, to my **Heavenly Father**, I am fearfully and wonderfully made in Your image. Thank You for blessing me with the physical and cognitive abilities to study and acquire new knowledge every day. May this study and the ones to follow forever be a praise and glory to Your name. I am and will forever be in awe of Your magnitude.

Secondly, to my beautiful mother, **Belinda**, and two sisters, **Leané** and **Wilmarie**, you are the reason I am. You are all my reasons. Thank you for believing in me and supporting me throughout the years. My identity rests solely on the fact that I am a daughter and sister to you. I love you dearly. I would also like to thank the rest of my family and friends, because your support and love contributed more than you will ever realize or come to understand. Everything I do is to make you proud.

Thirdly, a big and warm thank you to my supervisor, **Prof. Elmarí Deacon**. Prof. without your patience, knowledge and contribution, this study would not have been the same. Thank you for always guiding me in the right direction and for always expecting and demanding more of me. It was an honor to work with you. I have learned so much from you and will forever be grateful towards you. And to **Prof. Esmé van Rensburg** (co-supervisor), thank you for your input and patience with me. It was truly a privilege to learn from you.

Lastly, to the **North-West University**. Thank you for giving me the opportunity to commence my academic career and receive training at an institution like the NWU. Thank you for supporting me and making my master studies possible. You leave me with the fondest of memories that I will always carry with me.

‘Eenmaal ‘n PUK, altyd ‘n PUK.’

**PERMISSION LETTER FROM SUPERVISOR**

Permission is hereby granted for the submission by Elinda Harmse, of the following mini-dissertation for examination purposes towards the obtainment of a master's degree in Research Psychology: *Exploring identity development in adolescents living with type 1 diabetes: A critical review*. The article may also be submitted to *Current Diabetes Report* for publication purposes.

The role of the supervisor was as follows: Prof. Elmarí Deacon supervised the research inquiry in totality and acted as a second reviewer in the data analysis of the critical review article.

The role of the co-supervisor was as follows: Prof. Esmé van Rensburg was responsible and assisted in the quality check of the work before submitting to the scientific committees as well as for final submission for examination.

Prof. Elmarí Deacon
Supervisor

Prof E. van Rensburg
Co-supervisor

9 December 2020

Date

## DECLARATION BY AUTHOR

I, Elinda Harmse, hereby declares that this study; *Exploring identity development in adolescents living with type 1 diabetes: A critical review*, is my own work whereby I adhered to the referencing and editorial style as prescribed by the Publication Manual (6th edition) of the American Psychological Association [APA] as well as the Vancouver referencing style (only Section 2) to ensure that all sources used in this dissertation are acknowledged and properly referenced.

Furthermore, the co-authors, Prof. Elmarí Deacon (supervisor) and Prof. Esmé van Rensburg (co-supervisor) agree that this study does reflect the research regarding the subject matter. The co-authors of this article that forms part of this mini-dissertation, hereby give permission to the candidate, Elinda Harmse, to include the article as part of a master's mini-dissertation and that the candidate may submit the article for possible publication in *Current Diabetes Reports*.

This document has been submitted to Turn-It-In to provide the researchers of the North-West University with a report that stipulate the percentage of similarities detected in the mini-dissertation in relation to international databases. The content in this mini-dissertation falls within the acceptable range (Similarity Index: **6%**).

10 December 2020

Elinda Harmse
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Date

## LIST OF TABLES AND FIGURES

**Section 1**



**Section 2**



## ABBREVEATIONS

| | |
|---|---|
| T1DM | Type 1 Diabetes Mellitus |
| APA | American Psychological Association |
| SATI | South African Translators Institute |
| HREC | Health Research Ethics Committee |
| SSA | Sub-Sahara Africa |
| ADA | American Diabetes Association |
| HPCSA | Health Professions Council of South Africa |
| TRREE | Training and Resources in Research Ethics Evaluation |

## SUMMARY

Exploring identity development in adolescents living with type 1 diabetes: A critical review



*Keywords:* adolescence, adolescents, chronic condition, critical review, identity development, type 1 diabetes mellitus



Type 1 Diabetes Mellitus (T1DM) can be described as a chronic autoimmune disease characterised by increased blood glucose level which are due to the insulin deficiency. The prevalence of T1DM in adolescents is increasing worldwide and with that the challenges these adolescents have to face. For example, one of the challenges being that an adolescent yearns for social acceptance, which can result in him/her neglecting his/her injections and seeking to continue an identity as a "well" or "healthy" person. The majority of research focuses on the needs of the youth who are diagnosed with T1DM, while only a few research studies considered identity development within adolescents living with T1DM.

The aim of this critical review was to investigate existing literature on identity development in adolescents living with T1DM. The research aimed to describe current national and international research and theories on identity development in adolescents living with T1DM. It further aimed to identify gaps within existing scientific literature. After the gaps had been identified within the selected sources, themes emerged which helped the research study to answer the following research question that was posed in the beginning: *What does scientific literature state regarding identity development in adolescents living with Type 1 Diabetes Mellitus?*

The approach followed for this research study was a critical review. The overall purpose of the critical review was to assess, evaluate and discuss available information on identity development within adolescents living with T1DM. The research study utilized the following six phases to conduct this critical review: *Phase 1: Define the purpose of the*

*review, Phase 2: Defining the scope of the review, Phase 3: Identifying and selecting the sources of relevant information, Phase 4: Reviewing the literature, Phase 5: Writing the review* and then *Phase 6: Apply the literature to the proposed study*.

After using thematic analysis three main themes emerged from the data set. These themes included: *Theme 1: Identity develops differently in adolescents living with Type 1 Diabetes Mellitus than those who do not have the chronic condition, Theme 2: Adolescents living with Type 1 Diabetes Mellitus can either incorporate or contain their chronic condition in relation to their identity development* and *Theme 3: External factors influence identity development in adolescents living with Type 1 Diabetes Mellitus.*

Several recommendations can be considered when conducting future research. These recommendations include to widen the age range, to use more keywords and look for alternative words that can be used. It will be beneficial for future studies to include more languages as valuable information could be found in these. There should be more interventions designed or developed to assist adolescents when they are trying to establish an identity while having a chronic condition such as T1DM. Lastly, there is a vast amount of research needed in the South African context when it comes to identity development in adolescents living with T1DM.

Word count: 474

## PREFACE

According to the A Rules of the North-West University, this mini-dissertation adheres to the predetermined rules and regulations for utilising the article model. It should be noted that Section 1 and 3 of this mini-dissertation adheres to the established guidelines set out and provided by the American Psychological Association (APA: 6th edition), while Section 2 of this mini-dissertation adheres to the author guidelines provided by the Current Diabetes Reports. Regarding the latter statement, the aim of this mini-dissertation is to submit the article for possible publication to *Current Diabetes Reports*, an accredited peer-reviewed journal. As indicated in the table of contents, the entire mini-dissertation exhibits chronological page numbers – Section 1 starts on page 1 and continues chronologically to the reference list up until Addendum A, B, C, D and E.

Hettie Sieberhagen is a proficient language and technical editor, registered at the South African Translators Institute [SATI] (SATI no. 1001489), who assured that the quality of the language and the layout adhered to the expectancies of the North-West University (See Addendum C). The researcher obtained scientific clearance and approval form the Scientific Committee (OPTENTIA) (See Addendum A) as well as the Health Research Ethics Committee (HREC) (NWU-00345-20-A1) of the Faculty of Health Sciences of the North-West University for conducting this critical review (See Addendum B). Miss Elinda Harmse purposively and systematically generated data in fulfilment of the requirements for the master's degree in Research Psychology. The mini-dissertation in totality was furthermore submitted to Turn-It-In (See Addendum D) to determine, establish and provide the North-West University researchers with a report stating the similarities that were detected in the mini-dissertation in relation to national and international databases, where it was determined that it fell within the norms of acceptable similarities with a similarity index of **6%**. Permission to submit was given from supervisor and co-supervisor (See Addendum E).

## STRUCTURE OF RESEARCH MINI-DISSERTATION

This mini-dissertation consists of three sections. The layout of **Section 1** includes an in-depth, comprehensive literature overview which aims to provide relevant information regarding the structures and components of this study to orientate and inform the reader (pages 1 - 37). **Section 2** will present an article which includes the following: methodology used, the research findings and discussion, implications of living with Type 1 Diabetes Mellitus, the limitations and recommendations of the study and then, lastly, the conclusion (pages 38 - 74). **Section 3**, the final section, is a critical reflection of the researcher's experience throughout the research process while conducting this study as well as a personal reflection (pages 75 - 82). **Addendum A** (OPTENTIA Ethics Approval Letter) will be on page 83. **Addendum B** (HREC Ethics Approval Letter) can be found on page 85 and **Addendum C** (Language Editing Report) report on page 86 and **Addendum D** (Turn-It-In Report) on page 87. On page 88 **Addendum E** contains the permission letter from the supervisor and co-supervisor to submit this mini-dissertation.

# SECTION 1: BACKGROUND

## Introduction

The in-depth literature overview provided in Section 1 aims to inform the reader about the constructs relevant to this research study. Topics to be discussed in this literature overview includes: Type 1 Diabetes Mellitus [T1DM] in adolescents living in Sub-Sahara Africa [SSA], Adolescence (early-, middle-, and late adolescence), Identity development, Identity development within adolescence, and Identity development in adolescents living with Type 1 Diabetes Mellitus [T1DM]. Also to follow in Section 1 is the problem statement, aim, method, ethics, rigor and conclusion.

### Type 1 Diabetes Mellitus [T1DM] in Adolescents Living in Sub-Sahara Africa [SSA]

Katsarou et al. (2017) defines T1DM as a "chronic autoimmune disease characterised by increased blood glucose level (hyperglycaemia), which are due to the insulin deficiency that occurs as the consequence of the loss of the pancreatic islet β-cells" (p.1). In other words, the individual's blood glucose levels become too high, and if left untreated, can result in serious complications which can be fatal (Corbett & Smith, 2020). Verschueren et al. (2020) states that T1DM poses various challenges to the individual living with the chronic condition. These challenges include the following: daily insulin injections, establishing and forming new relationships and developing a new identity while living with the chronic condition (Verschueren et al., 2020). Accepting and adapting to these challenges can often be exceedingly difficult, especially when the individual is diagnosed in adolescence where the phase is characterised as being an intense developmental period (Corbett & Smith, 2020).

The American Diabetes Association [ADA] (2017) classify diabetes into the following four broad categories: (1) type 1 diabetes (mainly caused by the destruction of the autoimmune β-cell, having no insulin secretion), (2) type 2 diabetes (having a continuous loss

of β-cells, ultimately leading to insulin resistance), (3) gestational diabetes mellitus (GDM) (mainly diabetes diagnosed in the second or third trimester of pregnancy) and lastly (4) specific type of diabetes caused by other factors (diseases of the exocrine pancreas e.g. cystic fibroses and chemically-induced diabetes e.g. organ transplant). Luyckx et al. (2008) points out that living with a chronic condition such as diabetes causes great concern and distress, leaving the individual uncertain and maladjusted to their own lives and development.

Worldwide T1DM is on the rise with a rate of more or less 3% (Govender et al., 2018). A crucial point made by Govender et al. (2018) is that there are very few studies available examining the prevalence of and effect on adolescents living with T1DM. Roemer and Siminerio (2015) acknowledge that T1DM is a difficult condition to control, treat and live with. Therefore, stating the best possible treatment for diabetes is dedication, knowledge and motivation (Roemer & Siminerio, 2015). This research study focused on T1DM because it is viewed as the most frequent and common metabolic and endocrine chronic condition to feature in childhood and adolescence, with 8.8% of children and adolescents having the chronic condition worldwide (Katsarou et al., 2017).

The study of Katsarou et al. (2017) discovered that the occurrence of T1DM is rapidly increasing worldwide; each year approximately 90 000 children and adolescents are diagnosed with T1DM. A study done by the ADA (2018) indicated a 7.4% increase in diabetes cases among adolescents and predicted that the numbers will rise up to 9% in 2025. The occurrence rate indicates a sharp peak in the early adolescence phase (12 – 14 years) and estimates a further 70% rise by 2020 (Katsarou et al., 2017). Xu et al. (2018) conducted a study in 2015 where the estimated diabetes cases among adolescents came to a staggering number of 415 million and will continue to rise with a future prediction of 642 million adolescents by 2040.

Taking the study of Patterson et al. (2019) into consideration, Sub-Sahara Africa [SSA] has the most deaths in youth linked with T1DM. The worldwide estimated number of children under 15 years to develop T1DM annually is 98 200, with this number escalating to 128 900 annually for individuals under 20 years of age (Patterson et al., 2019). In conclusion, Govender et al. (2018) urges future researchers to study and explore the incidence and prevalence of T1DM in adolescents and youth within the SSA context, but more specifically cases in South Africa so that accurate numbers and statistics can be released to help individuals living with T1DM.

Subsequently, Govender et al. (2018) raised concern for the lack of studies examining the widespread presence of diabetes in African youth. Sub-Saharan Africa (SSA) diabetes studies have been restricted to clinical studies only, not necessarily looking at the whole picture and other demographics available, e.g. mental health (Govender et al., 2018). Seeing the numerous changes in public health, presentation of diabetes in young individuals and the lack of relevant data (Govender et al., 2018), the study of Patterson et al. (2019) gives a relatively accurate view of what is currently the norm. After establishing the peak of diabetes in adolescents living in SSA is between the ages of 14-17 years (Govender et al., 2018), it is becoming more evident that if the diagnosis occurs in adolescence, it may have greater consequences, seeing that it is a crucial developmental phase for the individual (Corbette & Smith, 2020).

**Adolescence**

De Moor, Van der Graaf, Van Dijk, Meeus and Branje (2019) define adolescence as "a time of continuous change, in which individuals reorient themselves with regard to who they are, how they came to be that person, and who they want to become" (p.75). Therefore, adolescence can be seen as a developmental phase where the adolescent strives towards autonomy and independence (Lam, McHale, & Crouter, 2014). Seeing that numerous traits,

behaviours and habits begin to form early on in adolescence, it is important to establish good coping skills and strategies as well as learning how to deal with innumerable challenges, such as living with a chronic condition (Levine & Munsch, 2018). Adolescence can further be described as the phase whereby psychological and biological changes occurs, as well as shifts/adjustments in social and familial relationships (Worthen, 2012).

It is a period of tremendous physical, social, psychological, cognitive and emotional change (Holmes, Kim-Spoon, & Deater-Deckhard, 2016). Leading to understand the study of Klimstra and Doeselaar (2017) where the authors state that adolescence is known to be a very confusing time in any person's life. According to De Moor et al. (2019) identity development is an important task in adolescence and might even become more essential following the occurrence of life events. Hence, it is crucial to pinpoint and understand specific factors related to successful identity development in adolescence, because through understanding, new knowledge can be developed in order to assist the adolescents with their development and help them to overcome difficult challenges (Holmes et al., 2016). Louw and Louw (2014) as well as Lam et al. (2014) state that adolescence can be perceived as the transition period between childhood to adulthood.

Along with Louw and Louw (2014), Doeselaar, Becht, Klimstra and Meeus (2018) is of the opinion that it is important to establish a clear identity which incorporates a strong sense of oneself, a firm belief and a strong value system. Within the first few years of life, individuals begin to perceive themselves as different and unique in relation to other people. However, within adolescence, the distinction between the self and others becomes more detailed (Doeselaar et al., 2018). This distinction can be seen in three main components of the adolescent's identity, namely, (1) distinctiveness (seeing yourself as different from other people), (2) coherence (perceiving the self as similar across domains) and (3) continuity (seeing oneself as the same person over a period of time) (Doeselaar et al., 2018).

Numerous attempts have been made in order to demarcate the age when adolescence commences and when the phase will end, but there seems to be no consensus on the subject because there are no clear or concise general features or characteristics of adolescence that can be easily identified (Corbett & Smith, 2020; Louw & Louw, 2014; Worthen, 2012). Previous studies have shown that many people believed that the beginning of adolescence was typically related to the onset of puberty (Worthen, 2012). Although true, developmental phycologists such as Erikson (1968), Piaget (1975) and Muuss (1996) argue that the adolescent phase comprise of three sub-phases. These phases include early adolescence (12 – 14 years), middle adolescence (15 – 16 years) and then late adolescence (17 – 19 years) (Worthen, 2012). The above-mentioned phases (early-, middle- and late adolescence) each has unique and significant differences and roles to play within the identity development of the adolescent (Worthen, 2012).

**Early adolescence.** Jaser et al. (2020) opine that the onset of T1DM is likely to occur in early adolescence. Early adolescence (12 – 14 years) can be viewed as the transition from childhood to adulthood (Louw & Louw, 2014; Worthen, 2012). Although it is important for the adolescent to have familial relationships, it is now important for them to seek and establish new social and intimate relationships with their peers, seeing that they are becoming aware of the opposite sex (Chen, 2019; Worthen, 2012).

During early adolescence, the friends of the adolescent become increasingly more important in his/her life, but the relationships with siblings and parents will continue to be influential (Worthen, 2012). Additionally, early adolescence can also be viewed as the most challenging phase of all three phases because of the intense physical change and confrontation with various roles that he/she can now begin to explore (Berger, 2018). These challenges include the “cognitive, socioemotional, and biological development of students

who are confronted with heightened social pressures from peers" (Ladd & Sorensen, 2017, p.6).

Early adolescence can be regarded as the most sensitive developmental period, seeing that it is the onset of puberty for many of these adolescents (Berger, 2018). When the adolescent begins to experience puberty, peer acceptance becomes a crucial point (Berger, 2018). Studies have also indicated that it is within this phase that academic performance of the adolescent will decrease, and behavioural problems tend to increase (Berger, 2018; Ladd & Sorensen, 2017). Adams and Montemayor (1983) indicates that this is where identity development is ignited when the adolescent is confronted with various roles that he/she must choose from and fulfil. Because the adolescent obtains new cognitive abilities in this developmental phase, early adolescence is known for the newly stimulated identity crisis which will lead the adolescent to consider his/her identity (Adams & Montemayor, 1983) once again.

**Middle adolescence.** Secondly, within middle adolescence (15 – 16 years) the central theme would be the relationships adolescents build with their peers or romantic partners (Worthen, 2012). Once the rapid physical and emotional changes of puberty have occurred in early adolescence, they can move on to be more experienced and mature (Berger, 2018; Rathus, 2016). With the acquired experiences and maturation, the adolescents in this phase will be able to move towards the formal operational thought, such as: abstract, logical, analytical and hypothetically thinking (Berger, 2018). It is within this phase that the stress levels of the adolescent decline and his/her coping skills or strategies improve (Rathus, 2016).

In middle adolescence, the individual becomes aware of two main identities, namely the ego- and self-identities (Adams & Montemayor, 1983). The ego identity refers to the

adolescent becoming aware of his/her surroundings and the possible commitments he/she has to make in terms of religion, political beliefs, future work roles and values (Adams & Montemayor, 1983). Self-identity is closely related to the adolescent's self-perception and self-image and will likely prepare the adolescent to develop strategies to form and establish various relationships (Adams & Montemayor, 1983).

In contrast with a slight decline in parental oversight in early adolescence, the importance of parent-child relationship significantly decreases in middle adolescence because there is a substantial increase in social relationships (Chen, 2019). Throughout this phase, parents become less dominant/influential in the adolescent's life (Worthen, 2012). As stated by Gilmore and Meersand (2014), this is the phase where the adolescent is most obsessed with peer relationships, media and acceptance within society. Adolescents are keen to partake in the reality of the world, to explore and pursue new sensations and experiences. They are also prepared to take more risks (Gilmore & Meersand, 2014).

**Late adolescence.** Third and lastly, adolescents in the late adolescence phase (17 – 19 years) physically begin to look more like adults and showcase more autonomy (Rathus, 2016). There is a better locus of control between family responsibilities of the adolescent and the demands of society (Gilmore & Meersand, 2014). This is where adolescents begin to set and achieve goals that they would like to accomplish and most importantly, they begin to form and establish identities apart from their parents/caretakers (Chen, 2019; Worthen, 2012). They will begin to deal with stressors more successfully with new-found confidence and coping abilities (Rathus, 2016).

Adolescents in the late phase are more competent to engage in self-reflection, which make them more mindful of their own events, past history and future and having control over each aspect (Gilmore & Meersand, 2014). In summary, if the adolescent is ready for

adulthood, he/she will have gained mastery over identity integration, personal relationships, regulating morals and values, and to understand their responsibilities towards themselves and the people surrounding them (Gilmore & Meersand, 2014).

To explain above-mentioned statement, Gilmore and Meersand (2014) argue that late adolescence is mainly characterised by the maintenance and continuance of the essential challenges experienced throughout the adolescent development. These challenges include preserving individuality, unique identity development/formation, restoration and mitigation of the superego, and finally to find and establish romantic relationships (Gilmore & Meersand, 2014). It should be noted that late adolescence is built upon the two previous phases (early and middle adolescence), which underpins the integration of the sexual body, their environment, physical development, emotional maturation and the gradual awareness of the "real" world (Gilmore & Meersand, 2014). Subsequently it is of paramount importance that each sub-phase of adolescence is successfully dealt with (Gilmore & Meersand, 2014; Lam et al., 2014).

**Identity Development**

Identity development is the complex process by which people come to develop a sense and understanding of themselves within the context of cultural demands and social norms (De Moor et al., 2019). Identity development can further be perceived as a continuous and on-going process which occurs throughout a person's lifespan (Timler, McIntyre, Rose, & Hands, 2019). Lumen Learning (2020) states that identity development consists of certain goals, values, and beliefs a person commits him/herself to. McLean, Syed, Yoder and Greenhoot (2016) argue that it is by exploring these personal beliefs and roles, that the individual feels a sense of reasonable and logical incorporation of the self and is able to comprehend his/her stance and place within society. After giving initial definitions of identity development, Lumen Learning (2020) concludes by saying that identity development is

essential to an individual's understanding and grasping of the self and partaking in their social systems.

The term identity is often used and modified when talking about a specific identity such as sexual-, personal-, culture-, gender-, racial- and ethnic identity (Barbot & Heuser, 2017). However, identity development in the adolescence phase integrates all aspects mentioned above because of the continuous development the adolescent undergoes (Barbot & Heuser, 2017). Another way of viewing identity is found in the work of Berzonsky (1989, 1993). Berzonsky (1989) describes identity in adolescence to be a variable outcome; a continuous or a sense of personality which can be maintained over time. When the adolescent begins to develop an identity, Berzonsky (1989) argues that progression can occur, especially if the adolescent wants to successfully transition into adulthood.

Adams and Marshall (1996) provide five functions identity development has in an individual's life, namely, (1) a feeling of mastery over one's own choices and outcomes, (2) a feeling of progression and development from one's history and for the future, (3) a shape and order to self-knowledge, (4) a sense of stability to beliefs, goals and self-knowledge and lastly (5) providing goals and direction. The above-mentioned functions mainly occur in the adolescence phase because of the developed cognitive functioning of the adolescent where they are able to establish a 'theory of self' (Adams & Marshall, 1996). Erikson (1968) believed that it is within this developmental phase that the adolescent experience what is called an 'identity crisis'; a pivotal turning point for an individual where he/she must develop in one way or another, assisting the adolescent with growth and development.

Identity development was perceived by Erikson (1968) as a crucial and vital psychological task of adolescence. Furthermore, Crocetti, Klimstra, Hale, Koot and Meeus (2013) state that identity development is not only a crucial part of adolescence, but rather the core developmental task that one should successfully accomplish. Erikson (1968) and

McLean et al. (2016) believed that it is through exploring one's true self, beliefs and values that an individual can begin to understand his/her place within society and integrate the different roles he/she may have. However, McLean et al. (2016) states that there may be possible complications when trying to understand this developmental task. Past research mainly focused on the processes of identity development, rather than the content of identity (McLean et al., 2016). Content will not only provide more information about the individual, but also the context in which they are developing (McLean et al., 2016).

McLean et al. (2016) suggest that one should not only look at how individuals explore their identity but consider where they are exploring these identities so that one can have a better understanding of their context. What stood out from the findings of one study, is that family, friends and peers play a crucial part in an individual's life (Timler et al., 2019). The authors also express the opinion that those individuals who can develop stronger identities will be able to have stronger characteristics, explore romantic relationships with more confidence and have a well-founded association with peer groups (Timler et al., 2019).

Another identity development theory that should be taken into consideration is that of James Marcia (1980). Identity development can be observed through four identity statuses, namely, (1) achievement, (2) foreclosure, (3) diffusion, and (4) moratorium (Griffin, Adams, & Little, 2017; Marcia, 1980). The *achievement status* can be described when the individual has attempted an important identity exploration before he/she devotes him/herself to a final decision, searching for various possible options that will best suit him/her (Griffin et al., 2017; Kroger, 2015). *Foreclosure status* on the other hand refers to individuals who have already committed to a certain ideology with little possibility of changing their viewpoint, or who may no longer explore other options (Griffin et al., 2017).

The *diffusion status* is the continuation of the foreclosure status, the only difference being that the individual is either committed to a certain ideology or not, but he/she is not engaging in any exploration (Griffin et al., 2017; Marcia 1980). Lastly, the *moratorium status* is where the individual is neither committed nor exploring any possibilities and can be considered as the individual having a "identity crisis." (Griffin et al., 2017; Kroger, 2015). Earlier publications and literature focused more on Marcia's (1980) and Erikson's (1986) development theories, but more recent studies include Berzonsky's (1993) identity styles (Barbot & Heuser, 2018).

**Identity Development within Adolescence**

Having defined identity development as well as adolescence, this section will explain how identity development looks within adolescence. From the earliest of days, each child begins to form a self-image or perception of him/herself (Schwartz & Petrova, 2018). Adolescence is the phase in which the young person begins to combine or integrate these self-perceptions into a logical and reasonable view of the self (Schwartz & Petrova, 2018). Whenever the adolescent is incorporating the views that he/she has of him/herself the adolescent's identity is being formed and developed (Meeus, Van De Schoot, Keijsers, Schwartz, & Branje, 2010). Once the adolescent enters this developmental phase, he/she will develop to the point where it is possible for him/her to form abstract thoughts (Berger, 2018), making it possible for him/her to compare the views of him/herself, with the views society have of him/her (Meeus et al., 2010). Similarly, when the adolescent is able to have abstract thoughts, he/she will be competent to identify any inconsistency between his/her self-perception and the perception that other people may have of him/her (Schwartz & Petrova, 2018).

For many years people have asked: Why is it so important to know oneself and the way in which a person chooses to define him/herself? Schwartz and Petrova (2018) provide

the answer when they state that there will be a considerable amount of stability within an individual's identity, which in turn will lead to higher levels of well-being. The authors also indicate that successful identity development will assist in life transitions and will hinder unacceptable or unwanted results or behaviours such as criminal activity, substance abuse, risky sexual habits and violence (Schwartz & Petrova, 2018). Syed and McLean (2015) briefly outline two major aspects when looking at identity development within adolescents. Firstly, to understand what it is that develops in the process of identity formation, and secondly, to evaluate identity content along with identity process (Syed & McLean, 2015).

Barbot and Heuser (2018) as well as Berzonsky (1993) identifies three identity styles in adolescence, namely (1) informative seeking, (2) normative and (3) diffuse. When the adolescent is in the *informative seeking* style, he/she is likely to investigate or explore details regarding his/her own beliefs and personal choices. Adolescents in the *normative style* will experience a process more or less like foreclosure – feeling content with both peer and parental influences on their lives (Barbot & Heuser, 2018; Berzonsky, 1993). Lastly, when the adolescent is in the *diffuse style,* he/she will encounter something similar to the diffusion category in Marcia's theory, which will lead him/her to avoid making any decisions (Barbot & Heuser, 2018; Berzonsky, 1993). Adding to above mentioned statements, Timler et al. (2019) explain that identity development is a life-long process, with the most critical phase occurring in adolescence. Adolescence comprises rapid changes and extreme fragility; subsequently the development of identity should be dealt with carefully, because it can be influenced by many factors (Timler et al., 2019).

**Identity Development in Adolescents living with Type 1 Diabetes Mellitus [T1DM]**

This section will follow on the previous section's discussions, which outlined T1DM to be the most frequent and common metabolic disease in the younger generation, specifically in adolescents (Ashraff, Siddiqui, & Carline, 2013). Ashraff et al. (2013) further explains that

youth diagnosed with T1DM are prone to have more emotional and behavioural challenges. Ashraff et al. (2013) are of opinion that the main focus and research being on the blood glucose levels of diabetes, the psychological aspect of the condition are often overlooked, and few studies has been conducted on the latter. The study highlights the contrast between adolescents who accepted their diagnosis and living a well-balanced life, and adolescents who struggle to accept their diagnosis. Adolescents who accepted their diagnosis were able to have a balanced family, school and personal life whereas, adolescents who struggled with their diagnosis were negatively impacted and struggled with numerous psychological processes (Ashraff et al., 2013).

The adolescent phase is deemed an incredibly challenging and demanding phase in human development with various changes; these changes include biological, emotional, hormonal and psychological (Werther & Cameron, 2018). On top of all the rapid and complex changes occurring in the adolescent, having to deal with a chronic disease such as TIDM can add to the instability of identity development (Werther & Cameron, 2018). In support of the above-mentioned statement, Fonte et al. (2019) state that adolescence is a period characterised by immense turmoil and difficult changes, and the add on of a chronic condition such as T1DM may have serious repercussions. Jaser and White (2011) acknowledge that T1DM is a chronic condition that impacts tremendously on the lives of adolescents and usually peaks at the beginning of puberty. This places emphasis on the necessity to study the condition in the adolescence phase (De Moor et al., 2019; Jaser & White, 2011).

In normal circumstances, the diagnosis of T1DM can be a huge source of stress to anyone, but to the adolescent it becomes a great burden when they have to develop an identity incorporating their condition as well (Jaser & White, 2011). Another essential point made by Oris et al. (2017) is the fact that adolescence is a crucial developmental phase where

lifelong diabetes care habits and routines begin to form. Therefore, the authors state for successful and optimal daily functioning, it is critical for adolescents to incorporate their diabetes routine into their daily lives, as well as their condition into their identities (Oris et al., 2017). It should be noted that identity development/formation is an especially important developmental task throughout adolescence (Oris et al., 2017), one which requires exploration in aspects such as "education, independence, freedom and experimentation" (Davies, 2019, p. 132).

Davies (2019) further emphasises that the process of developing or forming an identity may be stressful in itself, and the addition of T1DM can make the whole process even more complicated. According to literature it is of utmost importance for adolescents living with a chronic condition such as T1DM to adapt to changes or challenges and simultaneously be able to cope with the physical treatment and the possible stressors that may come with the condition (Adal et al., 2015). Authors conclude that the overall research done on identity development in adolescents living with T1DM should not only focus on the physical and endocrinological outcomes, but also on the psychological features of the whole chronic condition (Adal et al., 2015).

## Problem Statement

Living with diabetes as an adolescent is challenging (Pernille et al., 2017) and includes the controlling of multiple demands (Robinson, 2015). Adolescence is characterised by the fast and intense physical, cognitive, emotional, social and psychological changes as well as creating new lifestyles; all of these make adolescence a demanding developmental phase (Pernille et al., 2017). For the adolescent living with diabetes it becomes a struggle to develop an identity that incorporates their diabetes so that they become "a person with diabetes" rather than a "diabetic person" (Commissariat, Kenowitz, Trast, Heptulla, & Gonzalez, 2016, p. 673). An example of this struggle is that an adolescent can be yearning for

social acceptance, which can result in him/her neglecting their injections and seeking to continue his/her identity as a well/healthy person (Robinson, 2015).

Christiansen (1999) further elaborates that identity development is a combination of an individual's role, self-esteem and interpersonal relationships, and that the diagnosis of T1DM may affect the above-mentioned factors. As mentioned above by Erikson (1986), the adolescent begins to desire a state of independence. This desired sate of independence is influenced by T1DM, as the adolescent may still be dependent on a caregiver or parent to help with the daily administration of insulin (King, King, Nayar, & Wilkes, 2017; Monaghan, Helgeson, & Wiebe, 2015). This is strongly linked to the challenge Robinson (2015) mentions when he states that adolescents experience a sense of loss when it comes to their freedom and flexibility. Living with diabetes can cause a delay in the identity development of the adolescent (Xing, Chico, Lambouths, Brittian, & Schwartz, 2015) as adolescents seek to establish autonomy and tend to challenge authority, they seek pleasure in activities, value privacy and they are more likely to come in contact with peer pressure, while also attempting to manage a chronic condition (Commissariat et al., 2016; King et al., 2017; Monaghan et al., 2015).

The majority of research focuses on the needs of the youth who are diagnosed with T1DM, while only a few research studies considered identity development within adolescents living with T1DM (Monaghan et al., 2015). Furthermore, Jaser and White (2011) argue that the peak of a T1DM diagnosis will likely occur in puberty, which makes adolescence a key developmental phase to study/explore within the context of this chronic condition. Adolescence is a critical developmental stage which is often overlooked where skills are learnt and long-term behavioural habits and patterns are formed (Chao et al., 2016; Monaghan et al., 2015). This study aims to narrow this gap in literature by asking the

following research question: *What does scientific literature state regarding identity development in adolescents living with Type 1 Diabetes Mellitus?*

## Aim

The aim of this critical review was to investigate the existing research on identity development in adolescents living with T1DM. The researcher aimed to describe current national and international research and theories on identity development in adolescents living with T1DM. It further aimed to identify gaps within existing scientific literature. These identified gaps will allow researchers to investigate within the field, areas that need further improvement and development. Gaining new findings and ideas will add to the body of knowledge within the field of psychology as well as diabetes.

## Research Approach and Design

A critical review can be defined as the researcher having extensive knowledge of the phenomena after substantially researched and evaluated the existing literature (Grant & Booth, 2009). It contains a deep level of descriptions and goes beyond just reporting the findings of the identified literature (Grant & Booth, 2009). This study adhered to the methodology of a critical review. The overall purpose of this critical review was to assess, evaluate and discuss available information on identity development within adolescents living with T1DM (Carnwell & Daly, 2001). It was also to exhibit insight and understanding into the current state of knowledge with regards to identity development in adolescents living with T1DM (Carnwell & Daly, 2001). The critical review assisted in bracketing any biases or assumptions the reviewer may have towards the study and to ensure the findings are true and scientific in nature.

Carnwell and Daly (2001) propose six possible phases to be followed when applying the literature. The proposed study will utilize these six phases, which are: *Phase 1: Define the*

*purpose of the review, Phase 2: Defining the scope of the review, Phase 3: Identifying and selecting the sources of relevant information, Phase 4: Reviewing the literature, Phase 5: Writing the review* and then *Phase 6: Apply the literature to the proposed study.*

## Method

### Phase 1: Define the Purpose of the Literature Review

The purpose of the critical review was to explore identity development within adolescents living with T1DM. This topic is not adequately researched and a better understanding of identity development of adolescents living with diabetes will not only add to current literature but can also assist in the development of interventions to assist adolescents living with diabetes in identity development.

### Phase 2: Defining the Scope of the Review

Before the researcher began to search for relevant information, thought was given as to what the scope of the research was (Carnwell & Daly, 2001). The scope for the critical review included scientific, peer-reviewed literature (national and international) relevant to the study.

**Table 1**

*Criteria for Articles*

| Criteria | Include OR Exclude |
|---|---|
| Full text journal studies | Include, the literature obtained will have the required scientific rigour as well as relevant data with regards to identity, adolescents and Type 1 Diabetes Mellitus. |
| Peer reviewed studies | Include, the articles are more likely to be scientifically valid and it will reach reasonable and credible conclusions because more than one expert within the flied consulted before it was published. |
| Non-peer reviewed studies | Exclude, the literature may not have the required scientific rigor. Therefore, it will be excluded. |

| | |
|---|---|
| Quantitative studies | Include. Type 1 Diabetes Mellitus is different for every adolescent, therefore utilizing quantitative studies will deliver summaries of the data that will underpin the generalisations about the phenomena being studied. |
| Qualitative studies | Include. Qualitative studies will contribute depth and detail to the study. Depth and detail includes the attitudes, feelings and behaviours of the adolescents living with Type 1 Diabetes Mellitus. |
| Mixed method studies | Include. Utilizing both quantitative and qualitative studies' strengths can make up for the weaknesses of both approaches. It will help with generalisation, depth and detail of identity development in adolescents living with Type 1 Diabetes Mellitus. |
| Review studies | Include, it will help to collect more comprehensive and extensive data for the proposed study. |
| PhD thesis | Include. A PhD thesis is more concise than a book, article or journal and will help the research to get an in-depth understanding within a shorter period of time. |
| Masters' dissertations/mini-dissertations | Include, the literature obtained will have the required scientific rigour to be included. |
| Conference proceedings | Exclude, the literature may not have the required scientific rigor. Therefore, it will be excluded. |
| Studies published in languages other than English and/or Afrikaans | Include other languages. The articles from other languages will only be utilized and included if translated copies are made available to the researchers. |

**Phase 3: Identifying and Selecting the Sources of Relevant Information**

After consultation with Mr. Nestus Venter (librarian specialist), the databases that was searched on for the study included EBSCO Host, PsychINFO, SocINDEX, ScienceDirect and Google Scholar.

**Table 2**

*Level of Searches Done*

| | **Keywords** | **Field** | **Brief Justification for Chosen Field** |
|---|---|---|---|
| **Level One** | Identity<br>OR<br>Identity Development | Title | The main purpose of the critical review is to investigate identity and how it develops, therefore searching the title in order to include all relevant information. |
| | | **AND** | |
| **Level Two** | Adolescents<br>OR<br>Adolescence | All Text | The development of identity within adolescents may differ from person to person, therefore it is important to search in the texts of all the relevant studies done. |
| | | **AND** | |
| **Level Three** | Type 1 Diabetes | All Text | T1DM is a specific challenge that adolescents face. Once again, T1DM may be different from person to person, therefore all texts available must be included in order to get an in-depth and comprehensive understanding of the development of T1DM. |

**Inclusion and exclusion criteria.** Ridley (2008) mentions numerous aspects that can determine the inclusion and exclusion criteria of a study. These aspects include the date of

publication, area of the research, the methodology used, identity and size of the sample or the method used for data analysis (Ridley, 2008).

**Table 3**

*Inclusion and Exclusion Criteria*

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| • Adolescents. The reason for the adolescent phase is because, according to King et al. (2017), the adolescent phase is a demanding and challenging time for individuals who are diagnosed and living with T1DM.<br>• English language was chosen because it is the spoken language of the researcher (primary reviewer) and supervisors (co-reviewers).<br>• Articles published in African languages other than Afrikaans or English will be considered and included only if a translated copy is available to the researchers.<br>• Timespan: 2000-2019. It has been mentioned that the phenomenon (identity development in adolescent living with T1DM) has not been widely researched (Monaghan et al., 2015). Therefore, the researchers (primary reviewers and co-reviewers) will include a broad time range to include the entirety of the limited literature available.<br>• See Table 1 for including criteria regarding peer reviewed literature. | • Type 2 diabetes can be prevented, or the onset can be delayed through a healthy lifestyle and increased physical exercise, whereas T1DM is a chronic condition having a bigger and longer impact on the individual's life (Amuta, Crosslin, Goodman, & Barry, 2016; Chao et al., 2016; Ellis & Jayarajah, 2016).<br>• Articles not adhering to ethical standards. This means that an article will be excluded if it did not obtain ethical clearance. |

Firstly, the titles of search results were scanned to determine if they adhered to the inclusion criteria mentioned above and were then sorted into a folder. After the identified literature had been placed in a folder, it was subjected to a further abstract search to identify relevant keywords (De Klerk & Pretorius, 2019). Again, the identified literature sources were sorted within its own folder. Lastly, the selected sources each required a full text search with the identified keywords before storing it in a folder for further data extraction (De Klerk & Pretorius, 2019). This was done by two reviewers independently, namely the student researcher (Ms Elinda Harmse) and supervisor (Prof. Elmarí Deacon).

If the article adhered to the inclusion criteria, it was marked as relevant with a 1 and then included in the folder. If the researchers identified any exclusion criteria in the literature source, it was marked with a 2. This indicated that it was irrelevant to the proposed study and it was excluded. When the reviewers disagreed whether articles should be included or not, a third party was consulted, namely the co-supervisor (Prof. Esmé van Rensburg). Secondly, the articles that had been identified as relevant, were thoroughly read by each of the two reviewers independently. When the content was relevant to the study, the data were included. This ensured that the researcher utilized literature related and relevant to the research question.

**Phase 4: Reviewing the Literature**

It was important to review and read through the identified literature again to provide insight and knowledge as to what had been done, the reason for doing the study and the way in which it was conducted (Carnwell & Daly, 2001). This created an awareness of the current state of knowledge within the field, as well as potential gaps in theoretical knowledge, and finally the methodological limitations of the studies (Carnwell & Daly, 2001). This phase also assisted in identifying possible themes within the selected literature, which in turn

provided more structure and a comprehensive review of each paper and the final compilation of the critical review (Carnwell & Daly, 2001).

Thematic analysis is a method for identifying, organizing and gaining more perspective and insight into patterns of themes within a data set (Braun, Clark, Hayfield, & Terry, 2018). It enables the researcher to make sense of gathered experiences and to identify unique and valuable patterns which can be further researched or explored (Braun et al., 2018). Braun et al. (2018) propose six phases in the analysis of the data. These phases include: (1) *Familiarizing yourself with the data*. The peer reviewed literature is continuously analysed and re-read by the primary reviewer. (2) *Generating initial codes*. The proposed review follows an inductive approach where these codes are data driven. (3) *Searching for themes*. The codes are then sorted according to a pattern which answers the research question. (4) *Reviewing potential themes.* After the previous steps, the researcher revisits the original coding to ensure that it is reflected in the themes created. (5) *Defining and naming themes.* In this step both a description and name are given to the revised themes. And (6) *Producing the report*. This comprises the distribution of the themes collected, in such a way that it convinces the reader that the theme matches the text, while also answering the research question.

It is important to note that the primary reviewer is a registered student in the MA/MSc Research Psychology Programme at the North-West University, Potchefstroom Campus (2019-2020). The primary reviewer (Ms. Elinda Harmse) completed the required ethical training (Training and resources in research ethics evaluation [TRREE]) and was responsible for the process of selection and quality appraisal. The same goes for the second reviewer. The second reviewer was Prof. Elmarí Deacon (supervisor). Prof. Elmarí Deacon monitored the process from the beginning up until the end. Prof. Esmé van Rensburg also reviewed as a third party only if the primary and secondary reviewer differed.

**Phase 5: Writing the Review**

Carnwell and Daly (2001) propose that once the literature has been identified and obtained from different sources, a strategy needs to be put in place for constructing the critical review. It is important to notice that the main purpose of a critical review remains to display in-depth understanding and insight into present and on-going knowledge and information in the area of interest, so that gaps can be identified, researched and answered accordingly (Carnwell & Daly, 2001). Within Phase 5, Boland, Cherry and Dickson (2017) propose that the writing of the review consists of the possible explanation and conclusions drawn from the findings in relation to the context of the proposed research question. All the reviewers involved should ensure that the conclusion and final work is specific, detailed, evidence-based and applicable to the research question that was asked (Boland et al., 2017).

Jesson, Matheson and Lacey (2011) state that the review should always have a guiding aim. Firstly, it is important to note that the reviewer organised the review into sections that proposed evident themes based on each article (Jesson et al., 2011). Secondly, Jesson et al. (2011) propose that the study should be presented in a chronological order, starting with the oldest articles first and then later using current research to confirm, support or contradict those earlier studies (hence the 2000-2019 timeline). Lastly Jesson et al. (2011) state it is important that the reviewer is familiar with the literature within the body of knowledge of the field of interest. The reviewer should also possess a comprehensive understanding of the study entailed.

**Phase 6: Apply the Literature to the Proposed Study**

According to Clifford (1997), at this point the researcher discussed the findings obtained in the context of the aim of the proposed research, in relation to any other background information highlighted in the contextualization and problem statement of the research inquiry. Aspects related to the critical review were highlighted with specific

emphasis being placed on any particularly interesting findings. Within the final discussion the researcher acknowledged any limitations to the proposed research inquiry that might have affected the final outcome. Finally, the researcher considered any recommendations she wished to make to this research study (Clifford, 1997).

## Ethics

Ethics, specifically ethics in research, can be defined as "research taking place that addresses the needs, interests and abilities of the participants as well as maintaining accepted standards of scientific rigor" (Cascio & Racine, 2018, p.176). The studies of Cascio and Racine (2018) and Wager and Wiffen (2011) provide ethical guidelines to consider when conducting a research study. These guidelines include: (1) report the findings/result in a clear, concise and honest manner in order to avoid misleading the reader; (2) identify any bias or conflict of interest that you as the researcher may have towards the study; (3) the article should not be submitted for possible publication by more than one journal; (4) plagiarism should be avoided at all times by referencing the appropriate authors and giving them credit when using their work or studies, and then finally (5) transparency throughout the research process is very important because it can contribute towards the rigor of the study (Wager & Wiffen, 2011).

For the purpose of this critical review it is important to note that the researcher followed the Health Professions Council of South Africa [HPCSA] (Health Professions Act 56 of 1974, SA) ethical guidelines when conducting the research for this study. Guidelines that the researcher followed include: (1) That the reviewer is familiar with the APA guidelines for referencing the literature in order to prevent plagiarism (APA Publication Manual, 2010) as well as the Vancouver referencing style; (2) all articles were independently reviewed by the primary reviewer (Ms Elinda Harmse), secondary reviewer (Prof. Elmarí Deacon), and if any uncertainty arose, Prof. Esmé van Rensburg assisted in the decision-

making to minimise bias in any form; (3) within the inclusion and exclusion criteria, it states that only articles of high ethical standard were utilized in order to avoid any ethical misconduct (ensuring that the study got ethical clearance), and lastly (4) ethical clearance was obtained from the Health Research Ethics Committee (HREC) (NWU-00345-20-A1). However, it is important to notice that there were no direct participants involved in this study.

## Rigor

Rigor is the process of accuracy and precision as well as being thorough in the development of theory in the execution of the study, reporting of the results/findings and suggesting new knowledge (Gnyawali & Song, 2016). Rigor in research is deemed particularly important for several reasons; (1) it gives the research study a firm foundation to build upon for future research; (2) lack of rigor in recent studies can lead to incorrect or false conclusions and lead future research down the wrong path, and (3) the increase of studies without or with limited rigor will hinder or delay the process of publication in top journals (Gnyawali & Song, 2016). Rigor can further be divided into three main categories, namely, *(a) conceptual rigor (consist of the theoretical lenses, constructs used and the logical understanding of a phenomena), (b) methodological rigor (how the data are collected and analysed in relation to the phenomenon)* and the *(c) empirical rigor (how the findings/results are presented, refined and related to the theory)* (Gnyawali & Song, 2016).

Therefore, when a study is rigorous in its theory, method and analysis, it is clear for the reader to understand the author's theoretical perspective and reasoning, methodological choices and interpretation (Gnyawali & Song, 2016), which in turn can lead to a firmer foundation for future research. Hence, this critical review followed Krefting's (1991) four phases to ensure trustworthiness. These phases include credibility, transferability, dependability and confirmability and were implemented throughout the process.

**Credibility**

The importance of identifying and seeking patterns or themes in a data set places the emphasis on the need for sufficient time with the data (Krefting, 1991). To ensure that the proposed study is believable (credible), the reviewers should have a thorough and in-depth understanding of the context of the proposed research study. Often the researcher can become so embedded with the research, that it becomes difficult to formulate objective conclusions; when this happens it is necessary to make use of reflexivity (Krefting, 1991). *Reflexivity* is the assessment of the researcher's own perceptions, background and interests in the study (Krefting, 1991). Ensuring the credibility of the research study, the researcher uses reflexivity by taking comprehensive notes of the process followed. Peer examination takes the form of the primary reviewer discussing the process and findings with the co-reviewers to ensure the authority of the reviewer and structural consistency.

**Transferability**

The importance of transferability of the data lies in the representativeness of population group for the study (Krefting, 1991). One way in ensuring transferability of the data is to have multiple people doing the selection for the inclusion and exclusion of the data (Krefting, 1991). Therefore, the primary reviewer (Ms Elinda Harmse) and the secondary reviewer (Prof. Elmarí Deacon) both evaluated the included articles to ensure transferability. Transferability does not focus on the generalisation, but rather focus on the context of the proposed study, aiming at creating new knowledge and making it available (Krefting, 1991). Therefore, to ensure transferability in the study, the researcher abided by the step-by-step explanation of the research methodology which is outlined throughout this critical review.

**Dependability**

Dependability refers to the stability of the data over time and the consistency of the findings (Krefting, 1991). Therefore, the exact data gathering methods, analysis and

interpretation of the findings must be described and listed (Krefting, 1991). Regarding this study, dependability was ensured by replication of steps of the research process followed as well as by making use of co-reviewers to ensure that the presented data were true and relevant to the study and that there was no bias from the researcher. Krefting (1991) also proposes that the reviewer should develop a code re-code system whereby the reviewer analyses the data, waits two weeks and then analysed the data again. When the reviewer employs this method for this review and get the same results/finings, it strengthens the dependability of the study.

### Confirmability

Lastly, confirmability denotes the degree to which others agree with the findings by allowing an external reviewer to trace and retrace the steps followed in the research process in order to establish if the findings correlate with the initial findings of the primary reviewer (Krefting, 1991). This was achieved in the research study by adequate data report, from the research question, data collection methods, through raw information, analysing and interpreting review findings (Krefting, 1991). Krefting (1991) concludes by suggesting that there should always be more than one reviewer to look at the data. In doing so, the study will have greater confirmability and overall be more rigorous.

## Conclusion

The purpose of this section was to provide a summary of the latest literature available on the topic as well as providing a clear problem statement with an appropriate research question to explore empirically as outlined in the methodology section provided. This research study employed a critical review and utilised thematic analysis in order to generate themes from the selected data. Ethical guidelines and considerations was discussed in this section and it should be noted that this research study obtained ethical clearance from the North-West University. This critical review aimed to be rigorous in all aspects pertaining to

the study by ensuring trustworthiness in being credible, transferable, dependable and confirmable. Section 2 of this mini-dissertation will give a clear indication of the final findings of the research study when aiming to answer the identified research question.

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# SECTION 2: ARTICLE

**Exploring identity development in adolescents living with type 1 diabetes: A critical review**

**Guidelines for authors: *Current Diabetes Reports***

This article that follows, will be submitted for possible publication in the *Current Diabetes Reports*. Therefore, a summary for the authors guidelines will be complied for this specific journal, followed by the mentioned article.

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*Current Diabetes Reports* aims to provide in-depth review articles given by international experts on the most remarkable and important developments in the field of diabetes and other related factors. By submitting and presenting clear, concise and insightful balanced reviews that highlight recently published papers of crucial importance. The journal further explains contemporary and relevant approaches to the diagnosis, treatment, management and prevention of diabetes.

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- *Journal entry*: Smith JJ. The world of science. Am J Sci. 1999; 36:234–5.
- *Article with a DOI*: Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. J Mol Med. 2000; https://doi.org/10.1007/s001090000086
- *Book entry*: Blenkinsopp A, Paxton P. Symptoms in the pharmacy: a guide to the management of common condition. 3rd ed. Oxford: Blackwell Science; 1998.
- *Book chapter*: Wyllie AH, Kerr JFR, Currie AR. Cell death: the significance of apoptosis. In: Bourne GH, Danielli JF, Jeon KW, editors. International review of cytology. London: Academic; 1980. pp. 251–306.
- *Online document*: Doe J. Title of subordinate document. In: The dictionary of substances and their effects. Royal Society of Chemistry. 1999. http://www.rsc.org/dose/title of subordinate document. Accessed 15 Jan 1999.

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It is important for all the possible contributor's/ author's names to appear on the article before it is submitted for publications. Contributions can be the design of the framework, the collection, analysis and interpretation of the data etc. It must also be acknowledged when an author contributed by revising, approved the version to be published and also ensured a high level of integrity and honesty in the research process.

**Conflict of Interest**

It is important that the authors disclose any conflict of interest that they might have towards the study that might be directly or indirectly related to the work which is submitted for publication. Current Diabetes Reports states that any interest within the past three years stretching from the beginning until the end of the research study should be reported. If any conflict of interest falls outside of the three years, it is the author's responsibility to disclose if it can potentially be an influence on the submitted work or not. By providing any conflict of interest helps the study to be transparent and helps the readers to form their own biases and judgements. The following conflict of interest includes the following:

- Funding: the authors must state any funding that they might have received in order to conduct the study. The research funder as well as the grant number must be provided or any other research support such as salaries, equipment, supplies etc. by organisations that may gain or lose financially through the publication of the study
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- Non-financial interest: The non-financial interest includes the author's interest that goes beyond the financial interest that could possibly impart bias on the submitted work. These include professional interests, personal relationships or personal beliefs.

# MANUSCRIPT

## Exploring identity development in adolescents living with type 1 diabetes: A critical review

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**Abstract (Word Count: 199)**

**Purpose of review-** Type 1 Diabetes Mellitus (T1DM) is a chronic condition which is increasing amongst the adolescent population. Identity development takes places within the adolescent phase and can be significantly influenced by the presence of a chronic condition such as T1DM. A critical review was employed to evaluate existing scientific literature regarding identity development in adolescents living with T1DM in order to gain new knowledge regarding the chronic condition and how an adolescent develops an identity while living with T1DM.

**Current Findings-** The following themes emerged: Identity develops differently in adolescents living with T1DM than in adolescents who do not have the chronic condition, an adolescent can either incorporate or contain his/her T1DM in relation to their identity development and there are numerous external factors that influence identity development in adolescents living with a chronic condition such as T1DM.

**Summary-** Identity develops differently in adolescents living with T1DM than in those who do not have the chronic condition. A significant need exists for research in identity development in adolescents living with T1DM in the South African context. Interventions for adolescents to help them establish an identity while living with a chronic condition such as T1DM are also needed.

**Keywords**

Adolescents, chronic condition, critical review**,** identity development, type 1 diabetes

**Word Count**

4960

## Introduction

Diabetes Mellitus is characterised as an intensive, constant and complex chronic condition affecting people of any age and having a significant impact on the individual's life.[1 2] This study focused on Type 1 Diabetes Mellitus (T1DM) which can be defined as the dependence of insulin to help the body function properly.[3] Atkinson, Eisenbarth and Michels[4] report that T1DM is caused by immune deficiency where the pancreas struggles to develop β cells, resulting in no production of insulin. King, King, Nayar and Wilkes[5] acknowledge the adolescent phase as a demanding and challenging time for individuals diagnosed and living with T1DM. Living with T1DM can be seen as a stressful event which can have a profound impact on the adolescents' identity development by eliciting feelings of discontinuity, forcing the adolescent to reconsider their sense of self in order to integrate their condition into their identity.[6 7]

Authors studying child and adolescent development has different viewpoints as well as examples on the age range for adolescence. According to Louw and Louw[8] it begins at 11 - 13 years and ends at the age of 21. Curtis[9] and Kim and Kochanska[10] argues that adolescence starts at 13 years and ends at 17 years. Berk[11] argues that an individual can be considered an adolescent if he/she falls between the ages of 13-18 years. Because of these discrepancies, Louw and Louw[8] and Lam, McHale and Crouter[12] posit that it will be best to describe the adolescent phase according to developmental tasks rather than the chronological age. These tasks include the reconstruction and change in an individual's thinking, feeling and behaving that characterize specific periods of development[11 13 14], and results in changes in the physical, psychological, social and socio-cultural level.[1 8]

Although changes do occur, there are five main areas that can be identified in this developmental phase called adolescence: (1) the individual moving towards a state of independence; (2) further developing interest and cognitive abilities; (3) sexuality; (4) self-

direction; and lastly (5) adolescents undergo physical changes.[15] [16] While each one is important, one must look at these areas in relation to identity development and adolescence and how they link with each other.[16] Subsequently, the study of Syed and McLean[16] can be used when describing why identity development is so unique to adolescence by providing three motives for the statement: (1) cognitive abilities will allow the complex thought processes to take place; (2) the increase of choices and responsibilities, and finally (3) the collection of experiences that acquire a personal identity.

Additional to identity development, diabetes-related management is described by Overgaard, Lundby-Christensen and Grabowski[17] as a hardship and burden that adolescents struggle to balance and uphold. Chao et al.[1] specifically refer to additional stressors which a chronic condition such as T1DM may add on the adolescent's physical and psychological health. These may include influencing a sense of normality, fitting in with peer groups and building new relationships.[18] [15] Jordan, Noel, Caes, Connell and Gauntlett-Gilbert[19] link the interruption of identity development in adolescents to the stressor of having T1DM, stating that the adolescent feels the chronic condition takes away his/her identity, the very nature of who he/she is as an individual.

It is important to note that identity development is linear with the adolescent phase.[16] Erikson's[20] fifth phase of development, which occurs in adolescence, specifically focuses on the formation and the development of identity. Furthermore, Foelsch et al.[21] state that the "consolidation of identity is one of the most important tasks in normal adolescent development."[21(p.1)] Ellis and Jayarajah[2] argue that adolescence is an important developmental phase and a significant crossover between childhood and adulthood, not only for the physical, emotional and cognitive development, but to establish an identity as well.

Erikson[22] adds to these challenges by stating that identity development is not only the formation of systems, but also the control and mastering of conflicts that adolescents may encounter during their development in the adolescent phase. Moreover, Evans, Forney, Guido, Patton and Renn[23] argue that once the adolescent has overcome and mastered the challenges within the adolescence phase, an even stronger identity is developed. These challenges include fitting in and gaining social confidence, building friendships and balancing multiple social demands and family life.[1 7] It is within this developmental phase that the adolescent begins to encounter difficulties as he/she becomes more independent. They also begin to notice the expectations others have of them, as well as what they expect from themselves.[20 24]

Adolescence is traditionally viewed as being a stressful and challenging phase, especially when the adolescent focuses on developing an identity.[25] It is within this phase of adolescence that the adolescent attempts to establish and pursue autonomy; confronts and challenges authority, appreciates privacy and has a deeper sense and awareness of the self.[25] Adolescents living with T1DM have to juggle and adapt to all factors mentioned above, while adjusting to the demands of a chronic condition such as T1DM.[25] T1DM challenges the adolescent to change and adapt his/her life, which may result in conflict with certain developmental priorities, such as developing an identity.[25 26]

Adal et al.[27] state that the presence of a chronic condition such as T1DM may have an effect on the adolescent's emotional, physical and psychological state, especially in the development of an identity.[28] Adal et al.[27] explain that these effects can include delayed identity formation or development, physical marks left as a result of insulin injections and a feeling of being left out by peer groups. But when specifically focusing on identity development in adolescence, there are numerous factors that may possibly have an influence.[29] These factors include poor self-esteem which can lead to poor quality of life,

increased conflict with parents or caregivers and the inability to form relationships with friends or romantic partners.[29]

## Problem Statement

Numerous studies have suggested and still prove that T1DM is a chronic condition that develops within the adolescent phase and is rapidly increasing.[17 30] Adolescents who live with T1DM has the risk of developing future diabetes-related problems and psychological obstacles. One of these challenges includes the adolescent developing an identity which incorporates his/her condition into his/her sense of self.[30] As explained by Souza et al.[31] adolescents are overall exposed to possible stressors that may have an impact on their quality of life. Souza et al.[31] ultimately conclude that the presence of a chronic condition such as T1DM during the adolescent phase has significant influences, since this phase is known for changes in identity development.

Studies have suggested that research on diabetes-related stressors and identity development has often been adequately and sufficiently documented among adults, but there seems to be a lacuna when it comes to adolescents living with T1DM and the research pertaining to them as a group.[31] As a result, a third of adolescents living with T1DM struggle to develop an identity, encounter problems with daily functioning and diabetes-related management[31] as well as experience poor self-esteem, anxiety and often conflict with parents or caregivers.[30] All of these contribute to making adolescence a crucial and important developmental phase to study in the context of identity formation and T1DM.[17] In essence, Gürkan and Bahar[32] posit that the adolescent phase can be seen as the most challenging and changing developmental period of the lifespan, and the presence of a chronic condition such as T1DM can significantly hinder the sense of identity, independence and future plans of adolescents.

## Aim

The aim of this critical review was to explore scientific literature regarding identity development in adolescence with T1DM. The study further aimed to critically analyse the literature in order to present new knowledge and report current findings both national and international. Additionally, this study aimed to identify any existing gaps in current literature and also to make future recommendations for further research. This critical review also attempted to add knowledge in both psychology and diabetes fields of study. Therefore, this study aimed to answer the following research question: *What does scientific literature state regarding identity development in adolescents living with Type 1 Diabetes Mellitus?*

## Method

### Research Design

A critical review was employed for the research study. According to Grant and Booth[33] a critical review is when the researcher has substantially researched the topic and can critically evaluate its quality. A critical review does not only look at the literature as it is presented, but analyses and synthesises literature and material from different sources which will lead to conceptual innovation.[33] One of the reasons a critical review was employed is because of the opportunity to evaluate the existing literature on identity development in adolescents living with T1DM and the value which they add to the previous body of knowledge.[33] Using a critical review as a method will help the researcher to present new findings which will contribute to future research on the given topic.

Similar to Grant and Booth[33], Carnwell and Daly[34] propose seven guidelines to follow when conducting a critical review. These guidelines were followed by the authors and co-authors: *Phase 1: Define the purpose of the review, Phase 2: Defining the scope of the review, Phase 3: Identifying and selecting the sources of relevant information, Phase 4: Reviewing the literature, Phase 5: Writing the review and then Phase 6: Apply the literature*

*to the proposed study*. These guidelines will also help the study to be conducted in a clear, logical and systematic manner.[34]

**Research Approach**

For the present critical review, appropriate literature was retrieved from the following databases: ScienceDirect, Google Scholar, PsycARTICLES, PsycINFO, EBSCOhost, and JSTOR journals. The search was independently performed by the primary reviewer (first author), while the second reviewer (second author) monitored the review process and acted as a co-analyst of extracted data. As there are no formal requirements to present methods of search, synthesis and analysis within a critical review[33], a simple analytical framework similar to SALSA (Search, AppraisaL, Synthesis, and Analysis) was used to explore identity development in adolescents living with T1DM. The following keywords were used in the search: "identity/identity development", "adolescents/adolescence" and "Type 1 Diabetes." Boolean operators such as AND/OR was used to help clarify the search. A North-West University librarian specialist was consulted to assist in the process.

Studies were included if they were entries from 2000 up to 2019; full-text, peer-reviewed articles/theses/dissertations, and written in English. The search initially yielded 1 194 studies of which five were finally included. Figure 1 presents the search strategy approach and inclusion/exclusion criteria and Table 1 provides a summary of the data extracted.

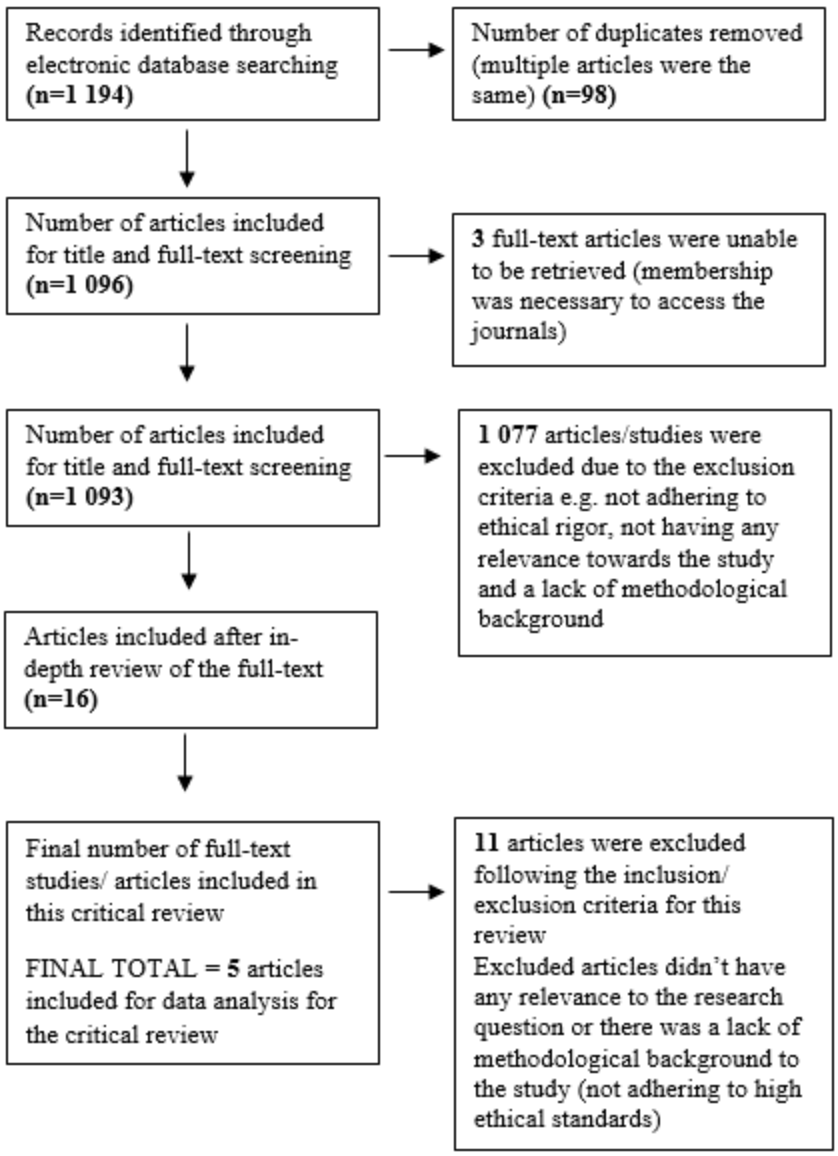


*Figure 1.* Search Flow Chart

**Data Extraction**

After the data extraction process, five articles were selected to be submitted into a data extraction table. The main characteristics of included studies were extracted from the articles and presented in Table 1. These characteristics included the authors, title of the article, year, study design and method, population, main findings and lastly the author conclusion.

**Study Selection**

Within the five studies selected, there were various participants, regions as well as culture and race. The study of Commissariat et al.[25] had a total of 85 American adolescents partaking within their study, with ages ranging between 13 – 20 years old. They were required to have T1DM for at least a year and to be fluent in English. The study of Oris et al.[35] consisted out of 575 Belgian adolescents (male = 41.6% and female = 58.4%) living with T1DM and the participants were between the ages of 14 – 25 years old. Verschueren et al.[36] also recruited a total number of 431 Belgian adolescents (male = 47.1% and female = 52.9%) between the ages of 14 – 25 living with T1DM.

The study of Commissariat et al.[37] had a total of 83 American adolescents between the ages of 13 – 21. The participants had been included in the study if they were fluent in English reading, writing and speaking as well as having T1DM for over a year. Lastly, the study of Raymaekers et al.[38] included a total number of 381 Belgian adolescents (males = 43.7% and females = 56.6%) between the ages 14 – 17 years old. They also had to be able to read and speak English as well as having T1DM for over a year. Table 1 is a data extraction table with all the relevant information pertaining to the included studies.

**Table 1:** *Summary of Extracted Data*

| | Authors and Title of Article | Study Design and Method | Sample | Main Results | Author Conclusion |
|---|---|---|---|---|---|
| 1. | Commissariat, Kenowitz, Trast, Heptulla, & Gonzalez *(2016)*<br><br>*Developing a Personal and Social Identity with Type 1 Diabetes During Adolescence: A Hypothesis Generative Study* | *Design:* Mixed Method (Sequential Exploratory)<br><br>Firstly, qualitative data collection and analysis took place. Secondly, quantitative data supplement and support the interviews<br><br>*Measurements:* Audio-recorded interviews and surveys | 85 adolescents (ages: 13 - 20) | Overall results included that T1DM was a burdensome aspect of the adolescents' daily life. Burden within this context, meant that it had a negative impact on the adolescent's social life, relationships etc. However, they stated that once they established a routine and managed some of the responsibilities of T1DM, they felt more in control.<br><br>Adolescents who incorporated their T1DM and saw the condition as being a part of their identities were better functioning individuals.<br><br>Furthermore, those adolescents which describe successful incorporation of their condition into their identity, mentioned the following positive aspects: (1) feelings of mastery and responsibility prior to their diagnosis, (2) do not care what peers or other people think, (3) being more apprehensive and cautious, (4) hoping to help other people, (5) and feeling overall happier and more confident<br><br>Adolescents who did not incorporate their T1DM into their identities struggled to accept the various aspects of living with T1DM. Adolescents who only contained their condition and did not incorporate it into their identity, struggled with self-acceptance and maintaining relationships | Previous studies focused on the positive/ negative influence that peers had on adolescents, but it is evident that it is more important how the adolescent views himself or herself for positive health behaviours and mental health outcomes<br><br>The authors concluded that it is better for the adolescents to (1) incorporate their condition into their identity, (2) have a realistic control over their diabetes, (3) believe that he/she can effectively control and manage their diabetes.<br><br>Guiding adolescents living with T1DM to incorporate their chronic condition into their identity may result in better self-management and mental health<br><br>It is suggested that the overall positive characteristics and behaviours of adolescents are strongly associated with the successful incorporation of T1DM into their identity<br><br>The authors lastly concluded that the successful incorporation and acceptance of diabetes into their identity leads to a better mental and physical lifestyle |

| | Authors and Title of Article | Study Design and Method | Sample | Main Results | Author Conclusion |
|---|---|---|---|---|---|
| 2. | Oris, Rassart, Prikken, Verschueren, Goubert, Moons, Berg, Weets, & Luyckx *(2016)*<br><br>*Illness Identity in Adolescents and Emerging Adults with Type 1 Diabetes: Introducing the Condition Identity Questionnaire* | *Design:* Quantitative Design<br><br>*Measurements:*<br><br>IIQ: Condition Identity Questionnaire<br><br>CESD: Centre for Epidemiological Studies Depression Scale<br><br>SWLS: The Satisfaction with Life Scale<br><br>SCI: Self-Care Inventory<br><br>PAID: Problem Areas in Diabetes Scale | 575 adolescents (ages: 14 – 25) | The study found that diabetes can have a significant impact on an individual's daily life and can hinder other identity- related obstacles, e.g. romantic relationships, and educational exploration<br><br>They also argue that the adolescent is more prone to struggle with their T1DM if he/she does not incorporate it within his/her identity. Adolescents tend to reject their diagnosis in order to maintain a "healthy identity." In other words, if the adolescent ignores his/her diagnosis, he/she is more likely to struggle with treatment and glycaemic control<br><br>In contrast with above mentioned statement, adolescents who incorporate and accept their diagnosis, tend to be happier, with fewer depressive symptoms<br><br>Once the adolescent accepts his/her diagnosis of T1DM, he/she will be better prepared to handle diabetes-specific related challenges. This will in return help them to manage their diabetes in the transformation to adulthood<br><br>Hence, the study supports the importance of incorporating T1DM in the adolescent's identity. Once the individual has accepted and incorporated the diagnosis into him/her identity, they will be able to deal with other diabetes-related problems | The authors note that if the adolescents accept their condition, they have better chances of integrating it within their identity<br><br>They also conclude that sufficient incorporation of diabetes into the adolescents' identity is a crucial and important developmental task in order for them to achieve and adapt to multiple diabetes-related problems and obstacles that they might encounter later in their lives as well as in the present<br><br>The authors opine that the degree to which the adolescents integrate their condition into their identity seems to be crucial during adolescence in order to enhance overall mental functioning<br><br>It is also important to note that the adolescent benefits when accepting his/her diagnosis as part of his/her identity, without the diagnosis dominating their lives<br><br>However, the authors also recognises that when diabetes dominates a person's identity, it can impede other identity-related development such as forming romantic relationships, educational exploration and diabetes-related management |

| | Authors and Title of Article | Study Design and Method | Sample | Main Results | Author Conclusion |
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| 3. | Verschueren, Oris, Claes, Moons, Weets, & Luyckx *(2019)*<br><br>*Identity Formation in Adolescents and Emerging Adults with Type 1 Diabetes* | *Design:* Quantitative Design<br><br>*Measurements:*<br><br>DIDS: Dimensions of Identity Development Scale<br><br>CEDS: The Centre for Epidemiological Studies Depression Scale<br><br>SWLS: Satisfaction with Life Scale<br><br>PAID: Problem Areas in Diabetes Scale<br><br>IPQ: Condition Perception Questionnaire<br><br>SCI-R: The Self-care Inventory Revised | 431 participants (ages: 14 - 25) | The authors acknowledge that living with T1DM can pose different challenges to the adolescent who is trying to establish an identity. The results of the study suggested that once the individual enters into adolescence, there will be a gradual shift in diabetes care responsibilities from the parents to the adolescent<br><br>Adolescents who successfully experienced achievement and foreclosure in their identity development may later on experience overall greater control in their lives and mastery over their chronic condition<br><br>Individuals who had trouble with regards to their diffusion and moratorium reported to have the most difficulty integrating their T1DM with their identity<br><br>Although most individuals are able to take responsibility for their condition, they often struggle or have difficulty to do so. These difficulties can be specifically linked to diabetes-related issues<br><br>The study also found that adolescents who had strong commitments towards their beliefs and value system were able to actively explore their identity in relation to their chronic condition<br><br>Adolescents in the diffusion and moratorium status were the individuals who struggled most to incorporate their condition into their identity or as a part of themselves | In the study's conclusion, the authors note that it is important to identify and support adolescents who struggle to develop an identity or a sense of self<br><br>Assisting adolescents and offering them tools and guidelines to engage in constructive life commitments may help them to overcome both physical and psychological barriers<br><br>The authors further concluded that although there are adolescents who can develop an identity despite having their chronic condition such as T1DM, there are far too many that still struggles to incorporate their condition into their identities<br><br>The study made suggestions that there should be more research focused on developing interventions to help adolescents develop an identity which incorporates their T1DM rather than containing the condition |

| | Authors and Title of Article | Study Design and Method | Sample | Main Results | Author Conclusion |
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| 4. | Commissariat, Laffel, & Gonzalez *(2019)*<br><br>*Identity and Treatment Adherence in Predominantly Ethnic Minority Teens and Young Adults with Type 1 Diabetes* | *Design:* Mixed-Method Design<br><br>(Exploratory Design)<br><br>*Measurements*:<br><br>Audio-recorded, semi-structured interviews, self-reported surveys and questionnaires<br><br>TSBI-A: The Texas Social Behaviour Inventory Short Form A<br><br>The Friend Attribution Questionnaire<br><br>DSSQ-Friends: The Diabetes Social Support Questionnaires<br><br>DSSE: The Diabetes Specific Self-Esteem Scale<br><br>SCI-R: The Self-Care Inventory Revised | 83 adolescents (aged: 13 - 21) | Adolescents who incorporated their condition into their identity were notably more social competent<br><br>Those adolescents who incorporated their condition had higher levels of self-esteem, greater self-care, more life satisfaction and better glycaemic control<br><br>Those individuals who did not incorporate their condition into their identity view T1DM as a burden and embarrassment<br><br>The study can be divided into two main ideas: either the adolescent incorporates his/her condition into his/her identity, or they do not.<br><br>The study suggested that there can be three major components of incorporation: (1) acceptance, (2) vocalizing diabetes experience and knowledge and (3) self-care in the face of stigma<br><br>Once the condition formed part of the identity, the adolescents felt more assured in their ability to manage their diabetes, experiencing greater life satisfaction and engaging in greater self-care. Lastly, the adolescents who incorporated their condition, had better glycaemic control | Incorporation of T1DM is believed to be linked with greater social competency. However, it should be noted that incorporation was not associated with fewer negative reactions from friends or family<br><br>There are instances where the family and friends react positive and supportive towards the individual who has T1DM. The adolescents with a supportive environment tend to incorporate their condition into their identity more easily; they also find a balance and mastery in their diabetes-related care routine<br><br>The authors concluded that an individual's self-perception may have a greater impact on his/her ability to incorporate T1DM as part of him/herself, than that of the perception of others<br><br>The adolescents who do not incorporate their diabetes condition into their identity, experience a lack of social support and care from others, mainly because they themselves do not engage in self-care openly<br><br>Lastly, the study made a significant link between incorporation of their condition and life satisfaction. The authors state that it may be that the very nature of incorporation and acceptance suggests a less negative attitude towards T1DM and its care |

| | Authors and Title of Article | Study Design and Method | Sample | Main Results | Author Conclusion |
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| 5. | Raymaekers, Prikken, Vanhalst, Moons, Goossens, Oris, Weets, & Luyckx *(2019)*<br><br>*The Social Context and Condition Identity in Youth with Type 1 Diabetes: A Three-Wave Longitudinal Study* | *Design:* Quantitative Design: Three-Wave Longitudinal Study<br><br>*Measurements:*<br><br>Condition Identity Questionnaire<br><br>IPPA: The Inventory of Parent and Peer Attachment<br><br>The Extreme Peer Orientation Questionnaire<br><br>Child Report of Parent Behaviour Inventory | 381 adolescents (aged: 14 - 17) | Adolescents living with T1DM are confronted with various difficult tasks, including incorporating their condition into their identity. It is noted that illness identity is the way in which a condition becomes part of one's identity<br><br>The study found that overprotective parents may hinder the adolescents' confidence in managing their T1DM, but also the lack of proper guidance from caregivers can impede the adolescents from physically and psychologically taking care of themselves<br><br>Lastly, if the adolescents integrate their condition into their identity, it gets easier for them to engage with peers in a healthy manner and they will be likely to establish healthier relationships<br><br>However, the adolescents may contain their T1DM condition if they become aware that they will not be accepted by their peer groups, leading them to start neglecting their diabetes care routine. This suggests that T1DM can dominate every aspect of the adolescent's life | To conclude, identity formation is stated to be a challenging phase when transitioning into adulthood. When confronted and diagnosed with T1DM, adolescents must try to integrate their condition into their identity<br><br>When the adolescents successfully integrate their condition into their identity, they are prone to be better with peer relationships<br><br>The adolescents experiencing more overprotective parents can be prone to feelings of being engulfed by their T1DM and will ultimately lead them to feeling inexperienced to handle their own condition<br><br>To sum up, the results underpin the importance of integration of condition into identity for the adolescent living with T1DM. Otherwise, the adolescent will begin to identify who he/she really is as an individual in relation with their condition<br><br>The environment in which the adolescent finds him/herself in plays a significant role in the way in which the adolescent incorporates or contain their chronic illness. |

## Data Analysis

In this study thematic analysis was utilised in order to generate themes. Braun, Clarke, Hayfield and Terry[39] define thematic analysis as a method for "systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a dataset."[39(p.57)] It is a manner in which the researcher can identify commonalities across a dataset, making sense of the identified themes which in turn will help to answer the research question.[39] It should be noted that not only the patterns are important, but the meaning each one of them holds and identifying themes which will best answer the research question are crucial.[39]

Braun et al.[39] propose six phases to follow when doing thematic analysis. This study utilized the following phases; *(1) Familiarizing yourself with the data* (the researcher read and re-read textual data); *(2) Generating initial codes* (group codes that can be potentially related to the research question); *(3) Searching for themes* (this is when a patterned response starts to form and more insight is gained); *(4) Reviewing potential themes* (the possible themes are analysed in relation to the entire dataset in order to ensure that all information is captured); *(5) Defining and naming themes* (the uniqueness and essence of each theme is captured), and lastly *(6) Producing the report* (in this phase it is important to present a logical, critical and well thought out report embedded in a scholarly field).[39]

## Findings and Discussion

After thematic analysis was conducted, the following themes emerged from the data: *Theme 1: Identity develops differently in adolescents living with Type 1 Diabetes Mellitus than those who do not have the chronic condition, Theme 2: Adolescents living with Type 1 Diabetes Mellitus can either incorporate or contain their chronic condition in relation to their identity development* and *Theme 3: External factors influence identity development in adolescents living with Type 1 Diabetes Mellitus.* Ultimately, these identified themes aimed

to answer the research question: *What does scientific literature state regarding identity development in adolescents living with Type 1 Diabetes Mellitus?*

**Theme 1: Identity develops differently in adolescents living with Type 1 Diabetes Mellitus than those who do not have the chronic condition**

All five articles emphasise the central role of identity development in adolescence.[25 35 36 37 38] Furthermore, identity development has prominence in adolescence, especially when they (adolescents) are trying to establish themselves in various roles. The adolescent phase is seen as the time in which the individual attempts to create a meaningful and unique definition of who he/she is as a person.[37] Adolescents who carry the burden of T1DM may experience reduced feelings in self-concept and the ability to form a coherent identity.[25 36 38] Themes that emerged from the data, clearly indicate that adolescents who live with T1DM develop an identity status different from those who do not have a chronic condition such as T1DM.[25 35 36 37 38] While the adolescent is in a transitional period between childhood to adulthood, a chronic condition such as T1DM may possibly have long-lasting effect on the identity development.[38]

Three of the studies argue that these differences can be seen in contrast with the various identity statuses (explained by literature as normal identity statuses) throughout their development.[35 36 38] Adolescents who live with T1DM develops an identity different, which in turn has an effect on the various identity statuses and their development.[35 36] Developing an identity different in this context can be explained by Jones and Foli[40] and Verschueren et al.[36] as the adolescent getting used to his/her chronic condition in their self-concept and perspective, exploring various roles in their environment along with the difficulty in making accurate decisions for their future.

Verschueren et al.[36], Commissariat et al.[37] and Raymaekers et al.[38], inspired by the work of Erikson[22] and Marcia[41] identify the following statuses as being crucial for the adolescent to successfully develop an identity. These statuses include *(1) achievement status*; *(2) foreclosure status*; *(3) moratorium status* and lastly, *(4) diffusion status.*[22 37 38 41 43] Verschueren et al.[36] explains that any interruption in the identity statuses may have an effect on the adolescent's overall development, but there is an even bigger effect on his/her identity development. This effect can ultimately lead to new identity statuses being formed in order to adapt and develop an identity while living with a chronic condition such as T1DM.[36]

Additionally, to confirming that identity develops different when living with T1DM, Oris et al.[35] propose four different identity statuses compared to that of Erikson's[22] and Marcia's[41] earlier works: *(1) engulfment* (refers to the extent that the adolescent defined themselves in terms of T1DM. When adolescents define themselves completely in terms of their condition, it occupies their entire being), *(2) rejection* (when the adolescent rejects his/her T1DM, it can possibly be viewed as a threat to the self), *(3) acceptance* (the extent to which adolescents incorporate their T1DM into their life and overall functioning. The adolescents do not feel overwhelmed by their condition), and lastly *(4) enrichment* (refers to the way in which having diabetes results and enables positively in the individual's life, specifically adding meaning to the individual's identity).

Overall, Verschueren et al.[36] and Commissariat et al.[37] conclude by saying that it is necessary and important to identify and support those adolescents who struggle to develop an identity, especially individuals who engage in active exploration but without a strong sense of commitment.[36] Adolescents must ultimately be provided with the correct guidelines and tools to help them investigate/explore various options to engage and make strong commitments as they develop through the different statuses.[36]

**Theme 2: Adolescents living with Type 1 Diabetes Mellitus can either incorporate or contain their chronic condition in relation to their identity development**

Commissariat et al.[37] suggest that there are two possible ways in which an adolescent can experience and manage T1DM in relation to their identities, namely, *incorporation* or *containment* of the chronic condition. *Incorporation* specifically refers to the adolescents who make their condition a part of who they are. They do not try to hide any aspects of their condition but merge it into their daily functioning and find ways in which to incorporate it into their identities.[37] When the adolescent is able to accept and incorporate the T1DM into his/her daily lives and functioning, he/she will be able to manage diabetes-related burdens more successfully.[35] Oris et al.[35] argue the importance for T1DM to be incorporated into adolescents' identities. Arguing that incorporation of T1DM into one's identity is deem a crucial part in this period of the adolescent's life and development.[35] Previous studies have suggested that the extent to which adolescents incorporate their T1DM into their identities may have an effect on their psychological and diabetes-related functioning.[35]

Commissariat et al.[37] further produce three significant components of incorporation: (1) self-care when faced with stigma, (2) acceptance, and (3) sharing diabetes knowledge and experiences. Three studies suggest that when T1DM is accepted and incorporated into their identities rather than contained, adolescents feel more assured to deal with diabetes-related issues, have higher levels of life satisfaction and apply greater self-care.[36 37 38] Three of the studies ultimately conclude adolescents who incorporated their condition into their identity had much greater social competency and ability to interact with their environment.[36 37 38]

Commissariat et al.[25] further suggest three possible processes to help the adolescents incorporate their T1DM into their identities. The first one is *"becoming and being ill"*[25(p.54)], where they state that the individual must revise and redefine the sense of self as someone with a chronic condition[25]. Secondly, *"managing the condition"*[25(p.54)] is where the person

must incorporate or consolidate the new concepts of the condition and the sense of self by experiencing and understanding the changes which occur within the body and mind.[25] And lastly, *"stigma and stigma control"*[25(p.54)] is where the person must learn to discern and adapt to manage the actual stigma surrounding their chronic condition.[25]

*Containment* on the other hand occurs when the adolescent tries to hide the T1DM diagnosis; he/she fears stigma from people and lastly, tries to maintain the identity that he/she had prior to their diagnosis.[37] When T1DM is viewed as external to one's self, it can result in lower levels of well-being and overall intensify the burden of living with T1DM.[25] It is important to note that containment doesn't necessarily mean rejection, it simply means that the adolescent hasn't decided whether or how to incorporate their T1DM into his/her sense of self.[37 38] The data further reveal that T1DM can be described as a fading or loss of the former self, making the demand to examine its effect on identity development very important.[12] The two studies of Commissariat et al.[25] and Commissariat et al.[37] highlights the continuous struggle the adolescent faces when he/she is trying to develop an identity that incorporates their T1DM so that he/she can become a "*person with diabetes, rather than a diabetic person.*"[25 37(p. 673)] Seeing him/herself as an individual who will be able to live with their chronic condition, rather than being defined by it.

One of the many burdens and challenges of living with T1DM is the stigma that the adolescents deal with. For example, Commissariat et al.[25] and Commissariat et al.[37] state that when the adolescent enters a new school/social situation, it is likely that the individual will deny or contain his/her T1DM in order to form part of the peer group rather than being stigmatised for having T1DM. However, when taking above mentioned statement into consideration, it is possible for containment of T1DM to be turned around so that one can incorporate it into one's identity when the process of *"stigma and stigma control"* is applied.[37]

It is important to note that adolescents who contain their T1DM, are more likely to be at risk for general and condition-specific problems.[25 37 38] Hence, adolescents living with T1DM, are urged to incorporate their condition into their identity, for overall healthy identity synthesis/development.[35 37 38] Commissariat et al.[37] conclude that although incorporation of T1DM is linked with higher levels of well-being and social competency, it might not always be an indicator of fewer negative reactions from friends or social groups; it ultimately comes down to the self-perception of the adolescent and the influence it has on his/her ability to incorporate T1DM into his/her identity.

**Theme 3: External factors influence identity development in adolescents living with Type 1 Diabetes Mellitus**

Socio-ecological theorists like Bronfenbrenner[42] highlight that identity development takes place within dynamic systems by ongoing corresponding processes identified between the individual and the responses of their environment. There are numerous factors which contribute to the development of adolescents and their diabetes management as their environment interacts with them on a daily basis.[38] Two of the studies mentioned these factors which include but are not limited to: personal and emotional feelings, family and peer dynamics, and other people's evaluations of them.[25 38]

Interestingly, there were only two studies addressing the adolescent and external factors influencing their identity development. Raymaekers et al.[38] report that *parents/caregivers* play a critical role when it comes to the encouragement and development of the adolescent's autonomy all the while helping them to adapt and manage their diabetes. The study of Goethals et al.[43] can be linked to that of Raymaekers et al.[38] when they state that parents are directly linked and play a critical role in the caregiving of adolescents when it comes to diabetes-related management. If there is *over-involvement* from the parents/ caregiver, it is then likely for the autonomy-seeking adolescent to perceive the demanding

behaviour as a hazard to his/her independence.[25] The study further suggested that when the parents work *with* the adolescent rather than *controlling* their diabetes-related issues, improved and positive changes can be seen in the adolescent's identity development.[25]

To illustrate, a study conducted by Overgaard et al.[17] found that being a parent or caregiver of an adolescent having T1DM can be incredibly stressful because they will be in a constant state of vigilance trying to maintain the adolescent's diabetes and general well-being. The study further suggest that diabetes management systematically shifts from the parent to the adolescent, becoming more of a partnership.[17] In relation to Commissariat et al.[25] it is important to find the balance between the involvement of the parent without endangering the adolescent's autonomy and independence, leaving room for collaboration on healthy diabetes-management so that the adolescent can begin to develop a sense of self while living with this chronic condition.

Two of the included articles form Commissariat et al.[25] as well as Raymaekers et al.[38] state that adolescents living with T1DM quickly get upset when parents, caregivers or friends seem to be overly protective towards or worried about them. In turn, this may possibly hinder the transfer of responsibility from the parents to the adolescents. This in turn can be linked with the confusion of the roles that each of the family members must fulfil because they do not necessarily know or understand what is expected of them.[17] The findings of the study further propose that once T1DM is normalized, then the adolescents can freely express themselves and live their lives as individuals having T1DM.[25] Adolescents may sometimes experience people who focus more on their T1DM than on them as a person, which in turn can be viewed by the individual adolescent as an overall rejection of their sense of self.[38]

Although there are quite a few negative influences of T1DM, the study of Commissariat et al.[25] found that the adolescents were much happier and relieved when they

disclosed their diagnosis to supportive friends and family, quoting that "adolescents indicated that social support from family and friends had a positive effect on how they lived with diabetes."[25(p. 680)] To have overall support from friends and family is deemed very important, as identity development rests upon the continuous change and interaction between the adolescents and their environment.[38] A study done by Overgaard et al.[17] supports the positive side of having diabetes when they state that the adolescents feel more appreciated by their families, and that if they give the necessary attention to the chronic condition it becomes manageable rather than disruptive to the family.

The study concludes that identity development can easily rely on constant social feedback from friends and family, depending on the daily choices that one may make.[38] For instance, an adolescent living with T1DM making a choice to disclose his/her diagnosis to peers, might not do it again if the social feedback they receive are negative. To put differently, two of the studies found that when feedback does not align with one's identity, the adolescent will be prone to change their behaviour to gain new feedback or adapting one's identity to find a solution to this inconsistent or uncomfortable state.[37 38]

### Implications for Adolescents Living with Type 1 Diabetes Mellitus

Time and again, literature has argued that the adolescent phase is characterised by intense physical, psychological, emotional and cognitive change.[44] The adolescent phase is further known as a time for establishing your own beliefs, a value system and a certain awareness of yourself, but according to Castensøe-Seidenfaden et al.[44] the individual living with T1DM experiences more difficulty and obstacles in the process of forming and developing an identity.[26 35 54] The findings of this critical review confirm the study of Jaser and White[46] where they state that a T1DM diagnosis can generally lead to tremendous amounts of stress owing to the requirement of diabetes related treatments and management, the uncertainty of ways in which one can incorporate T1DM into one's identity or sense of

self, and then lastly to shape a new reality of living life with a chronic condition such as T1DM.

Findings of this research study further suggest that although there are numerous challenges the adolescent must overcome such challenges can still lead to positive outcomes. The studies of Commissariat et al.[25], Overgaard et al.[17] and Raymaekers et al.[38] confirm this statement by reporting that adolescents feel more relieved and happier when they disclose their diagnosis to their peer groups, because they feel more accepted when their friends understand their situation. Within their family context, the adolescents felt that better physical and psychological management of the condition can lead to better balance within family relationships and that their parents and siblings appreciate them more.[38]

It was also noticeable in the findings of this study as well as that of Jaser and White[46] that adolescents must steer and negotiate between identity statuses all going through a developmental phase which is characterised by intense physical, emotional, cognitive and psychological change. Therefore, the adolescent living with T1DM will develop or form an identity unique to his/her chronic condition. As noted in the findings of the review and by Timler et al.[47], adolescents who attempt to develop an identity despite living with a chronic condition have a stronger sense of belonging to peer groups, better attitude towards life and firmer belief systems.[47] These in turn can be linked towards the notion concluded by various studies of adolescents gaining mastery over their lives and learning to balance demands.[46 47]

Although the study concludes and confirms that the adolescent living with T1DM has numerous challenges that he/she must face, there are possibly a few interventions that can directly or indirectly help the adolescent establish an identity despite having a chronic illness such as T1DM.[48 47] Barry-Menkhaus et al.[49] propose multiple interventions to assist the adolescent dealing with his/her chronic condition as well as the systems that are linked to

him/her, for example, individual-, friends-, family-, and school interventions for optimal physical and psychological functioning.[50]

## Limitations and Recommendation of the Study

It is important for the reader to note that this critical review has certain limitations that need to be taken into consideration. The first limitation is the difficulty to access some of the articles. Thus, there may possibly be important information that the study did not include due to certain access restrictions. Overall, language can be a powerful tool to utilize in the future, for example, identity development may be expressed or explained differently in another language than English or Afrikaans. Different or more keywords could have been utilised in order to include a wider variety data pool. Another limitation may be the discrepancy in the ages (12 – 17 years) of adolescents. It may be that the inclusion and exclusion criteria overlooked age groups that could have been relevant to the study. Therefore, a wider age range can be considered for future studies, or maybe even look at the overall development of the adolescent rather than just to focus on the ages.

It should also be noted that this review did not have any specific measures in order to evaluate identity development in adolescents, but rather looked at the developmental phases. Although developmental phases were explored within this review, there is a need for specific outcomes regarding each developmental phase for future studies. Throughout the research process, and specifically the data collection stage, it became evident that there is a lack of relevant and recent literature regarding identity development in adolescents living with T1DM. Some of the studies were outdated by more than ten years, and therefore could not be included in the review. Although interventions are mentioned above, there is still both a lack and need for interventions which specifically focus on identity development in adolescents living with T1DM. Therefore, this study recommends that future research should focus on creating interventions for the latter.

Another crucial factor which can be seen as a limitation is the lack of recent statistics of adolescents living with T1DM in the South African context. There was more statistics available in Sub-Saharan Africa but not South Africa *per se*, so updated statistics are required for future research in South Africa. This limited and restricted number of available literature and studies emphasise the need for more research in identity development in adolescents living with T1DM. The reviewers of this article recognize the somewhat small sample included in the study, and therefore caution should be taken when generalisation of findings occur. To conclude, the reviewers maintained high ethical standards and rigour to the best of their knowledge and ability throughout the research process.

## Conclusion

This critical review aimed to explore identity development in adolescents living with T1DM. The objective of this critical review was to identify, collect and describe recent and relevant literature or research on identity development in adolescents living with T1DM. Limited articles were available on adolescents developing an identity while living with a chronic condition such as T1DM. The three themes produced by this review highlight the need for further research and exploration to not only see the problem but to create guidelines in order to help adolescents develop a healthy identity despite living with a chronic condition such as T1DM. Literature also indicated that although adolescents living with T1DM develop an identity different from those who do not have the condition, it is still possible for them to develop an identity. Therefore, it is also necessary for research to focus more on identity development programmes to assist adolescents in need.

This research study employed a critical review in order to evaluate existing literature and aimed to contribute new knowledge to both the fields of psychology and diabetes. The data captured were from five articles written in the past 19 years (2000 - 2019) which all adhered to the inclusion and exclusion criteria set out in the beginning. All the selected

studies further focused on adolescents who are living with T1DM, focusing specifically on their identity development. Throughout the data collection and analysis phase, it was evident that there was a lack of research in the South African context and that future research should really consider focusing on studies pertaining to South Africa. Limitations and recommendations of this review should be considered when planning or conducting research in the South African context.

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type 1 diabetes: results from Diabetes MILES Youth–Australia. Diabetes Care. 2017 Jul 1; 40(7):849-55.

# SECTION 3: CRITICAL REFLECTION

Section 3 will comprise a critical reflection of the primary researcher and her experience of the research process. The researcher will discuss the research process with regards to data collection, data analysis and interpretation, findings and a conclusion. It should be noted that the primary researcher is a registered MA Research Psychology student who commenced studies in 2019 till present. Further, this section aims to provide an in-depth critical reflection of the primary researcher and her overall experiences conducting the research.

## Critical Reflection on the Research Process

The critical reflection will begin by describing the researcher's experience of the research process which was informed by the guidelines on how to conduct a critical review (Carnwell & Daly, 2001; De Klerk & Pretorius, 2019; Grant & Booth, 2009). The processes which were followed by me, the primary researcher, include the data collection process, data analysis and then lastly the discussion of findings. The overall aim of a critical review is to exhibit that substantial research of available literature has been conducted, and the quality of the work presented has been critically evaluated (Grant & Booth, 2009).

This critical review (Carnwell & Daly, 2001) aimed to evaluate previous studies conducted on identity development and their theories, how adolescents develop an identity and how this identity can be affected when they have to live with a chronic condition such as Type 1 Diabetes Mellitus [T1DM]. My responsibility as a researcher was to ensure that I followed and maintained ethical guidelines throughout the entire research process to ensure rigorous findings. It is important to note that this research did not include/deal with any participants, therefore ethical consideration with human participants was not necessary in that regard. The dataset for this critical review consisted of previous studies' results/findings. These results/findings were then subjected to be analysed and interpreted in an ethical and

rigorous manner in order to add to the existing body of knowledge in the psychological and diabetes fields of study. Gnyawali and Song (2016) made a crucial point when they stated that rigor in research should always be accurate and detailed in the development of new theory, in the design and implementation of the study.

Throughout the research process I ensured that dependability, credibility, confirmability and transferability were obtained through continuous feedback from my supervisors, reading and re-reading the data, ensuring that I had no bias towards the study and making sure that I stayed true to the findings, and not portraying my perspective. I further ensured high ethical standards of the research process by following the HPCSA ethical guidelines along with Wager and Wiffen's (2011) recommendations. As a registered MA/MSc Research Psychology student at the NWU (Potchefstroom Campus), I ensured that I got the necessary ethical training and guidance by attending numerous academic training events as well as completing the online Training and Resources in Research Ethics Evaluation [TRREE] course. I was further assisted by my supervisor and co-supervisor (Prof. Elmarí Deacon and Prof. Esmé van Rensburg) with the monitoring and coding of the research process. The co-authors have experience of the review process as well as with thematic analysis.

To uphold ethical conduct, the author and co-authors avoided to publish the final report in multiple journals and exclusively work with one, *Current Diabetes Report*. I avoided plagiarism by ensuring to reference each and every author's work used to conduct this study. I followed the in-text and general referencing guidelines set out by the American Psychological Association (APA 6th ed) as well as the Vancouver referencing style in Section 2. It should be noted that no financial support or funding was given for this research, therefore I could remain impartial and open-minded and not be impacted by any interested parties. I did not skew the data/findings in any way to fit my perspective, but rather followed

the data to the best of my ability to present accurate and scientific findings. While conducting this critical review, I was constantly aware of the need for transparency and honest interpretation of the data, and rigour.

**Data Collection**

When I started the data collection process, I was confronted with the task to search for the necessary articles objectively and scientifically. The biggest challenge I had was to formulate the right keywords in order to get the most relevant and accurate data for the study. It was crucial to understand not only how to formulate keywords, but also how to search for them electronically. Therefore, when I had trouble to understand the search platforms, I contacted Mr Nestus Venter who is a librarian specialist at the North-West University. He then assisted me in understanding the necessary platforms, but specifically to ensure that they were scientific databases. Having multiple keywords, it was necessary for me to use the Boolean search terms such as AND/OR.

After consultation with Mr. Nestus Venter, I modified, chose and combined the following keywords: “identity OR identity development”; “adolescent OR adolescence” and “Type 1 Diabetes”. With the mentioned keywords, I searched databases such as Google Scholar, EBSCOHost, Science Direct and a few other. Initially I was overwhelmed with the number of articles that I found, but with the help of my supervisor I could narrow it down to five articles that I included for the study. As the primary reviewer, I was initially responsible to apply the inclusion and exclusion criteria in order to ensure that the most relevant articles get chosen. As the secondary reviewer, Prof. Deacon monitored and contributed to the inclusion and exclusion processes.

## Data Analysis and Interpretation

When I started with the data analysis and interpretation, the process of appraisal was quite time consuming and difficult at the beginning just because I was afraid that I might overlook something that was important. Initially, there was a total of 1 194 articles from the first database search. Finally, after in-depth revision and analysis, I was left with five studies I could include in the critical review. After the final five articles had been selected, it was important to assess the validity and applicability of each study to ensure high quality findings (Puks, 2016). To assess the validity and applicability of each selected article, I read each one in-depth in order to ensure maximum contribution to the study. I read and re-read each article in order to gain a deeper understanding of the study and to assist me in seeing the gaps in research and then ultimately to identify themes.

When both my supervisor and I were satisfied with the selected articles, I then proceeded to the two final stages, which comprise analysis of the literature and drawing conclusions and then finally the write-up of the findings of the data (Puks, 2016). I felt that within this phase of the research process I began to create structure and a way forward to answer my research question. The data extraction table with the main findings, author's conclusion, publication date and research design/methodologies was extremely valuable and helped me a lot.

For this critical review, I followed the six steps Braun, Clarke, Hayfield and Terry (2018) present for thematic analysis whereby I identified patterns and possible themes for accurately presenting the findings of the study. I was aware of the fact that each article was unique in its contribution towards the study, and I tried to capture every important aspect. In the beginning it was difficult to distinguish and filter the data in order to only present the crucial parts and findings of each study. But as I read and reviewed each article, along with

my supervisor, the themes that emerged became easier and clearer for me to identify and finalise.

**Findings**

After the successful analysis and interpretation phase, it was then time for me to write up the findings and apply the relevant literature to the research study. Once again, I was faced with the challenge of only reporting the core aspect of each theme in such a way that I would contribute new knowledge, but at the same time stay true to the data. It was critical for me to provide clear, accurate and concise findings which were in line with the aims of the research study. It was also important to report the findings in such a manner that the research question could also be answered. The findings include the following: *Theme 1: Identity develops differently in adolescents living with Type 1 Diabetes Mellitus than those who do not have the chronic condition, Theme 2: Adolescents living with Type 1 Diabetes Mellitus can either incorporate or contain their chronic condition in relation to their identity development* and *Theme 3: External factors influence identity development in adolescents living with Type 1 Diabetes Mellitus.*

To emphasise the findings, I also provide a discussion whereby I explain the significance of each article and to describe the possible implications and future recommendations. During this phase of the research process I became very excited to observe the significance of the study and what it might entail for future research on identity development in the adolescent living with T1DM. It was interesting for me as well to see that adolescents living with T1DM do indeed develop an identity different from those who do not have T1DM.

## Conclusion

When I started with my journey in the Master's research psychology programme, I was unsure of the topic I wanted to research as well as what the process would entail. After research and numerous consultations with various people, I identified the need for psychological research in the diabetes context. It made me excited and nervous at the same time, seeing that I had little knowledge about diabetes in the first place. After a few meetings with my supervisor, I began to feel at ease and was looking forward to the two years to follow. What I truly liked about my Master's degree was the fact that I was challenged in every aspect (emotional, cognitive, social and academically). Just when I thought I was on the right track; I was challenged by my supervisor to think deeper and more critically to eventually see the bigger picture.

The transition from an Honours student to a Master's student was something to get used to, because I was suddenly tested on every aspect of my previous year's studies. I had to learn to think more critically and not just take everything on face value. Once I saw the need/gap for psychological research in the diabetes context, the next step was to establish what it was that I should focus on. After reading countless articles, it became clear that adolescence is a critical developmental phase, as well as that they struggle the most to form an identity when they have to live with a chronic condition such as T1DM. Hence, the research topic of identity development in adolescents living with T1DM began to take form.

In the beginning of my studies, a lecturer once said that you should not try to change the world with your master studies. You must choose something that can easily be carried out and be practical. Although I agree with his statement, I felt as though it still could make an incredible impact regardless of which level you are on. And that is exactly how I felt these past two years. I have realised the paramount value of research, and that every study you do is a steppingstone for someone in the future. I can only hope that I contributed towards

psychology as much as the researchers before me, even if it is just a small portion. I have come to realise that although there was a vast amount of research done in the past; it remains our responsibility to continue and better the research with every study. At the end of my Masters I am more confident about my abilities, humbled for the opportunity, and exited for the future. I think in doing this study, I was ultimately confronted with my own views and perceptions on identity and the way in which you view yourself, and how it relates to something such as a chronic condition. Although the individual is unable to change his/her diagnosis they will always have a choice in how they see themselves, leading me to end the study with one of Viktor Frankl's quotes: "Forces beyond your control can take away everything you possess except one thing, your freedom to choose how you will respond to the situation."

References

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# Addendum A (OPTENTIA Ethics Approval Letter)

## Scientific Committee Approval for a Research Application

**Research using human participants, health or health-related studies**

| Scientific Committee Information | | | |
|---|---|---|---|
| **Name of the scientific committee** | Optentia Scientific Committee | **Discipline(s)** | Psychology, Social Work, Industrial Psychology, Sociology |
| **Research Entity** | Optentia Research Focus Area | **Contact Person for the committee** | Nadia Jordaan |
| **Faculty** | Humanities | **E-mail address for the committee contact person** | 29390915@nwu.ac.za |

| Study & Scientific Review Information | | | | |
|---|---|---|---|---|
| **Title of the study:** | Exploring identity development in adolescents living with type 1 diabetes: A critical review | | | |
| **Researcher/Study Supervisor Initials, Name and Surname:** | Prof. E. Deacon; Prof. E. van Rensburg | | **NWU Number:** | 10857729; 10194118 |
| **Student Initials, Name & Surname:** | E. Harmse | | **NWU Number:** | 25988654 |
| **Other Researchers involved in the study** ***(Initials, Names and Surnames)*****:** | None | | | |
| **Potential risk level for human participants:** | No risk | ☒ | **Motivate:** The study entails a critical review of the literature. No risks for human participants are envisaged. | |
| | Minimal risk | ☐ | | |
| | Medium risk | ☐ | | |
| | High risk | ☐ | | |
| **Potential risk level for children and incapacitated adults:** | No risk | ☒ | **Motivate:** The study entails a critical review of the literature. No risks for children or incapacitated adults. | |
| | No more than minimal risk of harm | ☐ | | |
| | Greater than minimal risk with the prospect of direct benefit | ☐ | | |
| | Greater than minimal risk with no direct benefit | ☐ | | |
| **Recommendation for the REC:** | Review by the research ethics committee required | ☐ | **Motivate:** Click here to motivate | |

| | |
|---|---|
| **Any additional comments** | **Motivate:** Click here to enter any additional comments |
| **Chairperson of the committee** | Prof. S. Rothmann |
| **Committee members present during the review**<br><br>**(NB, please ensure no conflict of interest)** | **Prof. S Rothmann, Prof. J. Hoffman, Prof. V. Roos, Prof. M.M. Heyns, Prof. M.W. Stander, Prof. A. Fouche** |
| **Date of review** | 2019/12/04 |

**Signature of Chairperson**

**Date:** Click here to enter a date.

**Signature of Research Director**

**Date:** Click here to enter a date.

# Addendum B (HREC Ethics Approval Letter)

Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 086 016 9698
Web: http://www.nwu.ac.za

**North-West University Health Research Ethics Committee (NWU-HREC)**

Tel: 018 299-1206
Email: Ethics-HRECApply@nwu.ac.za (for human studies)

28 February 2020

## RESEARCH ETHICS COMMITTEE LETTER OF DECISION: NO RISK

Based on the review by the North-West University Health Research Ethics Committee (NWU-HREC) on 28/02/2020, the NWU-HREC hereby clears your study as a no risk study. This implies that the NWU-HREC grants its permission that, provided the general conditions specified below are met, the study may be initiated, using the ethics number below.

**Study title: Exploring identity development in adolescents living with type 1 diabetes: A Critical Review**
**Principal Investigator/Study Supervisor/Researcher: Prof E Deacon**
**Student: E Harmse - 25988654**

**Ethics number:** NWU-00345-20-A1
Institution Study Number Year Status

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

**Application Type: Single study**
**Commencement date: 28/02/2020**

**Risk:** No Risk

**General conditions:**

*The following general terms and conditions will apply:*

- *The commencement date indicates the first date that the study may be started.*
- *In the interest of ethical responsibility, the NWU-HREC reserves the right to:*
  - *request access to any information or data at any time during the course or after completion of the study;*
  - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research;*
  - *withdraw or postpone clearance if:*
    - *any unethical principles or practices of the study are revealed or suspected;*
    - *it becomes apparent that any relevant information was withheld from the NWU-HREC or that information has been false or misrepresented;*
    - *submission of the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and/or*
    - *new institutional rules, national legislation or international conventions deem it necessary.*
- *NWU-HREC can be contacted for further information via Ethics-HRECApply@nwu.ac.za or 018 299 1206*

The NWU-HREC would like to remain at your service and wishes you well with your study. Please do not hesitate to contact the NWU-HREC for any further enquiries or requests for assistance.

Yours sincerely,

Digitally signed by Prof Petra Bester
Date: 2020.03.03 08:31:20 +02'00'

NWU-HREC Chairperson

Digitally signed by Wayne Towers
Date: 2020.03.02 13:12:25 +02'00'

Head of the Faculty of Health Sciences Ethics Office for Research, Training and Support

## Addendum C (Language Editing Certificate)

H C Sieberhagen
SATI no 1001489
hettiesieb@gmail.com

Translator and Editor
082 3359846
018 264 2309

# CERTIFICATE
## OF LANGUAGE EDITING

ISSUED ON 21 NOVEMBER 2020

This serves to certify that I have edited the language of the dissertation

**Exploring identity development in adolescents living with type 1 diabetes: A critical review**

by

**E Harmse**

Dissertation submitted in fulfilment of the requirements for the degree
Master of Arts in Research Psychology
at the
North-West University

| | |
|---|---|
| Supervisor: | Prof E Deacon |
| Co-supervisor: | Prof E van Rensburg |

*The responsibility to effect the recommended changes remains with the student*

H C Sieberhagen
**SATI no 1001489**
21 November 2020

## Addendum D (Turn-It-In Report)

ORIGINALITY REPORT

| 6% | 5% | 4% | 0% |
|---|---|---|---|
| SIMILARITY INDEX | INTERNET SOURCES | PUBLICATIONS | STUDENT PAPERS |

PRIMARY SOURCES

| | | |
|---|---|---|
| 1 | repository.nwu.ac.za<br>Internet Source | 3% |
| 2 | Persis V. Commissariat, Lori M. Laffel, Jeffrey S. Gonzalez. "Identity and treatment adherence in predominantly ethnic minority teens and young adults with type 1 diabetes", Pediatric Diabetes, 2019<br>Publication | 1% |
| 3 | Werner de Klerk, Jené Pretorius. "Guideline for conducting critical reviews in psychology research", Journal of Psychology in Africa, 2019<br>Publication | 1% |
| 4 | Persis V. Commissariat, Joslyn R. Kenowitz, Jeniece Trast, Rubina A. Heptulla, Jeffrey S. Gonzalez. "Developing a Personal and Social Identity With Type 1 Diabetes During Adolescence", Qualitative Health Research, 2016<br>Publication | <1% |
| 5 | journals.sagepub.com<br>Internet Source | |
| 6 | link.springer.com<br>Internet Source | <1% |
| 7 | care.diabetesjournals.org<br>Internet Source | <1% |
| 8 | dune.une.edu<br>Internet Source | <1% |

# Addendum E (Solemn Declaration and Permission to Submit)

NWU Higher Degrees Administration

## SOLEMN DECLARATION AND PERMISSION TO SUBMIT

### 1. Solemn declaration by student

I, Elinda Harmse

declare herewith that the thesis/dissertation/mini-dissertation/article entitled (exactly as registered/approved title),

Exploring identity development in adolescents living with Type 1 Diabetes: A critical review

which I herewith submit to the North-West University is in compliance/partial compliance with the requirements set for the degree:

MA Research Psychology

is my own work, has been text-edited in accordance with the requirements and has not already been submitted to any other university.

**LATE SUBMISSION: If a thesis/dissertation/mini-dissertation/article of a student is submitted after the deadline for submission, the period available for examination is limited. No guarantee can therefore be given that (should the examiner reports be positive) the degree will be conferred at the next applicable graduation ceremony. It may also imply that the student would have to re-register for the following academic year.**

Ethics number: NWU-00345-20-A1

ORCiD: 0000-0002-1911-6052

Signature of Student: Elinda Harmse — Digitally signed by Elinda Harmse Date: 2020.11.24 09:58:59 +02'00'

University Number: 25988654

Signed on this 24 day of November of 20 20

### 2. Permission to submit and solemn declaration by supervisor/promoter

The undersigned declares that the thesis/dissertation/mini-dissertation/article:

- ✓ complies with the A-rules and the technical requirements provided for in the Manual for Master's and Doctoral studies and in faculty rules;
- ✓ has been checked by me for plagiarism (by making use of TurnItIn software for example) and a satisfactory report has been obtained;
- ✓ and that the work was language edited before submission for examination.

Faculty specific requirements as per A-rules: 1.3.2, 433, 4.2.4, 4.10.4, 5.3.2

- ✓ complies with regards to faculty rules on submission or acceptance by an accredited scientific journal;
- ✓ complies with regards to faculty rules on peer reviewed conference proceedings;

- ✓ the student is hereby granted permission to submit his/her article/mini-dissertation/ dissertation/thesis for examination.

Signatures of supervisor(s) and Promoter(s): (only compulsory in cases where there are co- or assistant- supervisor(s/promoters)

Elmarí Deacon — Digitally signed by Elmarí Deacon Date: 2020.12.04 11:58:07 +02'00' — Supervisor/Promoter

E van Rensburg — Digitally signed by E van Rensburg Date: 2020.12.04 14:35:22 +02'00' — Co-Supervisor/Co-Promoter

Assistant -Supervisor
Assistant-Promoter