KNOWLEDGE AND EXPERIENCES OF NURSES REGARDING THE PREPARATION OF ADOLESCENTS WITH CONGENITAL HEART DISEASE FOR ADULTHOOD AT WINDHOEK CENTRAL HOSPITAL, WINDHOEK, NAMIBIA

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Abstract

The purpose of the study was to determine the nurse's knowledge and explore the experience of nurses regarding the preparation of adolescents with Congenital Heart Disease (CHD) for adulthood. A convergent mixed method design was used. A descriptive design was applied to describe the nurses' knowledge on preparation of the adolescents with CHD for adulthood according to the following domains: a) prevention of complications, b) physical activities, c) sexuality and heredity, d) contraception and pregnancy planning for the quantitative data. For qualitative data, a phenomenological descriptive approach was followed to explore and describe the experience of the nurses with regards to the educating, and counselling of adolescents with CHD in preparation for adulthood at Windhoek Central Hospital's In- and Out-patient cardiac departments. Out of 26 nurses who provide care at Windhoek Central Hospital's cardiac departments, only 17 nurses who met the inclusive criteria were interviewed. Due to the low numbers, all participants were eligible for both methods. The quantitative data was analyzed and synthesized using the Statistical Package of Social Science (SPSS-version 27) software, which is designed for quantitative data analysis. Descriptive factor analyses were produced using statistical methods using SPSS version 27. The qualitative raw data for this study were analysed through Atlas.ti using the coding system, then the most descriptive words were converted into themes.

To achieve the aim of the study, two objectives were set: (a) to determine the nurses' knowledge on preparation of adolescents with congenital heart disease for adulthood with regard to the prevention of complications, physical activities, sexuality and heredity, contraception and pregnancy planning; and (b) to Explore the nurses' experience with regards to education, counselling, and preparation of adolescents with CHD for adulthood.

Objective (a): The study comprised mostly of registered nurses (76.5%), with 17.6% enrolled nurses and only 5.9% of nurses are cardiac specialist nurses. The findings revealed that most nurses (52.9%) who provide direct nursing care to the adolescents with congenital heart disease in a transition period qualified for a long time as nurses and they have appropriate experience for preparing the adolescents with CHD for adulthood.

The findings from the quantitative data indicated that although nurse demonstrate good knowledge that adolescent with CHD should consult health facilities in case of side effects of medication (94.1%), avoidance of physical demanding occupation (100%) however only 76.5% of nurses agreed that adolescents with CHD in transition should not partake in any competitive sport. While nurses acknowledged that adolescents with CHD may engage in sexual activities that they are capable of performing (70.6%) and that adolescents with CHD are at risk of pregnancy related complications (100%). However, the respondents nevertheless had average knowledge about action adolescents with CHD should take in event of medication side effect (52.9%), poor knowledge about risks incurred by engagement in sexual activities (11.8%), subsequent poor knowledge about risk of hereditary of CHD to the offspring (11.8%) and average knowledge about the choices of contraceptive for adolescents with CHD, most respondents 82.4% correctly recommended the Implanon as the suitable method of contraceptive for adolescents with CHD, however this method of contraceptive is standard for all adolescents with CHD at Windhoek central hospital cardiac department, without considering the specific cardiac lesion, type of cardiac surgical intervention and treatment regimen for an individual adolescent with congenital heart disease, as proposed by Sable et., (2011) and World Health organization (2009).

Additionally, the findings indicated that nurses use a holistic approach when preparing the adolescent with CHD for adulthood by focusing on key aspects of preparation such as:

prevention of complications, physical activities, sexuality, heredity, contraception and pregnancy.

Objective (b): Nurses felt that, they encouraged disease acceptance during counselling as this might result in better physical and mental well-being of the adolescents with congenital heart disease. It is worthy to note that most of the participants in the interviews spoke highly on the importance of treatment adherence. Moreover, nurses had the impression that sufficient knowledge is provided to adolescents with adolescents with CHD with regard to International Normalized Ratio training. Although a holistic approach on other matters that affect the adolescents with CHD is used by nurses to ensure a smooth transition, the nurses' perceive that there is still a need for psychological support to help the adolescents to cope with the disease as CHD requires ongoing medical attention as CHD causes limitations to the patient's daily activities. Nurses felt that although activities intolerance was mostly discussed with the transitioning adolescents with CHD, nurses' did not discuss the benefits of exercise. Therefore, adolescents with CHD could risk developing perceived physical activity restrictions. From the qualitative section, the main themes which emerged were *Inform patients on the nature of CHD, Extreme physical activities, The future of adolescents living with CHD, Educate on sexual activities, Educate on career choice, Nurses knowledge, Care and empathy psychological support and Policy/guideline*.

The researcher recommended the implementation of a checklist to guide the nurses in assessing the needs of adolescents with CHD in the transition period as well as in-service training for nurses to initiate an effective and efficient education and counselling to the adolescent with CHD in a transition period.

Keywords: *Adolescents, Congenital Heart Disease, Counselling, Education, Experience, Knowledge, Nurses, Preparation, Transition*

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List of Acronyms and Abbreviations

ACC/AHA	-	American College of Cardiology and American Heart Association
ACHD	-	Adolescents with Congenital Heart Disease
ACHDNC	-	Adult Congenital Heart Disease Nurse Coordinator
AHA	-	American Heart Association
CHD	-	Congenital Heart Disease
ECG	-	Electrocardiogram
INR	-	International Normalized Ratio
IUD	-	Intrauterine Device
LKQCHD	-	Leuven Knowledge Questionnaire for Congenital Heart Disease
MoHSS	-	Ministry of Health and Social Services
NYHA	-	New York Heart Association
QOL	-	Quality of Life
RHD	-	Rheumatic Heart Disease
SPSS	-	Statistical Package of Social Science

Declaration

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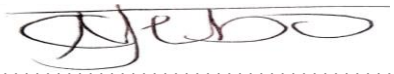
Charmine Kunouee Njembo		Sept 2022
Name of Student	Signature	Date

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Above all, the Almighty God for the gift granted upon me.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Congenital Heart Disease (CHD) is defined by Gaskin and Kennedy (2019) as "any physiological aberration or structural defect of the heart present at birth," which includes anatomical malformations in the heart wall, valves, or blood vessels, as well as various cardiomyopathies and arrhythmias. CHD has a wide spectrum of severity, including mild, moderate, and complex, and affects varying levels of heart function as the patient ages (Chen et al., 2017).

Advancements in diagnosis and therapy, surgical intervention, and medical technology, there have been an increase in the survival of children with CHD, resulting in many children with CHD reaching adolescence and adulthood (NHS England, 2016). A formal medical transition procedure by health care for adolescents with CHD should include providing continuous health care that is patient-centred, age appropriate, flexible, and thorough (Sable at el., 2019). While this is correct, Valles et al. (2015) go on to say that a transition for adolescents with CHD aims to provide information about self-care management, psychosocial skills, communication skills, medical condition education, medical independence, and the needs of young patients in terms of employment.

The role of nursing care in the transition of Adolescents with Congenital Heart Disease (ACHD) is crucial because it strives to increase patients' and their families' knowledge of the medical issues and lifestyle implications. However, there is no universal standard or agreement that exists on the preparation of adolescents with congenital heart diseases regarding transition for adulthood be delivered and how the transfer should be organised

(Moons et al., 2021). Therefore, the World Health Organization [WHO] (2016) emphasises the importance of having a cardiovascular disease management toolkit available for healthcare professionals to use when counselling adolescents with congenital heart diseases about reproductive health in order to ensure the transition for adulthood for adolescents with congenital heart disease according to prescribed standards. Concurrently, Amakali and Small (2014) advise that clinical nursing personnel should promote a contextualised rehabilitation programme for children with heart disorders, including counselling and health education, to aid children and caregivers in adapting to and living with the heart condition.

It is critical for the nurses who provide nursing services in the in- and out-patient cardiac department at Windhoek Central Hospital to design a counselling and health education programme that targets the transition of adolescents with congenital heart disease for adulthood. However, in the Cardiac Clinic and Cardiac Unit at Windhoek Central Hospital in Namibia, there is no evidence of a health education programme regarding the transition of adolescents with congenital heart disease for adulthood. Health education programmes regarding transition of adolescents with congenital heart disease for adulthood would aid nurses in providing the required information to the adolescents concerned for a safe transition.

1.2 Background of study

The overall number of individuals living with congenital heart disease in the United States of America was projected to be 1.4 million in 2010, with 1 million children living with Congenital Heart Disease (CHD) (Gilboa et al., 2016). Sable et al. (2011), congenital cardiac disease is difficult and often necessitates long-term care.

Transitioning adolescents with congenital heart disease usually require more advice about social life and life in general than children with congenital heart disease. White and Cooley (2018) suggest that the transition process should not only be limited to adolescents.

It may go on into adulthood, depending on the patient's medical condition and the stage of development can be pushed back. Nurses who work with adolescents who have congenital heart disease must possess a wide range of knowledge and skills in order to effectively care for these patients. Complex knowledge and abilities are required for high-quality clinical practise, consulting, teaching, and case management (Huiju & Jingdi, 2019). The authors contend that nurses' clinical practise skills must be strengthened, especially processing and communication abilities. As a result, nurses should pursue scientific knowledge through research in order to encourage self-care and empowerment among adolescents with CHD.

Between 2003 and 2012, there were 2.5 percent of people with congenital heart disease in South-East Nigeria, (Keates et al., 2017). At the time, South Africa and Namibia both recognised CHD as a major cause of death in children and adolescents, with CHD-related deaths totalling 0.6-0.8 deaths per 1,000 live births, or around 11,000 deaths per year. It was expected that 85% of these children would survive into adulthood since 40% of them could be treated surgically (Keates et al., 2017). According to the Windhoek Central Hospital Cardiac Unit's quarterly report for 2016, there were 461 cases of CHD, and in 2017, there were 817 cases, representing a 44 percent rise from the previous year.

As demonstrated in clinical practise, adolescents with CHD who did not participate in an educational programme at transition had a concerning gap or lack of knowledge about their heart condition, including the name of their heart defect, the reasons for follow-up, the

effects of competitive physical activities, the signs of heart disease progression, appropriate contraceptive methods, and the risks of pregnancy (Ladouceur et al., 2017).

Adolescents who have congenital heart disease should be prepared for medical transition by encouraging their understanding of CHD and self-management and self-advocacy abilities, by a nurse delivering CHD care (Mackie et al., 2019). The European Society of Cardiology recommends that transition discussions begin around the age of 15 and continue until the successful transfer to adult services occurs at roughly the age of 24; however, in some patients, this period may be delayed (Chen at el., 2017). These guidelines also emphasise the need of adapting this timeframe to the adolescent with CHD and their specific needs.

Contraceptive use increases the risk of adverse outcomes in women with CHD, (Abarbanell et al., 2019). Contraceptive efficacy should be weighed against cardiovascular risks, as pointed to by literature. Adolescents with congenital cardiac problems who are educated and utilise an effective contraception method prevent health risk issues (Abarbanell et al., 2019).

Intrauterine devices (IUD) are not recommended for young women with heart problems because they may cause endocarditis, arrhythmias and bradycardia. This can lead to bacteraemia, which can be dangerous (Abarbanell et al., 2019). Since the Implanon method has no side effects, it is the recommended birth control method for the adolescents with CHD at the Windhoek Central Hospital's In- and Out-patient cardiac departments.

Beumgartner et al. (2020) showed that accurate and timely genetic counselling is important because patients with congenital heart disease use drugs that may cause birth abnormalities and other foetal issues.

Furthermore, van Hagen et al. (2017) show that maternal complicated CHD is connected with foetal development retardation and an increased rate of bad obstetric and foetal outcome, and it is critical to emphasise this during counselling to adolescents with congenital heart disease.

1.3 Problem statement

Adult survivors with congenital cardiac defects outnumber children, according to Marino et al. (2012). The birth prevalence of congenital cardiac disease in southern Sub-Saharan Africa is estimated to be around 20/1 000 live births (Lawrence, 2020). In 2016, the Out-patient Cardiac department at Windhoek Central Hospital recorded 461 adolescents with congenital cardiac disease, and in 2017, the number increased to 817, representing a 44 percent rise (Windhoek Central Hospital Cardiac Out-patient quarterly report, 2016 and 2017). Due to advancements in diagnosis, treatment, including surgical interventions, there has been an increase in the survival of children with CHD, resulting in many children with CHD reaching adolescence and adulthood (NHS England, 2016).

As the adolescents with congenital heart diseases reach adulthood, they would engage in social activities which may put them at health risk, such as sexual activities, social behaviors and engagement in strenuous physical activities.

Moreover, over half of these people would develop co-morbidities and residual sequelae as a result of their condition, including endocarditis, arrhythmias, congestive heart failure, and sudden death (Verheugt et al. 2010).

Transitioning adolescents with congenital heart disease usually require more advice about social life and life in general than children with congenital heart disease.

The study by Ladouceur et al. (2017) on the educational requirements of adolescents with CHD indicated that education had a significant influence on health knowledge.

Furthermore, Ladouceur et al. (2017) proposed that a systematic education programme for adolescents with CHD could increase their understanding of the disease and prevent problems.

In addition, the European Society of Cardiology (ESC) Guidelines for the management of grown-up congenital heart disease (version 2010) emphasise the importance of professional health care providers providing early and ongoing transition educational and counselling programmes to patients with CHD, with an emphasis on physical activities, pregnancy, contraception, and genetic counselling (Baumgartner, 2013).

However, research on congenital heart disease has revealed that adolescents with CHD had inadequate to intermediate understanding of their condition (Janssens et al. 2016). Although education is emphasised as a critical component of the transition programme, nurses are identified as being in a unique position to provide this instruction (Moons et al. 2006). While researching this topic, it became clear that Namibia lacked data on nurses' expertise and experiences of preparing adolescents with CHD for adulthood. Given the reported increase of 44 percent of adolescents with CHD by the Ministry of Health and Social Services [MoHSS] (Windhoek Central Hospital Cardiac Out-patient quarterly report, 2016 and 2017), the researcher believes that there is a need for nurses who provide nursing care at Windhoek Central Hospital's In- and Out-patient cardiac departments to provide education and counselling services to adolescents with CHD. Furthermore, in order to address health issues pertaining to transitioning adolescents with CHD, nurses must be knowledgeable about complications prevention, physical activity tolerance, sexuality and heredity, reproductive health issues such as pregnancy and contraception, as well as other sensitive and personal issues.

However, the MoHSS currently does not have a specific educational programme for preparing adolescents with congenital heart disease for adulthood. Furthermore, the lack of a transition preparation programme that focuses on reproductive health education and counselling has resulted in limits and discrepancies in the information provided by nurses to teenagers with CHD. Since some adolescents with congenital heart disease become pregnant in defiance of their prescribed treatment regimens, the researcher noted this. In this regard, there was a need to assess the knowledge and experiences of nurses at the Windhoek Central Hospital's In- and Out-patient cardiac departments in terms of preparing adolescents with CHD for adulthood.

1.4 Goal and objectives the study

1.4.1 Goal

The study's purpose was to explore nurses' knowledge and experiences with preparing adolescents with congenital heart disease for adulthood. The focus was on the role of nurses in educating and counselling adolescents with congenital heart disease about adulthood readiness.

1.4.2 Objectives

The objectives of the study were to:

- Determine the nurses' knowledge on preparation of adolescents with congenital heart disease for adulthood with regard to the prevention of complications, physical activities, sexuality and heredity, contraception and pregnancy planning; and
- Explore and describe the nurses' experience with regards to education, counselling, and preparation of adolescents with CHD for adulthood.

1.5 Significance of the study

New knowledge emerged from the study depending on the study results, which might assist nurses in facilitating the medical preparation of adolescents with CHD for adulthood through the initiation and continuation of education and counselling to individual needs. The findings of this study highlight the importance of having programmes and guidelines to hospital management, which enhance a smooth transition of adolescents with congenital heart diseases to adulthood.

The findings may guide initiatives by the MoHSS, Windhoek Central Hospital management and other stakeholders on nurses' in-service training to initiate effective and efficient education and counselling to the adolescents with congenital heart disease for transition to adulthood.

1.6 Paradigmatic perspectives

As defined by Creswell (2014), a paradigm is a worldview or philosophy that emerges from action, situation, and consequences rather than from an antecedent condition or conditional assumption. Similarly, Brink Van der Walt and Van Rensburg (2016) define a paradigm as a set of assumptions about the basic types of entities in the world, how these entities should interact, and the right methodologies to be used for creating and verifying ideas about these things.

A paradigm, in essence, frames how a topic related to disciplines is perceived and the path that a research endeavour takes. The study was founded on the following meta-theoretical and methodological assumptions:

1.6.1 Meta-theoretical assumptions

A wide range of meta-theoretical assumptions, such as ontological, axiological and rhetorical assumptions are included. The most prevalent nursing metaparadigm, as affirmed by Mc Ewan and Wills (2014), includes the ideas of humans, environment, health, and nursing. This study also made use of meta-theoretical assumptions about people, health, the environment, and nursing.

Adolescents with congenital heart disease who visit the cardiac in- and out-patient department are the subjects of this research.

In addition, adolescent patients with congenital heart disease who are preparing to enter adulthood might be considered healthy if they are in good physical and mental condition. The environment is the cardiac in- and out-patient departments, where clinical care and rehabilitation services are provided to adolescents with CHD, while nursing includes pre- and post-operative care, health education, counselling, International Normalized Ratio training (INR) for adolescents on oral anticoagulation therapy, depending on how well the patient understands the concept, wound care, and follow-up assessments to adolescents with CHD.

Picture 1.1 Nursing Metaparadigms

Source: Wayne (2020)

1.6.2 Ontological assumption

Ontology is defined by Brink et al. (2016) as a systematic set of ideas about reality. Ontology, according to Crotty (2003), is the "examination of what it is to be." It is concerned with the type of world under investigation, the nature of existence, and the structure of reality as a whole. This has served as the foundation for the adoption of the mixed research method for this study, which will allow the constructivist and interpretative approaches to be applied simultaneously.

This study was intended to be descriptive phenomenological in nature. To collect quantitative and qualitative data, the researcher employed a structured closed-ended questionnaire and semi-structured opened-ended interviews, respectively.

Furthermore, this study was carried out in the constructivist tradition. Individuals, according to constructivism, are on a quest for a better knowledge of the world in which they live and work. Individuals form subjective interpretations of their experiences (Creswell & Creswell, 2018). Humans make meaning as they interact with the world they interpret. Open-ended questions were utilised in this study to allow participants to express their thoughts on the transition of adolescents with CHD to adulthood.

1.6.3 Epistemological assumption

Epistemology is a field of philosophy concerned with the study of knowledge. Furthermore, the same authors claim that epistemology is concerned with establishing a philosophical foundation for determining what kind of knowledge is attainable and how it may be ensured that it is adequate and legitimate.

The adequacy and nature of knowledge necessitate that there be a specific method that informs the researcher to seek an answer that is assumed to be true and demonstrates the truth to the research topic (Bashir et al., 2017).

The combination of structured questionnaires and in-depth semi-structured open-ended questions in the interviews ensured the researcher's distance from the participants, ensuring neutrality (Polit & Beck, 2012). Using epistemology, the researcher was able to examine the nurses' knowledge and experiences, as well as define and characterise the process of preparing adolescents with CHD at Windhoek Central Hospital's In- and Out-patient cardiac departments by nurses.

1.6.4 Rhetorical assumptions

The art of persuading is known as rhetoric (Brannen & Coram, 2008). This research's rhetorical framework was how the researcher persuaded the respondents that the investigation was useful. The overarching rhetorical assumption of this research is that it was not seeking the truth or a panoptic view of reality, but rather reporting reality through the eyes of research participants. This assumption was utilised to ensure that the researcher delivered the true facts of the investigation throughout the participant interviews.

In this study, nurses at Windhoek Central Hospital's in- and out-patient cardiac department who give direct nursing care to adolescents with congenital heart disease described their experiences in preparing these adolescents for the transition to adulthood.

This meant applying the rhetorical premise in the study, which increased the validity and trustworthiness of the results by addressing difficulties that could not be addressed with quantitative data, and vice versa.

1.8.5 Methodological assumptions

According to Creswell (2014), methodological assumptions are the assumptions formed by the researcher about the procedures utilised in the process of qualitative research. Creswell and Clark (2017) also note that the data collection, evaluation, inference, and reporting processes are all part of a research design.

The knowledge and experiences of nurses who provide direct clinical care to adolescents with CHD at Windhoek Central Hospital's In- and Out-patient cardiac department were assessed using a mixed method approach. This design comprises the researcher implementing and upholding each thread independently during analysis or while drawing conclusions, and then converging the data. To the contrary, Jogulu and Pansiri (2011), argue that quantitative research has primarily contributed to the development of validity and reliability, whereas qualitative research has contributed significantly to the development of subjective interpretations of individuals' experiences and, consequently, the credibility of the data.

1.7 Definitions

Adolescence: Adolescence is defined by the World Health Organization (2006) as the period between the ages of 10 and 19. It is also commonly recognised as a stage of life that lasts from puberty through maturity. Adolescence is a phase of rapid growth and change that bridges the complicated transition from infancy to adulthood (Wong et al., 2010).

Adulthood: The period in the human lifespan in which full physical and intellectual maturity have been attained (Britannica, 2018).

Congenital Heart Disease: Is the structural defect of the heart as a result of abnormal embryonic development of a normal structure or failure of such structure to progress beyond an early stage of embryonic or foetal development (Fauci et al., 2008).

Experiences: This is defined by the Dictionaries (2019) as the knowledge that is derived from direct exposure and participation in the event and circumstances that expand and affirm such knowledge, and to gain this experience, a person needs to live through those events.

Nurses: Faan (2005), views a nurse as a person trained in the scientific basis of nursing, meeting prescribed standards of education and clinical competence to provide services that are essential to or help in the promotion, maintenance and restoration of health and well-being.

Preparation: The Dictionaries (2019) implies as making arrangements or a process of getting an individual ready for action or for a particular experience or the stage of life.

Transition: Is a development or evolution from one form, stage or style to another. Medical transition is a process of development from a paediatric medical system to an adult one (Sable et al., 2011; ACC/AHA, 2011).

1.8 Chapter outline

This study is presented in five chapters, which are outlined as follows:

Chapter 1: Background and introduction of the study

Chapter 2: Literature review

Chapter 3: Research design and methodology

Chapter 4: Presentation of the study results

Chapter 5: Discussions, conclusion, recommendations, and limitations.

1.9 Chapter summary

This chapter presented the introduction and background of the study, problem statement, goal and objectives of the study, and the significance of the study. The limitations and delimitations of the study were discussed. Applications of paradigmatic perspectives were explained. The next chapter discusses the existing literature related to this study.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

The evaluated literature consists of a review of significant concepts, studies, and theories linked to the current investigation. The review of similar studies was influenced by the study's purpose and objectives. Brink et al. (2016), literature review included locating, reading, comprehending, and drawing conclusions about published research and hypotheses about the issue under study, as well as organising and presenting the review. Related research on nurses' knowledge and experiences with preparing adolescents with congenital heart disease for adulthood were consulted, with a focus on publications from 2000 to 2021.

The material includes text books, the MoHSS Guidelines and registers, medical publications and papers, thesis and dissertations, and findings from other research studies on the transition to adulthood for adolescents with congenital heart disorders. The goal of the literature review was to determine recorded nurses' knowledge and experiences with education and counselling for adolescents with CHD transitioning to adulthood. A literature review of the study's primary concept was undertaken in order to draw conclusions about the current investigation, as stated in the following sections.

Key concepts for this study which guided the literature review are: congenital heart disease, adolescence, transition and preparation.

2.2. Theories regarding preparation of adolescents with Congenital Heart Disease for transition to adulthood

The study adopted the theory of interpersonal relation and the transition theory in nursing to explore the experiences in the CHD unit at Windhoek central hospital.

2.2.1 Theory of interpersonal relation

Preparation refers to making preparations or a process of preparing an individual for action, a certain experience, or a stage of life (Arabacı, & Taş, 2019). A formal transition program's goals, according to Sable et al. (2011), are to prepare young adults for care transfer. It should offer continuous and comprehensive health care that is patient-centred, age and developmentally appropriate, and adaptable.

It should incorporate age-appropriate medical condition education as well as foster communication, decision-making, self-care, and self-advocacy skills (Nyström, 2007). The preparation or transitional programme should promote increased personal and medical independence, as well as a better sense of control over one's health, healthcare decisions, and psychosocial environment (Peplau, 1997). The ultimate goal of a transition programme is to improve young patients' quality of life (QOL), life expectancy, and future productivity (Sable et al., 2011; ACC/AHA, 2011). As a result, for adolescents with congenital heart disease to successfully transition to adulthood, nurses must use an interpersonal relationship paradigm.

In the theory of Interpersonal Relations proposed by as Peplau (1952/1988a) (D'Antonio et al., 2014), nursing is viewed as a therapeutic and inter-personal process. The authors emphasise that the therapeutic nurse/client connection consists of two components: professional skills and client requirements, which serve as the cornerstone of nursing practise. Furthermore, the theory discusses the connection between the nurse and the patients, stating that both parties must contribute based on their sentiments, values, attitudes, goals, and understanding of the subject matter. By transmitting and receiving information toward a similar objective, this communication plays a vital role in maintaining effective nursing care (D'Antonio et al., 2014). This theory's main aspect emphasises the

objective of nursing as assisting others in identifying their felt issues through the formation of therapeutic relationships. Peplau (1952/1988a) highlights various tasks that nurse play, including resource person, teacher, leader, advocate, and counsellor (D'Antonio et al., 2014).

Therefore, in this study, the theory of interpersonal relation was applied to explore and describe the characteristics of nurses which are deemed necessary to facilitate efficient and effective therapeutic and inter-personal process in caring for adolescents with congenital heart diseases transitioning to adulthood. In light of this study, nurses should educate adolescents with congenital heart disease using the following principles: "... a formal transition programme should prepare adolescents for transfer of care." It should provide continuous, patient-centred health care that is age and developmentally appropriate, adaptable, and thorough.

Moreover, a transition program for the adolescents with CHD should include age-appropriate medical condition education as well as skills in communication, decision making, self-care, and self-advocacy" (Sable et al., 2011; ACC/AHA, 2011). Nurses should also be resource people who counsel and teach teenagers with congenital heart disease about their health requirements as they transition to adulthood.

Wong et al. (2010), content that adolescence is a developmental stage of profound physical and psychological change during which an individual develops a sense of personal identity. In the current study, counselling entails preparing the adolescent with CHD in terms of sexuality, reproductive health and heredity, physical activities, medication and treatment complications, and job choice (Sable et al., 2011).

Sable et al. (2011) and the American College of Cardiology and American Heart Association [ACC/AHA] (2008) Guidelines for the Management of Adults with CHD, the transition process should begin at the age of 12 to prepare the patient for transfer to adult care.

To ensure a smooth transition, professionals must collaborate with families while encouraging the young person to take greater charge of their own health care.

A comparable study conducted by Van Deyk et al. (2010) revealed that a score on the LKQCHD of 50% - 80% represented intermediate knowledge by a patient; a score of 50% demonstrated basic knowledge on the four LKQCHD categories; and a score of less than 50% demonstrated poor knowledge by a patient (Hartman, 2015).

The domains of prevention of complications, physical activities, sexuality and heredity, and contraception and pregnancy planning for female adolescents with congenital heart disease were adopted for the current study, and a relevant literature review was conducted to place the current study in the context of existing literature.

2.2.2 The transition theory in nursing

The transition theory in nursing as developed by Schumachert and Meleis (1994) focus on human experience, the responses, and the consequences of transition on the well-being of people (Pegg, 2018). In this transition framework, the goal in nursing is to help people go through a healthy transition including mastery of behaviour, sentiment, cues and symbols associated with new roles and non-problematic processes, to enhance healthy outcomes (Meleis, 2018). Transition is phenomenon often triggered by critical events and changes in individuals or environment.

Transition theory is used as a framework to understanding the nurses' knowledge and experiences of nurses regarding the preparation of adolescents with CHD for adulthood at Windhoek Central Hospital.

2.2.3 Theory synthesis

A theoretical framework can aid in the creation of effective programs by providing a thorough knowledge of the many phases and processes associated with transition.

The two theories were adopted not only to give the study grounding, but also to ground study findings. The transition theory was adopted as it allows nurses to reflect the experiences of nurses who work with adolescents with CHD. The theory's application is beneficial in guiding comprehension of the contemporary issues that nurses face. On the other hand, the theory of interpersonal relation was adopted as the researcher acknowledged that many nursing problems, according to Peplau, can be solved by developing strong interpersonal relationships.

2.3 Nurses' knowledge of preparation of the adolescents with congenital heart diseases to adulthood

A formal medical transition procedure by health care for adolescents with CHD should include providing continuous health care that is patient-centred, age appropriate, flexible, and thorough (Sable at el., 2019). While this is correct, Valles et al. (2015) emphasised that a transition for adolescents with CHD intends to give knowledge about self-care management, psychological, communication skills, medical condition education, medical independence, and employment needs of young patients with CHD.

Nurses' understanding of caring for patients with CHD is critical in assisting adolescents in fulfilling the complicated needs of living with CHD (Shackleford, 2018). Furthermore,

Shackleford (2018) emphasises the need of nurses in clinics and hospital settings in implementing educational programmes and interventions to improve the transition to adulthood.

Valles et al. (2015), share that the main goal of preparing adolescents with congenital heart disease is to enable them to take control of their illness during transition by giving them with all the knowledge they require.

As a result, nurses must get more complex knowledge about congenital heart disease as well as the necessary different processing abilities in order to care for transitioning adolescents with CHD (Sable et al., 2011). Although not specific to adolescents with congenital heart diseases, the literature suggests that clinical nursing staff should facilitate a contextualised rehabilitation programme for children with heart disease, including counselling and health education, to help children and caregivers adopt and live with the heart disease (Amakali & Small, 2014).

Moceri et al. (2014) conclude that in the absence of a formalised programme to help patients through transition, services may be delayed or incorrect for the patients' stage of transition. Overall, transition preparedness refers to the process of preparing adolescents and those involved in their medical care to enter, continue, and finish their transition through the life courses (Gilleland et al., 2012). As a result, nurses must respond to the need to form important partnerships on a local, regional, and worldwide scale in order to facilitate and improve the management of patients with congenital and acquired cardiac disease (Zühlke et al., 2013).

Meanwhile, Saidi et al. (2009) emphasise the importance of collaboration between health care providers skilled in various fields related to transitioning to adulthood, such as adult

management of congenital heart disease and obstetricians or gynaecologists needed to provide proper care and counselling for adolescents with CHD transitioning.

The current study emphasises the importance of nurses using a holistic approach when preparing an adolescent with CHD for adulthood by concentrating on critical components of preparation such as complications prevention, physical activities, sexuality, heredity, contraception, and pregnancy.

2.4 Nurses' knowledge of disease and treatment for adolescents with Congenital Heart Disease

The qualitative study by Zühlke et al. (2013) emphasises the necessity of training, sustaining, and retaining a sufficient number of health workers for the provision of treatment to adolescents with congenital heart disease in Sub-Saharan African nations. Furthermore, Lantin-Hermoso et al. (2017) indicate that patients with CHD who require non-cardiac surgery benefit from rigorous evaluation and multidisciplinary planning, which includes a complete grasp of their anatomy and physiology, with input from their primary care practitioner.

By educating patients about medicine and providing follow-up care, nurse coordinators can help patients better adhere to their treatment regimens, (Sillman et al., 2016). Understanding the indications for anticoagulation, common INR levels for varied indications, educational requirements, and precautions is crucial in offering guidance. Patient education by nurses should include dietary advice (the effect of vitamin K-containing foods on INR), adherence and interactions with other medications, and the importance of timely INR testing and requesting the result (the patient should be aware of the most recent INR reading) (Sillman et al., 2016).

Furthermore, Sillman et al. (2016) contend that the nursing coordinator should address the rationale for initiating new drugs, their side effects, and any barriers to adherence, which may be due to financial restrictions. Fear of side effects, as well as a lack of knowledge about how to take the prescription, should be addressed. Similarly, nurses should adapt patient monitoring based on the severity of symptoms and the intensity of therapy.

This study emphasises that adolescents with CHD are informed on various types of drug side effects, and patients receive adequate information from nurses on when to seek medical assistance when side effects arise.

However, 47.2 percent of study participants were unaware that drugs should be discontinued immediately if an adverse effect arises, which is a considerable amount of individuals who were not told.

2.5 Nurses' knowledge of measures to prevent complications for Adolescents with Congenital Heart Disease

Complication is a difficult clinical term to grasp. Complications are defined by scholars as the development of an illness as a result of another disease or symptoms (Mandalenakis et al., 2016). Pneumonia, heart failure, pulmonary hypertension, infective endocarditis, hypoxia attacks, and brain abscesses are all common sequelae of congenital heart disease. The consequences of congenital heart disease listed above may be accompanied by bacterial endocarditis (Biering et al., 2015).

Further complications in these patients include gastroesophageal reflux, aspiration risk, osmotic diarrhoea, constipation, and, in rare cases, necrotizing enterocolitis. Nurses' key responsibilities include the prevention, identification, and management of infections in adolescents with CHD (Lantin-Hermoso et al., 2017).

Furthermore, da Silva et al. (2007) contend that nurses must be well-versed in the pathophysiology of CHD in order to comprehend consequences such as cerebral thrombosis, which is linked to an increase in red blood cells and, as a result, an increase in blood viscosity. This also covers heart failure caused by structural abnormalities in the heart and pulmonary hyperaemia. Finally, there is the possibility of infective endocarditis, which is accompanied with endocardial damage and infection.

According to the patient's condition, nurses should facilitate living styles that are appropriate for the patient's activity.

In addition, nurses should conduct infection-prevention measures and provide self-protection advice to children and parents. Furthermore, da Silva et al. (2007) argue that nurses should educate patients about the importance of avoiding contact with patients who have infectious disorders. As a result, the ward should be ventilated, and any infection should be treated aggressively.

The competence of nurses who prepare adolescents for the transition to adulthood about the prevention of probable issues was examined using guidelines from the relevant literature.

2.5.1 Nurses' knowledge of physical activities for adolescents with Congenital Heart Disease

The World Health Organization (2006) created a Global Physical Activity Questionnaire for adolescents with congenital heart disease that is based on the following domains of activity at work: travel to and from locations, and recreational activities. This questionnaire comprises of 15 items that examine the physical activities of Adolescents with CHD.

Longmuir et al. (2013) emphasise the need of a physically active life and positive behaviours to help with cardiorespiratory or musculoskeletal fitness and the well-being of children and adolescents with CHD, emphasising that psychical activities should be reduced only when there are arrhythmias.

For adolescents with congenital heart disease, Kwon et al. (2019)'s quantitative study recommends that nurse interventions to increase self-efficacy, which has a favourable link with physical activity, be developed. Bredy et al. (2018), on the other hand, state that physical activities should be promoted in an individual's lifestyle while considering gender, illness severity, and the 2017 New York Heart Association (NYHA) classification into account.

To increase the patient's quantity of physical activity, nurses should be informed of the specific diagnosis of Adolescents with CHD and be familiar with appropriate kinds of physical activity based on the patient's condition and physical attributes. A modified intervention would allow nurses to provide patient-specific advice on physical activity. Although not particular to teenagers with heart disease, Sable et al. (2011) emphasise that the degree of cardiac problems and disease are crucial factors that influence the decision about the type of physical activities. As a result, the purpose of this study was to examine nurses' understanding of the types and extent of physical activities that adolescents with congenital cardiac disorders should engage in. As a result, the majority (70.6 percent) of current research participants recommended that adolescents with CHD in a transitional time engage in physical sexual activities only if they felt competent of doing so.

2.5. 2 Nurses' knowledge of reproductive issues for Adolescents with Congenital Heart Disease

Sexuality, heredity, contraception and pregnancy planning for the female patients are important factors of consideration for transition to adulthood of adolescents with congenital heart disease.

2.5.2.1 Sexuality and heredity

The study by Sable et al. (2011) emphasises the significance of transitional care programmes that involve routine sexual health risk screening, evaluation, and prevention counselling. As a result, Sable et al. (2011) advocate for age-appropriate reproductive health information on sexual health, contraception, and screening for signs of high-risk behaviours that could expose adolescents with CHD to sexually transmitted infections and pregnancy.

The genetic aetiology and recurrence risk of a congenital cardiac abnormality may include hereditary or sexually transmitted disease, however this varies from person to person.

It is critical that the adolescent's congenital heart defect and inheritance patterns be addressed as they reach reproductive years so that awareness of inheritance patterns for congenital heart problems and the ability to make educated decisions about reproduction can be created.

These studies have the potential to identify the danger to the offspring of teenagers with congenital cardiac disorders, and the data can be delivered at an appropriate developmental time. A genetics study combined with a complete clinical evaluation may provide information that helps the teenagers involved, their families, and their care providers

regarding decisions on sexual behaviours and reproduction for adolescents with congenital heart disease (Zubani et al., 2017).

According to Sable et al. (2011), the majority of teenagers report having had sexual interactions by mid to late adolescence. According to the National Survey of Family Growth, 47 percent of female teenagers and 46 percent of male adolescents had engaged in sexual intercourse at least once. Approximately one-fourth of all youth reported having had intercourse by the age of 15, with the average age for first sexual intercourse encounter for girls being 17 years and 16 years for boys. One study found that kids with chronic illnesses had more early sexual interactions than those in a control group (Abma et al., 2017). Furthermore, according to data collected from sexually active patients, 72 percent of 16-to-18-year-olds were likely to have engaged in other risky sexual behaviour, such as having two partners in a three-month period, using doubtful birth control, or using drugs or alcohol before sex (Abma et al., 2017). In the case of teenagers with congenital heart disease, these sexual behaviours are likely to increase the risk of problems.

As a result, the purpose of this study was to examine nurses' understanding of the impact of sexual behaviours on the health of adolescents with congenital heart problems.

As a result, the data show that the majority of nurses (70.6 percent) are aware that adolescents with congenital heart disease in the transition phase may engage in physical sexual activities only if they believe they are capable of doing so.

2.5.2.2 Contraception and pregnancy planning for the female adolescent with congenital heart disease

Sable et al. (2011) emphasise the significance of transitional care programmes that incorporate preventive counselling and routine sexual health risk screening.

Sexuality, contraception, and reproduction are all issues that should be included in a transitional care programme for teenagers with CHD. Adolescent females with congenital heart disease (CHD) need to have their contraceptive method chosen according on their age, the severity of their condition, and any surgical or pharmacological interventions they may have had, as well as any postoperative residua and sequelae they may have had.

The authors also emphasised the necessity of allowing adolescents with congenital heart disease to express their concerns with nurses. As a result, there is an urgent need to address the concerns of pregnancy and contraception. Education and awareness about the danger of maternal foetal obstetrical complication, as well as the procedures that adolescents with CHD must adhere to, are not addressed.

However, the World Health Organization (2009) recommends that females who have had successful surgical correction for minor lesions such as atrial septal defects, patent ductus arteriosus, and ventricular septal defects with no sequelae have no constraints on their contraception choice. Transitional care programmes for adolescents with congenital heart disease should also emphasise the significance of early counselling and medical examination.

The current study found that the most important topic addressed during family planning education is the avoidance of pregnancy in adolescents with CHD, as this is a significant risk. However, when it came to the instance of adolescents with CHD becoming pregnant, there was little discussion about it.

If an unintended pregnancy occurs despite contraception guidance and education, a well-coordinated pregnancy and delivery plan must be developed, one that includes not only the

obstetrician and cardiologist, but also clinical social work and psychological services personnel to assist and support the patient in making the decision to keep the baby or place the baby in adoptive services (Sable et al., 2011).

It was determined whether or not nurses were knowledgeable about the recommended contraceptives for adolescents with congenital heart problems in the current investigation. The data demonstrated that regardless of congenital cardiac problems, the Implanon is the recommended option of contraception for teenagers with CHD in the transition phase at Windhoek Central Hospital In- and Out-patient cardiac department.

Burström et al. (2017) qualitative study indicated that pregnancy might have serious impact on the health of the adolescents with CHD. Moreover, the author stressed that the adolescents' level of maturity plays an important role when discussing pregnancy and contraceptive choice with the adolescents with CHD.

2.6 Nursing care of the adolescents with congenital heart disease transitioning to adulthood

Adolescents and adults with CHD may suffer serious mental and physical health implications if they do not receive proper treatment; therefore, in the absence of an organised programme in place to support adolescents through the transition to adulthood, care may be delayed or inappropriate (Goossens et al., 2014).

Nurses must have a thorough grasp of the impacts of congenital heart disease in order to process different skills and improve nursing care. Patients require self-regulation and psychological counselling, and nurses should assist patients as much as possible in this respect (Huiju & Jingdi, 2019).

Furthermore, nurses should design a living system that is appropriate for patient activities based on the patient's condition, while also taking precautions to prevent infection and educating adolescents with congenital heart disease about self-protection (Sable et al., 2011).

2.7 Nurses' experiences with regards to education about preparation of adolescents with congenital heart disease

Sable et al., (2011) state that a child's transition schooling begins between the ages of 12 and 14 and continues until they are 18 to 20 regardless of whether they are transferred into adult care. Adolescents with congenital heart disease need to be properly educated about their medical condition and given the opportunity to practise communication, decision-making, self-care, and self-advocacy skills in order to successfully move into adulthood.

Furthermore, adolescents with congenital cardiac illnesses should be educated on the transitional program's basic ideas, which should be discussed over a minimum of two visits for older adolescents (Sable et al., 2011).

Sable et al. (2011) is of the view that the core concepts of the transitional programme for adolescents with congenital heart diseases should maximise the adolescents' lifelong functioning and potential through the provision of high-quality and developmentally appropriate health care services that continue uninterrupted as the individual transitions from adolescence to adulthood.

During the transition period, nurses are critical to the smooth and successful administration of education in children with congenital heart disease and their caregivers (Deanfield et al., 2003).

The commencement and continuation of education from the moment of diagnosis to successful transfer is critical to the success of the transitioning programme, as is the supply of written material to support vocal knowledge (Amakali & Small, 2014; Kennedy, 2008). Nurses are critical in this teaching process because they prioritise the individual managing and living with an illness in their nursing care (Van Deyk et al., 2004).

Yang et al. (2012) discovered that only 61 percent of 62 individuals with congenital heart disease had a good comprehension of their heart problems, and that their understanding was informed by the instruction they got while attending a specialised congenital heart disease centre. Despite the study's finding of a high risk of morbidity, less than half of adults with congenital heart disease could recognise the signs of heart failure; in fact, just 10% recognised the key symptoms of endocarditis (Yan et al., 2012). In contrast, a qualitative study conducted by Veldtman et al. (2000) on 63 adolescents with congenital heart disease discovered that only 33% of the participants had a good understanding of their heart disease and could show the location of their defects on a diagram, while 67% had an incorrect understanding of their defects.

Similarly, research by Veldtman et al. (2000) and Yang et al. (2012) discovered that while 90 percent of their participants had a strong understanding of their previous treatments, 25 percent were uninformed of the potential negative effects of their prescriptions.

As a result, a lack of education is seen as one of the primary reasons why more than half of adults with congenital heart disease did not receive follow-up treatment (Yang et al., 2012). The outcomes of the preceding research point to insufficient supply of health information to cardiac patients. Adolescents with congenital heart problems may be affected by this trend.

As a result, the current study examined nurses' experiences with preparing adolescents with congenital heart problems for adulthood.

2.8 Nurses' experiences with regards to counselling of adolescents with congenital heart diseases

Counselling is defined by the World Health Organization (2006) as a time-limited procedure that uses contact to assist people deal with their problems and respond appropriately to specific obstacles in order to create new coping skills. In medical contexts, the counselling process is a genuine intervention that consists of a quality contact between the counsellor and the patient, which is distinguished by the counsellor's ability to empathise with the patient's interior world. According to the current study, counselling entails preparing the adolescent with CHD in terms of sexuality and heredity, physical activities, medication and treatment complications, career choice, and reproductive health (Sable et al., 2011).

According to Sable et al. (2011), the main goal of transitioning adolescents with congenital heart disease to adulthood counselling is to empower the adolescents to take ownership of their illness management by providing them with all the information they need to successfully transition to adulthood. Furthermore, Sable et al. (2011) advocate that medical follow-up and counselling programmes address non-cardiac medical problems and surgical needs such as psychosocial issues, aesthetic issues, medical and drug interactions, anticoagulation, antibiotic prophylaxis and dental care, exercises and sport participation, contraception and pregnancy, new symptoms or acute illness, travel, education, employment, insurance, diet and genetic counselling.

The information provided above should provide them with a thorough understanding of their disease, how to recognise issues related with their disease, and the significance of making healthy lifestyle choices. Girouard and Kovacs (2020) illustrated that employment and/or career choice outcomes vary by the type, severity of CHD and the neurodevelopmental strengths and weaknesses the adolescents has. Furthermore the authors' highlights that ongoing career guidance to the adolescents with CHD is advised to making assumptions and placing artificial limits on academic and career choice.

Nutrition counsellors, Burstom et al. (2019) and Huiju and Jingdi (2019), agreed that counselling should facilitate nutritional support to stimulate growth and development while taking dietary choices into account for health promotion reasons. To improve their physical fitness, transitioning adolescents with congenital heart disease should consume a high protein, high vitamin, and high calorie diet.

2.9 Chapter summary

Using the research objectives as a guide, this chapter provided an overview of the theoretical framework and associated investigations. The examination and debates of the literature review were dominated by the core ideas of adolescence, congenital heart disease, preparation, counselling, and transition. The overarching goal of this literature review was to situate the current study within the context of existing and relevant literature on nurses' knowledge and to describe nurses' experiences with the preparation, education, and counselling of adolescents with congenital heart disease as they transition to adulthood. The third chapter describes the research approach that was employed to carry out the investigation.

CHAPTER THREE

RESEARCH METHODS

3.1 Introduction

Chapter two provided a full overview of the research topic, a detailed analysis of the current literature was offered. This chapter explains the research methods utilized to answer the questions and objectives of the study project. A mixed method research design was used. In the qualitative phase, a research instrument with open-ended questions was used. The qualitative phase/approach aimed to learn more about the experiences of nurses who work in the Windhoek central hospital's CHD unit.

The broad strategy a researcher uses in carrying out a research endeavour, (Leedy & Ormrod, 2015), is described as research methodology. It encompasses the entire research process, from identifying a question or problem to formulating a strategy for solving it. It comprises the study design, demographic, sample size, research tools, and validity and reliability control procedures, as well as research ethics.

3.2 Research design

The techniques for collecting, analysing, interpreting, and reporting data in research investigations are included in research design as a plan or strategy to achieve research objectives (Creswell, 2014; Mcdaniel & Gates, 2014). The researcher used a convergent parallel mixed method design to determine and describe nurses' knowledge and experiences regarding the transition of adolescents with congenital heart disease for adulthood at Windhoek Central Hospital's In- and Out-patient cardiac departments, with an emphasis on the nurses' educational and counselling roles to the adolescents with congenital heart disease.

In addition, the researcher used a convergent parallel mixed method design where quantitative and qualitative data were merged in order to get a complete picture of the knowledge and experience of nurses at the Windhoek Central Hospital's In- and Out-patient cardiac departments about how to help these adolescents become adults. The purpose of collecting both quantitative and qualitative data was to gain a better understanding of the research problem than just using quantitative or qualitative data (Creswell, 2014).

3.2.1 Convergent parallel mixed method

A convergent parallel mixed method enabled the researcher to collect both quantitative and qualitative data concurrently and analysed them individually. The findings were then compared in order to validate the knowledge and experience of nurses regarding the preparation of adolescents with congenital heart disease for adulthood at Windhoek central hospital. The researcher then combined the data. This was done by comparing the findings of the two perspective side-by-side. Quantitative data provided a broader insight about nurses' knowledge regarding preparation of adolescent with congenital heart diseases for adulthood. The themes were identified from qualitative data and then compared them to the quantitative findings to explain/ justify the quantitative the data. To convert the data, a researcher can translate the qualitative issue into quantitative variables (Creswell, 2014).

3.2.2 Mixed methodology design

Mixed method research is employed in a range of scientific fields, including sociology and education, as well as the health sciences (Bryman, et al. 2008). Mixed method research is considered a method rather than a methodology by (Creswell, 2014; Johnson, & Onwuegbuzie, 2004). The researcher employed a mixed-methods strategy. Primary data

was collected using both quantitative and qualitative methods. The researcher integrated both forms of information.

The researcher used this method of inquiry to combine quantitative and qualitative approaches to gain a better understanding of a studied problem than each methodology could provide alone. Mixed methods researchers feel that testing and confirming approaches in a single study is vital (Johnson, & Onwuegbuzie, 2004). The employment of both quantitative and qualitative approaches, as well as the integration of diverse methodologies, is referred to as "mixed methods" (Bryman, et al. 2008; Creswell, 2014). Mixed technique studies were also known as multi-strategy research (Creswell et al. 2013. Tennis 2008; Creswell, 2014).

When quantitative and qualitative philosophies are combined in a single study, it is known as mixed methods research (Johnson et al. 2007). According to (Johnson et al. 2007; Creswell, 2014), mixed method research is a new research methodology in the social and human sciences. Creswell, (2014) agrees, viewing mixed method research as a third paradigm that supplements standard quantitative and qualitative research approaches. A dispute between quantitative and qualitative researchers regarding which method was superior led to mixed methods research (Johnson, & Onwuegbuzie, 2004; Bryman, et al. 2008; Creswell, 2014). Mixed methods research has many definitions, but they all revolve around the use of both quantitative and qualitative data.

The main tenet of mixed methods research is that multiple types of data should be collected using various strategies and methods in ways that reflect complementary strengths and non-overlapping weaknesses, allowing a mixed methods study to provide insights not possible

with only quantitative or qualitative data (Creswell, 2014). As a result, this study used a mixed methods approach.

The convergent parallel mixed method design was chosen because it allowed the nurses' knowledge and experiences to be easily integrated during the assessment, explaining and systematically deciding the process of preparing adolescents with CHD for adulthood. It also provided study participants a voice and verified that the study conclusions were based on their personal experiences.

3.2.2.1 Justification of a Two-Phase Study

The researcher is aware of Yardley and Bishop's (2008) contention that no consensus exists on the best data summarizing strategy. There is no single method of study that can find absolute truth; all methods provide for imperfect representations of reality. As a result, as (Morgan, 2014) points out, the fundamental purpose of using both methodologies is to maximize one's capabilities while increasing the performance of the other (sequential contributions). Both methodologies, on the other hand, are commonly considered to be necessary in scientific investigation. Others say that taking a practical approach isn't an option. The study's goal was to figure out how to explain social phenomena. The study style (quantitative/qualitative) determines the sort of data collected and the methods of analysis applied. There is a scarcity of adequate data on preparation of adolescents with CHD for adulthood by nurses in Namibia.

The research employed an objective, methodical, and formal quantitative procedure. Relationships/associations, as well as cause and effect interactions between variables, are described and investigated using numerical data. A quantitative method was appropriate for this inquiry because numerical data was collected and statistically examined.

Furthermore, using the quantitative method, the findings of this study might be extrapolated to a larger population.

The qualitative research used an open-ended and conversational communication strategy to obtain data (Creswell, 2014). This study benefited from a qualitative method since it helped researchers to better understand how participants make decisions, which could aid in the creation of health research results. One-on-one interviews were employed in this study as qualitative research approaches.

The study's research location has been limited to the Namibian context. Quantitative and qualitative techniques can work in tandem and complement one another, allowing for more versatility.

Quantitative and qualitative research methodologies are increasingly being used in investigations (Yardley & Bishop, 2008). Each research method has its own set of benefits (Morgan, 2014). Due to the complexities involved, combining research approaches should be done with caution. Qualitative methods such as open ended interviewing and observation are used to perform inductive, subjective, contextual research. On the other hand, quantitative research relies on surveys that are rational, objective, and generalizable. Although mixed methods research is still in its infancy, both strategies provide robust, well-developed matching as well as related research processes and procedures (Morgan, 2014).

3.2.2.2 Challenges of mixed method

Mixed methods studies combine data from different methodologies and analyze it. Both paradigms generate a range of views or viewpoints, but each imposes its own limits (Bryman et al., 2008; O'Cathain, 2010). According to 'Purists,' these philosophies could not be compared.

Purist philosophers are regularly admonished for failing to understand the creativity and thoughtfulness required while employing both techniques (Bryman et al., 2008). When the two methods are combined, new and fascinating perspectives on the world emerge.

When merging quantitative and qualitative data in a single study, there are four main concerns to consider (Johnson & Onwuegbuzie, 2004).

The first problem to solve is sampling. Each method has its own set of example concerns to deal with, ending in the challenge of reading words and numbers with representativity. The second issue that has been discovered is that of validity. When a researcher's conclusions are regarded untrustworthy, the third challenge, legitimation, arises, and the researcher is unable to make inferences that can be proven, dependable, transferable, and trustworthy. The final challenge is integration, which requires the researcher to select data consolidation strategies. The main concern of the researcher is deciding how much weight to give either group of data. The fourth problem is one of politics, which arises from the application of both qualitative and quantitative approaches. Persuading people that the use of opposing strategies can be contrasted demands a certain amount of political expertise.

In a mixed method approach, if the quantitative findings are dominant, contributions from the qualitative phase may be lost if the differences are neglected (Yardley & Bishop, 2008). Using a combination of strategies isn't always the ideal option; it all depends on what you're trying to achieve. One strategy is always the better in the great majority of circumstances (Morgan, 2014). By creating a well-thought-out response to the reasons for creating a study design that is suitable for its intended application.

Six issues in the use of mixed methods research in the social and behavioural sciences remain unresolved, including (a) terminology and basic definitions used in mixed methods research, (b) utility of mixed methods research, (c) paradigmatic foundation for mixed

methods research, (d) design issues in mixed methods research, and (e) issues in producing conclusions (Tashakkori & Teddlie, 2003). The researcher verified credibility and trustworthiness for the qualitative component and validity and reliability for the quantitative part to ensure data quality and study findings were not harmed.

3.3 Quantitative data collection phase

De Vos (2011) described quantitative research as an investigation into a social or human problem based on the testing of a theory made of variables by gathering numerical data and analysing it using statistical methods to see if the theory's predicted generalizations are true. It is a method of investigation in which the researcher uses methods of investigation such as experiments and surveys to collect data on present instruments that produce statistical data (Creswell, 2014).

3.3.1 Descriptive design

The purpose of a descriptive research design is to gather data that can be presented numerically or as individual opinions (Burns & Groove, 2011). The benefit is that it allows a researcher to collect and analyse data using a variety of methods. According to the applicable domain of Leuven's Knowledge Questionnaire for Congenital Heart Disease, the researcher used a descriptive design to determine and describe nurses' knowledge on the preparation of adolescents with Congenital Heart Disease for adulthood at Windhoek Central Hospital. Therefore, quantitative data were collected in the following applicable domains: (1) prevention of problems; (2) physical activities; and (3) sexuality and heredity; and (4) contraception and pregnancy planning for the female adolescent with congenital heart disease (Moons et al., 2001).

3.3.2 Qualitative data phase

A qualitative study, according to Creswell (2014), is an investigation of a social or human problem focused on the construction of a comprehensive and holistic image using words and undertaken in a natural setting. It emphasizes evaluating and understandings through attentively examining people's words, behaviours, and records.

3.3.2.1 Phenomenological approach

Phenomenology is a type of qualitative research that focuses on how people have similar experiences with a group of people who live in the same place. Fundamentally, what you're trying to do is come up with a way to describe the nature of the thing you're studying (Creswell, 2014).

The researchers used a phenomenological approach to explore and describe the nurses' experiences with regard to preparing, educating, and counselling adolescents with Congenital Heart Disease as they transitioned for adulthood. In addition, it was decided to measure, describe, and interpret the lived experiences of nurses in the in- and out-cardiac departments with reference to the transition of adolescents with Congenital Heart Disease (Creswell, 2014).

3.4 Research setting

The study was carried out at the in-patient and out-patient cardiac departments of Windhoek Central Hospital. Windhoek Central Hospital is a referral hospital located in Windhoek, Namibia's capital city. The cardiac department is the state's only cardiac facility, and it serves as a referral hospital for all cardiac conditions and illnesses, including cardiac catheterization, open heart surgery, echocardiogram, electrocardiogram (ECG), and INR training.

Both objectives of the research were accomplished by collecting data at Windhoek Central Hospital's in- and out-patient cardiac departments, as the objectives are context-specific to this department.

Figure: 3.1: Windhoek Central Hospital (Source: (Ngatjiheue, 2020)

3.5 Population

It has been suggested that the term "study population" refers to an individual or group of individuals or objects that have some common qualities with the researcher's focus. The study population should be carefully characterized in terms of person, location, time, and any other criteria deemed important to the research (Jourbert & Ehrlich, 2007). In the case of the study, all 17 nurses who met the inclusion criteria were eligible as participants due to the low numbers.

As shown in table 3.1, the study population consisted of (N=17) nurses who had worked in the Cardiac Department for at least six (6) months prior to the start of the study.

Table 3.1: The study population

Target	**Population**		**Sub-total**
	In-Patient Cardiac Department	**Out- Patient Cardiac Department**	
Cardiac Nurse Specialist	1	0	1
Registered nurses	9	4	13
Enrolled nurses	3	0	3
Total			17

3.5.1 Inclusion criteria

Relevance and acceptability are used to determine inclusion criteria or participation eligibility. The inclusion criteria provide the researchers with a set of inclusive guidelines for potential participants' participation. The inclusion criteria are an important aspect that allows the researcher to take into account the responses of the participants (Meline, 2006). The study's inclusion criteria were as follows:

- Nurses who provide direct clinical care to the transitioning adolescents with Congenital Heart Disease; and
- Nurses who have worked in the Cardiac Department for six (6) months and longer prior to the commencement of the study.

3.5.2 Exclusion criteria

The exclusion criteria assist the researcher in eliminating candidates based on a certain set of requirements and abilities. Exclusion criteria are basic elements for consideration that allow the researcher to eliminate participants who did not have the traits that the researcher

was looking for and may have extra characteristics that interfere with the study's outcomes (Patino & Ferreira, 2018). Exclusion criteria for participation in the study were as follows:

- Nurses in managerial positions in the cardiac department and who don't render nursing care to the transitioning adolescents with Congenital Heart Disease;
- Newly qualified or appointed nurses in the Cardiac department who have worked less than six (6) months prior to the commencement of this study; and
- Nurses that are working at the Cardiac Theatre Department.

3.6 Sample and sampling

3.6.1 Sample

When a researcher picks a group of people to be in his or her sample, they are representing the people in the study (Brink et al., 2012) say that a sample is a small part of the whole, or a group that comes after the whole. It is made up of a chosen group of elements or units of analysis from a specific population, as long as they share the same features. All the participants who were in the unit were also eligible to be interviewed.

To assure data authenticity, the sample for this study was drawn from the entire population (N=17). As a result, no sample calculation was required.

3.6.2 Total Population Sampling

Total population sampling, according to Lund Research Ltd (2012), is a sort of purposive sampling approach in which the researchers opt to include the entire population. The whole sample method was used in this study to gain insight into the phenomenon being examined, to limit the chance of missing potential insight and to limit the likelihood of statistical generalization of the sample under investigation.

3.6.3 Sampling

As defined by Stockemer (2019), sampling is the process of selecting a certain number of individuals from a representative sample of the complete population under investigation in order to gather data about the entire population under investigation.

3.6.3.1 Sampling for quantitative data

Due to the small number of the study population, the study opted for the census method in which all the nurses who provide direct nursing care to the adolescents in question and met the inclusion criteria of the study population were interviewed. Such methods are crucial in purposively created samples. For quantitative data, the whole population (N=17) of nurses were included in the study sample to ensure the validity of the data (Creswell, 2014). There are no set standards for sample size in qualitative investigations, according to Polit and Beck (2012), and the essential concern is to generate enough in-depth data to illuminate categories, patterns, and other dimensions of the phenomenon under study until data saturation is reached. To collect qualitative data, a purposeful sample strategy was utilized, as well as the researcher's assessment based on his or her understanding of the population. From August 2019 to January 2020, data were collected from all population samples of 17 nurses who give direct nursing care to adolescents with CHD at Windhoek Central Hospital's in- and out-patient cardiac department.

Data was gathered until saturation was reached (Brink et al., 2016). Nurses' lived experiences of transition for adolescents with Congenital Heart Disease were gathered, documented, and interpreted phenomenological data on the experience of nurses in the cardiac department.

3.7 Research instruments

3.7. 1 Quantitative data collection instrument

The nurses' knowledge on how to prepare the adolescents with congenital heart disease for the transition to adulthood was collected via a self-administered questionnaire. A questionnaire, according to De Vos et al. (2011), is a tool that contains questions and other sorts of items that are designed to gather information that is relevant to the study. The goal of using a questionnaire to collect data is to get facts and views on the phenomenon from people who are knowledgeable about it (Brink et al., 2016).

The questionnaire used in this study contained closed-ended questions divided into two sections: section one (1) focused on the demographic information of the participants, which included gender, current position, duration of nursing qualifications, and duration of working in the cardiac department; section two (2) focused on the assessment of nurses' knowledge using applicable domains of LKQCHD; and section three (3) focused on the assessment of nurses' knowledge using four applicable domains of LKQCHD (Moons et al., 2001). The LKQCHD domains that were used in this questionnaire were: (a) nurses' knowledge of preventing complications for the adolescents with CHD; (b) nurses' knowledge of physical activities; (c) nurses' knowledge of sexuality and heredity; and (d) nurses' knowledge of contraception and pregnancy for females for adolescents with congenital heart diseases.

Nurses' knowledge of the characteristics and signs of complications of congenital heart disease, such as endocarditis, and the risk of complications during pregnancy, was assessed using a "Yes" or "No" response to determine whether adolescents with CHD are educated on the characteristics and signs of complications of congenital heart disease, such as

endocarditis, and the risk of complications during pregnancy. A series of opinion statements on patients' experiences with medication side effects and nurses' understanding of physical activities for teenagers with congenital heart disease were also evaluated using a "Yes" or "No" response. Nurses' knowledge of side effects of medications, sexuality, and heredity was assessed on a 4- and 5-point Likert scale, respectively, using a list of statements that reflected the side effects of medications, the engagement in all physical sexual activities by adolescents with Congenital Heart Disease, the possibility of a child born to a CHD adolescent having CHD, and the recommended methods of contraception most advisable for adolescents with CHD.

3.7.2 Qualitative data collection instrument

Interviews, according to Brink et al. (2016), are a type of data collection in which the interviewer receives responses from the respondent in a face-to-face or telephonic interaction. An interview guide and a voice recorder were used to obtain qualitative data. In a present order, the interview guide asked semi-structured and open-ended questions to the participants. The research supervisor and a field expert assessed the interview guide and confirmed its credibility (cardiologist and cardiothoracic surgeon).

The purpose of the interview guide was to assess and explain nurses' experiences with education and counselling of adolescents with congenital heart disease in preparation for adulthood. The following open-ended questions were asked at the start of each interview: *(a) Describe the role of nurses in the preparation of adolescents with Congenital Heart Disease for adulthood, (b) describe your experiences with educating adolescents with congenital heart disease for adulthood, (c) describe your experiences with counselling adolescents with congenital heart disease for adulthood, and (d) what does counselling of an adolescent with* CHD for adulthood entail?

All interviews were conducted in a semi-structured format and were audio-recorded. During the interview, the researcher took field notes to record the participants' nonverbal replies (Brink et al., 2016). Following that, the researcher asked probing questions based on the respondents' responses in order to gain greater clarification and satisfy the study objectives.

3.8 Pilot study

Pilot research, also known as a preliminary study, is a small-scale study carried out before the main study (Brink et al., 2016). The authors go on to say that a pilot study only comprises a small number of people from the study population. However, according to De Vos et al. (2011), a pilot study is required to demonstrate that the processes chosen are adequate, valid, reliable, effective, and error-free, and that if data gathering devices are not dependable, they may be adjusted. The questionnaire as a data collection instrument was pilot-tested on 10% of the total study population as justified by Connelly (2008), who stated that 10% of the study population is justifiable to pilot test the data collection instrument.

Pilot test was therefore conducted on a comparable study group of nurses who worked on the cardiac unit but were permanently transferred to other departments. Two (2) nurses who previously worked in the cardiac department but have permanently relocated to other departments were interviewed using a convergent parallel strategy to obtain quantitative and qualitative data. The quantitative data was obtained using a self-administered questionnaire, and the qualitative data was acquired using a semi-structured face-to-face interview with audio recordings and written notes.

The data collected during the pilot study was utilized to evaluate the instruments and data analysis method, but none of it was used in the main trials' conclusions. The pilot study took place over the course of three (3) weeks, from March 10th to March 31st, 2019.

3.9 Procedures for data collection

Data collecting methods, according to Grove et al. (2013), are a systematic procedure of acquiring data from selected participants to solve a study issue or problem. Qualitative research necessitates the collection of data in words, whereas quantitative research necessitates the collection of data mathematically (Polit & Beck, 2012). Individual interviews were used to collect data for this investigation.

Permission was received from the MoHSS Executive Director and the hospital Medical Superintendent of Windhoek Central Hospital prior to data collection. The chief of specialized nursing services as well as the cardiac department's floor nurse managers were informed of the researcher's presence in the department.

Both quantitative and qualitative data were collected at the same time because the study was a convergent parallel mixed techniques study. Prior to data collection, the researcher briefed each participant on the study's aims and reiterated the questionnaire and interview recording's anonymity in order to encourage honest responses. The nurse participants were given the self-administered questionnaire after the researcher obtained their informed written consent and explained everything to them. The researcher collected the questionnaires once they were completed and stored them carefully for subsequent study.

3.9.1 Quantitative data

Quantitative data was collected using self-administered questionnaires to assess nurses' knowledge about the transition of adolescents with congenital heart problems to adulthood using the Leuven's Knowledge questions (Moons et al., 2001).

3.9.2 Qualitative data

Semi structured in-depth face-to-face interviews were conducted in a cardiac department for this investigation. The in-depth interview was chosen by the researcher because it is appropriate for a descriptive qualitative study since it allows the researcher to acquire high-quality information from the participants. It allowed the researcher to gain insight into nurses' perspectives on the transition of adolescents with congenital heart disease from childhood to adulthood (Brink et al., 2016). With the participants' agreement, audio recordings of the interviews were made. The data was backed up by the audio recorder, which also aided the researcher during the transcribing of individual interviews. It allowed for many replays to record the data, which was especially useful because some respondents spoke quickly, making it impossible for the researcher to write down all of the verbally stated information. During the interview, the researcher took field notes to record the participants' nonverbal replies (Brink et al., 2016). Field notes allowed the researcher to retrieve notes at his or her leisure, which supplemented the data that had been captured.

Individual interviews were conducted to allow individuals to express themselves freely about their experiences. The interviews were conducted in a confidential setting in order to encourage them to speak freely. Each participant's interview lasted 20 to 35 minutes.

3.10 Data analysis

The objective of data analysis, according to De Vos et al. (2011), is to summarize the data into an accessible and interpretable form so that the relationship between the research problem and the research problem may be explored, tested, and conclusions reached.

3.10.1 Quantitative data analysis

Using a Microsoft Excel, version 27 spreadsheet, descriptive analyses were performed on variables for demographic data and nurses' knowledge of complications prevention, physical activities and career choices, sexuality and heredity, contraception and pregnancy planning for female adolescent with congenital heart disease to adulthood (Moons et al., 2001).

Sections 1 and 2 of the quantitative data analysis were done initially, followed by initial cleaning and formatting of the data during data preparation. Variables were renamed to match the SPSS version 27 classification. Following that, the data was imported into SPSS statistics version 27 for diagnostic and reliability analysis. The data was analyzed and synthesized using the Statistical Package of Social Science (SPSS-version 27) software, which is designed for quantitative data analysis. Descriptive factor analyses were produced using statistical methods using SPSS version 27.

The quantitative data were divided into two sections: section one (1) examined the participants' demographic information, which included gender, present position at work, length of nursing education, and length of time working in the cardiac department. The data on nurses' knowledge was analysed in section two (2) using the applicable domains of Leuven's knowledge questionnaire for Congenital Heart Disease, which included: (a) nurses' knowledge of complication prevention, (b) nurses' knowledge of physical activities,

(c) nurses' knowledge of sexuality and heredity, and (d) nurses' knowledge of contraception and pregnancy for female adolescents with congenital heart disease only.

3.10.2 Qualitative data analysis

When conducting mixed methods research, a decision must be taken on how to analyse the qualitative findings. The researcher's data analysis will be influenced by the research design. The researcher's point is that qualitative data analysis was used to compliment, the quantitative data. Atlas.ti's coding system was used to analyse the original raw data for this investigation.

The first thing to do is to read or listen to the qualitative text on tapes. When the interviews are done, they will be transcribed by the researcher. This will help with the development of some basic categories and links. Connective strategies derived from narratives, memos, and categorisation methods (thematic content analysis and coding) are three sorts of analytic procedures that can be used by a researcher (Kaplan, & Maxwell, 2005).

Coding is a systematic classification approach used in qualitative research. Data is split down and categorized into categories, making it easy to compare pieces within the same category and assisting in the development of theoretical concepts (Kaplan, & Maxwell, 2005). Thematic content analysis, on the other hand, groups information into categories for subsequent investigation. In some literary circles, content analysis is regarded as an objective, methodical, and quantitative approach. Thematic content analysis is essential for tabulating the results of open ended responses and interviews (Creswell, 2014). According to Creswell (2014), the data should first be organized and grouped together. Individual interviews were transcribed verbatim in this study, and content analysis was performed using Creswell's method (2014).

The following are the main steps:

The first step was to organize and prepare all of the data for analysis. Transcribing verbatim in an MS Word document, typing up field notes, categorizing the data, and finally grouping the verbatim responses/statements were all part of the process.

Step 2: The researcher looked over all of the transcribed data and read it again, line by line. Actions, behaviours, words, and sentences were coded as relevant inferences, especially those that were repeated. These deductions were jotted down in the document's margin.

Step 3: After the researcher had finished reading and coding all of the interview papers, a list of all the subjects and related topics was compiled. These ideas were reorganized into three distinct columns. Similar ideas and statements were colour coded.

Step 4: The data was re-examined by the researcher and an expert with qualitative research methods. The notions were condensed into codes, which were then written adjacent to the relevant text.

Step 5: The researcher grouped comparable codes (similar colour codes) by converting the most descriptive terms into themes. A line was drawn between the matched themes to illustrate interrelationships.

Step 6: Finally, the researcher sorted the codes into categories and assigned acronyms to each theme.

Step 7: Once the coding was completed, the data for each theme were gathered in one location, and analysis was conducted. There were other subthemes identified.

Step 8: To express the conclusions of the analysis, the holistic narrative passage approach was used to portray the themes.

3.10.3 Values/importance of Coding in qualitative data analysis process

Coding is a key tool in the process of transforming raw qualitative data into a communicative and reliable "narrative." Examining a cohesive section of your empirical material – a word, a paragraph, or a page – and labelling it with a word or brief phrase that summarizes its substance is the primary activity of coding. Coding is an important part of qualitative analysis since it minimizes the amount of empirical material and makes data more accessible for analysis while also improving the quality of the analysis and findings. Coding, in particular, is an early kind of analysis, according to Skjott et al. (2019).

3.11 Merging of the quantitative and qualitative data

Data analysis in a convergent design involves three steps, according to Creswell and Creswell (2018). The first phase involves analysing the qualitative database by coding the data and collapsing the code into broad themes; the second phase involves analysing the quantitative database in statistical results; and the third phase involves integrating the quantitative and qualitative data by merging the two results.

A side-by-side comparative strategy was used in this investigation. The quantitative statistical findings were presented first, followed by a presentation of the qualitative findings, in a form of themes and sub-themes. The researcher then contrasted the quantitative and qualitative findings, and stated interpretations based on the findings of both the quantitative and qualitative database analysis (Creswell & Creswell, 2018).

3.12 Reliability and validity of quantitative data

Brink et al. (2016) argue that reliability and validity are closely related, and that reliability is part of validity and that an instrument that does not yield reliable results cannot be considered valid.

3.12.1 Reliability

The degree to which a research's consistency and dependability can quantify a variable is referred to as reliability (Brink et al., 2016). Furthermore, according to Creswell and Creswell (2018), dependability arises when an instrument's score is consistent, stable over time, and when test administration and findings are consistent.

The questionnaire and interview guide's reliability was ensured in this study by pilot testing them on two nurses (10 percent of the total study population and study sample) who previously worked in the cardiac department but have since moved to other departments and were not included in the study sample.

A pilot study was conducted at the Windhoek Central Hospital's in- and out-patient cardiac department to assess the feasibility, reliability, and relevance of the research instrument in terms of measuring the study's objectives and estimating the time spent collecting data (quantitative and qualitative).

The participants were asked to note down any issues they had understanding the questions on the questionnaire, and they were encouraged to ask questions during the interview if a question was unclear before responding to the interview questions. Because the participants in the pilot study did not identify any issues, no changes to the tools were made. The questionnaire and interview took an average of 15 to 30 minutes to complete.

3.12.2 Validity

Validity is defined by Brink et al. (2016) as an instrument's capacity to measure the variable it is designed to assess. Furthermore, according to Creswell and Creswell (2018), validity in quantitative research has three classic forms to consider: first, do the items measure the intended content? Second, is the score estimation of the standard measure? Finally, does the item assess hypothetical or conceptual knowledge? The application of

Leuven's Knowledge questionnaire for adolescents with congenital heart disease ensured face validity. A questionnaire containing all the characteristics relevant to the knowledge of preparing adolescents with CHD for adulthood was used to ensure content validity.

Only variables related to assessing nurses' knowledge of the preparation of adolescents with CHD for adulthood were included in the questionnaire to ensure construct validity. In addition, to create the variables for the questionnaire, an extensive literature analysis of related studies was conducted.

A comprehensive review of the literature indicated that there is currently no completely validated LKQCHD questionnaire available to test nurses' understanding of adolescents with CHD preparedness for adulthood. A recent study on transition intervention for adolescents with CHD was published in the journal Adolescent Medicine. It was the adolescents with CHD who were the focus of Mackie et al. (2018), not the nurses. The questionnaire's validity is confined to face or content validity. As a result, for this study, items from LKQCHD on preparedness of adolescents with CHD were constructed from four (4) important areas of LKQCHD, and a questionnaire was developed with optical reader software that contained 19 questions. Four questions dealt with demographics, five with nurses' knowledge of problems prevention, three with nurses' knowledge of physical activity tolerance, two with nurses' knowledge of sex and heredity, and five with contraception and pregnancy planning. There are two Likert-scare questions, seven single-choice questions, six multiple-choice questions, and four demographic questions among these.

The questionnaire was provided to cardiac experts for revision and content validity assessment. To meet the criteria, two rounds of the Delphi method were required (Culley,

2011). The many phases involved in questionnaire design, as well as an overview from the experts are the most important aspect of questionnaire development and validation. The letter from one of the experts who assessed the applicability of the LKQCHD to nurses is in annexure 4. The Pearson correlation coefficient between each variable item and the overall score variable was used to determine the validity test of each variable or item. Three variables were found to be valid in the study: "the length of time a respondent has been qualified as a nurse" (rho = 0.676, p-value = 0.003), "the length of time a respondent has been working at cardiac ward" (rho = 0.689, p-value = 0.003), and "to what extent are patients educated on different types of side effects of medication" (rho = 0.492, p-value These findings indicate that there is a significant correlation or relationship between these three variables and the total score variable, indicating that these questions (variables) are genuine and assess what we expect.

The Chronbach's alpha was used to determine the research instrument's reliability. Cronbach's alpha value = 0.5 was obtained. This was attributed to the sample size of n = 17 respondents. A Cronbach's alpha value of less than 0.6 is considered poor. The test reliability can be accounted for in future studies with higher sample sizes as small number may account for the low Cronbach's alpha value. However, in adopting the research instrument, the researcher was guided by Makela (2004), who concluded that depending on the variable being studied, a Cronbach's alpha value of 0.51 is acceptable. This is supported by Spiliotopoulou, (2009) who stated that Cronbach alpha test were not always judged properly as a low size of the coefficient alpha may not always indicate a problem with the tool or questionnaire as this might be due to data characteristics of the construct. Furthermore, Spiliotopoulou (2009) notes that researchers and practitioners should report and consider the nature of the data, the length and width of the scale, the linearity and

normality of the response distribution, the central response tendency, the sample response variability, and the sample size when judging the internal consistency of an outcome measure. Data from a questionnaire comprehended with the objectives of the study. As a result, a convergent mixed technique was appropriate for this study to complement the quantitative data with qualitative data. The questionnaire for this study was put through a reliability test, and the results demonstrated its reliability.

The researcher was mindful of the critical nature of validating the questionnaire's use. In so doing the researcher agrees with Boparai, et al. (2018) who notes that the article briefly outlines the method of psychometric evaluation of a questionnaire.

3.13 Trustworthiness of the qualitative data

To be a good researcher, you need to know that there are flaws in all research methods, and the qualitative method of inquiry is no different. As a result, using qualitative research measurement methodologies is crucial. In order for studies to be regarded scientific, measurement precision is critical as eluded by Finlay (2006). Trustworthiness was ensured through the application of criteria of credibility, transferability, dependability and confirmability as explained in the next sessions. To be replicable and objective, investigations must be based on scientific principles. The interpretative research paradigm's fundamentals were followed by the researcher. Reliability is replaced by dependability, and objectivity is replaced by confirmability.

3.13.1 Credibility

Credibility was ensured through prolonged engagements of the participants, field notes, peer debriefing, and triangulation of qualitative and quantitative findings in order to ensure

accuracy, soundness, confidence of the data and the relevant interpretations thereof (Polit & Beck, 2012; Brink et al., 2016).

3.13.2 Transferability

From a qualitative standpoint, transferability is primarily the responsibility of the person who wishes to generalize a study's findings (LoBiondo-Wood et al., 2010). Transferability is defined as evidence of validity obtained through the provision of 'rich descriptions,' which allow the leader to judge whether the research's conclusions are applicable to their own circumstances and hence to them (Creswell, 2014). The study supervisors and specialists in the field of cardiac care validated the interview questions in this study (cardiologist and cardiothoracic surgeon).

To collect qualitative data, a purposeful sample strategy was utilized, as well as the researcher's assessment based on his or her understanding of the population. The researcher gathered information from all 17 nurses who met the inclusion criteria of the study. Nurses who worked in the in-patient and out-patient cardiac departments at Windhoek Central Hospital.

3.13.3 Dependability

The research methodology used in this study as well as the questions contained in the interview guide were first checked by the study supervisor and experts in the field of cardiac care (cardiologist and cardiothoracic surgeon), for relevance and to determine whether they are acceptable, prior to the start of data collection (Brink et al., 2016). Some of the tactics used to ensure the credibility of qualitative research include long-term participation, regular observation, peer debriefing, members' checks, progressive

subjectivity, and triangulation. As a result of their rigor, researchers ensure that their findings are trustworthy, transferable, dependable, and confirmable.

3.13.4 Confirmability

Conformability was ensured through the incorporation of an audit trail of the data and a literature review to compare previous findings from earlier studies. Referential adequacy or recoding of the data by other researchers to confirm authenticity and neutrality of the data was performed (Creswell, 2014). Participants' perspectives must not be tainted by collecting collective viewpoints, but what they say must be documented and transcribed exactly as they say it (Sim 1998).

3.14 Ethical considerations

During this study, the researcher was required to follow the research principles, guidelines, and regulations. To begin, the Human Research, Ethical Committee (HREC) of the University of Namibia provided ethical approval.

The HREC committee assessed a written proposal to determine that it fulfilled the ethical norms of scientific research methodology. Second, authorization was requested from the Ministry of Health and Social Services to undertake a study on the knowledge and experiences of nurses in the preparation of adolescents with Congenital Heart Disease for adulthood at Windhoek Central Hospital. After that, authorization was acquired from the office of the Executive Director of the Ministry of Health and Social Services, as well as the Medical Superintendent of Windhoek Central Hospital, to conduct the study in the Cardiac Department. This served as a framework for the researcher to avoid violating the participants' rights and to conduct an ethical study. The ethical norms of biomedical research involving human beings were respected and applied in this investigation, as detailed in the following session.

3.14.1 Principle of respect for a person

All possible information about the purpose of the investigation, the expected duration of the participant involvement, the procedure that was followed during investigation, as well as possible advantages and disadvantages that the respondents may be exposed to, as well as credibility of the researcher, should be provided to potential participants. (De Vos et al. 2011). The study's aims were communicated to participants, and they were informed that they would be asked a series of questions about preparing adolescents with CHD for adulthood, with a focus on nurse education and counselling. Researchers and participants went over each section of the questionnaire to make sure everyone was clear on what they were being asked. Following that, the participants were asked to give their informed written consent for the gathering of quantitative and qualitative data. People who agreed to participate in the study were made aware that they had the option of withdrawing at any moment (Creswell & Creswell, 2018). As a result, no one was pushed or victimized into participating, and it was entirely voluntary. At all times, privacy, anonymity, confidentiality, and respect were maintained. To avoid handwriting recognition, participants were told that their completed questionnaires and interviews would not be shared with their departmental supervisors. As a result, anonymity was preserved. Rather than names, the individuals were identified by numbers (De Vos et al., 2011).

The data was kept safe in line with the data protection act of the University of Namibia's Centre for Research and Publications.

Honesty toward the participants was maintained throughout the interview in order to establish mutual respect throughout the study.

The researcher kept an eye on the individuals for any signs of distress, in case they wanted to renegotiate their informed permission (Brink et al., 2016). During the interview, however, there was no need to renegotiate informed consent.

3.14.2 Non-maleficence

Non-maleficence demands the researcher not to purposefully damage study participants or cause harm to study participants due to a lack of understanding or neglect (de Vos et al., 2011). It's all about ensuring the safety of study participants by safeguarding and preventing harm to them. The researcher safeguarded the study participants from discomfort and harm in this study by ensuring that no participant's identify was exposed on the questionnaire or during the interview, for example. The questionnaires were simple to complete, and participants were encouraged to feel at ease and given the opportunity to ask questions. The researcher kept an eye on the participants throughout the interview for any signs of distress, but none were noticed.

3.14.3 Principle of beneficence

Non-maleficence requires the researcher to avoid causing harm to study participants on intentionally or as a result of a lack of knowledge or negligence (de Vos et al., 2011). It's all about keeping study participants secure by shielding and preventing harm to them. In this study, the researcher ensured that no study participants' identities were revealed on the questionnaire or during the interview, for example, to avoid discomfort and injury. Participants were urged to feel at ease and given the option to ask questions as the surveys were straightforward to complete. Throughout the interview, the researcher kept an eye on the participants for any symptoms of distress, but none were noted.

3.14.4 Principle of justice

The fundamental principle of justice requires that all respondents be treated equally and fairly (Grove et al., 2013). Participants were chosen from the Cardiac Department at Windhoek Central Hospital because in the public health system they are the only nurses who provide direct clinical care to transitioning adolescents with Congenital Heart Disease. The research was carried out at the Windhoek Central Hospital, which is where the phenomena occur. The sample size for the entire community (n=17) meant that all possible volunteers had an equal chance of being included in the study.

To ensure the principle of justice, all participants were given the same questionnaire and were interviewed with the same tool.

3.15 Chapter summary

This chapter presented an in-depth discussion of the research methodology that was applied to answer the study objectives. The aim was to summarise how the researcher approached the study from the research design, research setting, population, inclusion and exclusion criteria, sampling, research instrument, pilot study, procedure for data collection, data analysis and research ethics employed. The applications of ethical principles of respect for a person, beneficence and justice were discussed. The next chapter (chapter four (4)) presents the findings obtained from this study.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Introduction

In this chapter, detailed descriptions of the results of the study are presented. The results are based on the data of a convergent mixed method that were collected by means of a closed questionnaire for quantitative data and in-depth semi-structured interviews using a designed interview guide for the qualitative data. Descriptive statistical analyses were performed for quantitative to measure the proportions (%), the means of the social-demographic characteristics and the knowledge of the participants. Verbatim analysis of qualitative data was performed about experiences of nurses regarding the preparations of the adolescents with congenital heart disease for adulthood with particular emphasis on education and counselling at Windhoek Central Hospital. Findings are presented as themes.

The samples consisted of n=17 nurses and all nurses sampled responded to the questions. Seventeen (17) questionnaires were distributed and a response rate of 100% was attained. Welman et al. (2007) indicate that responses above 50% are sufficient to obtain meaningful statistical analysis and to obtain acceptable results.

4. 2 Section A: Demographic data

The demographic section covers the data on the gender of nurses, the current position of nurses, duration of qualification as a nurse, and duration of working at Windhoek Central Hospital In- and Out-patient cardiac department.

4.2.1 Gender of nurses

Figures 4.1 shows the gender of the respondents

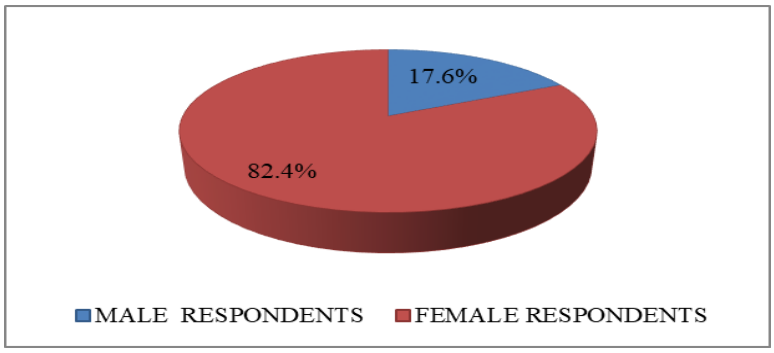

Figure 4.1: Distribution of the respondents by gender (N = 17)

The figure shows that 82.4% of the respondents were females while 17.6% were males. This shows that that majority of the respondents were females, as nursing is a female dominated profession.

4.2.2. Current position of nurses

Figure 4.2 shows the current positions held by nurses providing direct nursing care to the adolescents with CHD in a transition period.

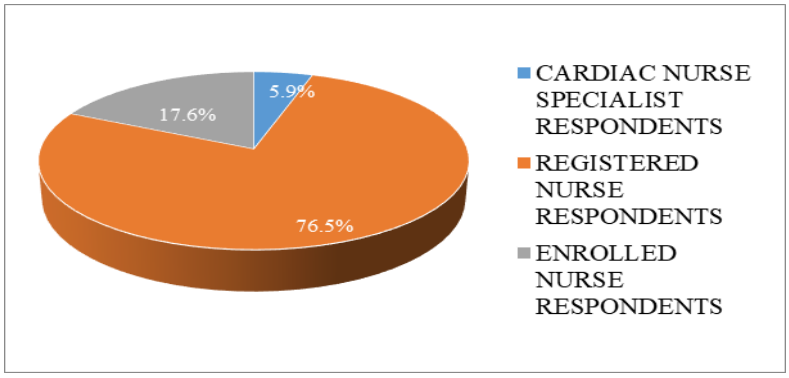

Figure 4.2: Distribution of the respondents by current position (N = 17)

Out of 100% respondents, 5.9% of nurses were cardiac specialist nurses, 76.5% were registered nurses and 17.6% were enrolled nurses.

This result shows that the majority of nurses who provided direct nursing care to the adolescents with CHD in a transition period at Windhoek Central Hospital's In- and Out-patient cardiac departments are registered nurses, however without specialisation in cardiac nursing care.

4.2.3 Duration of qualification as a nurse

Figure 4.3 shows respondents' length of time after qualifying as nurses

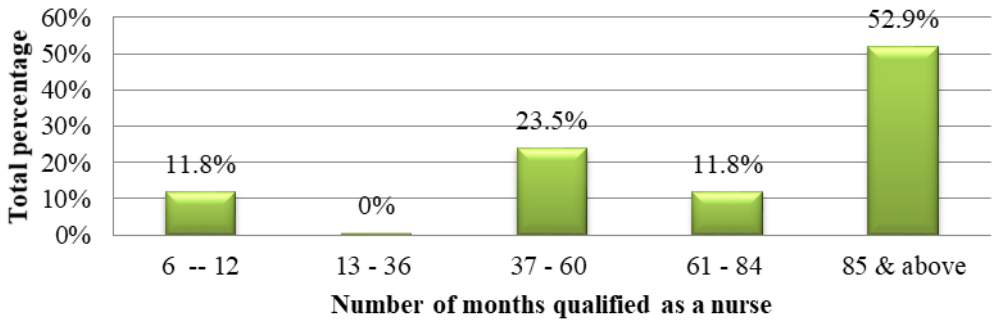

Figure 4.3: Respondents' duration of qualification as a nurse (N = 17)

The results reveal that the majority of nurses (52.9%) who provide direct nursing care to the adolescents with CHD in a transition period qualified for a longer time as nurses.

4.2.4 Duration of working at Cardiac Ward

Table 4.1 shows the length of time working at the cardiac word.

Table 4.1: Respondents' duration of working at Windhoek Central Hospital In- and Out-patient cardiac departments (N = 17)

MONTHS	FREQUESNCY	PERCENTANGE
6 - 12 months	2	11.8%
13 - 36 months	1	5.9%

37 - 60 months	4	23.5%
61 - 84 months	3	17.6%
85 months and above	7	41.2%
Total		100%

Table 4.1 shows that the majority (41.2%) of nurses who participated in this study have worked for a long time at Windhoek Central Hospital In- and Out-patient cardiac department.

4.3 Section B: Merged Findings

This section assessed the findings on the nurses' knowledge regarding the prevention of complications; physical activities; sexuality, heredity, contraceptives and pregnancy using the applicable domains of LKQCHD. Data from interviews will be presented below the quantitative findings.

4.3.1 Prevention of complications

4.3.1.1 Education of adolescents with CHD on the characteristics and signs of complications vis-à-vis endocarditis

Figure 4.4 shows respondents' answers about educating the adolescents with CHD on the characteristics and signs of endocarditis to the adolescents with congenital heart diseases.

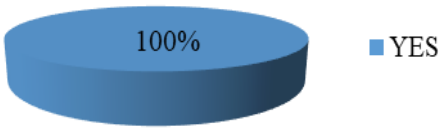

Figure 4.4: Respondents' knowledge about education of adolescents with CHD on the characteristics and signs of complications e.g. endocarditis (N = 17)

With regards to this variable, all 100% respondents had adequate knowledge that all adolescents with congenital heart disease being prepared for adulthood should be educated on the characteristics and signs of the complications.

From the qualitative data, the themes which emerged in relation to educating adolescence on CHD were: inform patients; extreme physical activities.

Inform patients

Participant 6, 15 and 17, note that nurses do need to prepare the patients to better inform them on CHD. This is so as to better equip the adolescents with CHD on their social lives and so that one can take responsibility whilst they live with CHD. Adolescence need to be educated on the possible complications which may arise as a result of CHD. This is putting themselves in the shoes of the affected adolescence. As emphasized by participant 16, nurses are not always there, thus adolescence need to be given enough information on how to tackle challenges which may arise. This is evidenced by following quotes from the participants:

Participant 15

The role of the nurses on preparation of adolescent with congenital heart disease, to prepare them for adulthood is just to educate them and emphasize more possible complications that they might have faced during their growing period as from the adolescent stage to adulthood and we play a role to make them understand more what they can expect in their lifetime during that stage.

Participant 17

The focus here in the cardiac unit its treatment adherence is important to take their medication correctly as prescribed by the doctor and go for regular follow up, depending on their follow-up dates. Secondly, we focus on medical help in case they develop any complications due to treatment or anything for example, heart failure or they start getting tired we also teach them to recognize the signs of ineffective endocarditis to mention a few…..We also focus on family planning and contraceptives, different options of contraceptives how they work and how they can interfere with the medication we also inform patients of the possible complications of pregnancy and to inform their doctor when they suspect they might be pregnant.

Extreme physical activities

This study moreover revealed that adolescents with CHD were informed about the type of sport to partake in but this was rather advised as to why some sports were not recommended for adolescents with CHD. Nurses mostly discussed activities intolerance and they did not discuss the benefits of exercise. Therefore, adolescents with CHD could risk developing perceived physical activity restrictions.

Participant 1

They can do most of the jobs, but things that are very energy consuming, jobs that are intense like competitive sports or risky sports, such things we'll not advise them to do and also some things that are very deep that they can't access medical care.

Participant 14

Ok with them I will recommend jobs that won't put much pressure on them, ones that do not give them so much stress or any excessive physical activity, yes that one I would really recommend it, yes although it is their own choices but we need to guide them in that particular juncture.

Participant 15

The male patients we teach them regarding the activities….The physical activities, it is not only for male for this method it is for male and for female, in this case. So what do we teach them about it, it is that how to take care of themselves, what activities do they need to prevent themselves from, that might cause potential side effect regarding their condition, and the treatment also and their follow up dates. We have to emphasize on them, why is it important to stick to their follow up dates that they are given, why they have to stick on the medication, how to recognize the side effects or any sign that there is something wrong and how to manage it immediately when they are home.

4.3.1.2 Education on different types of the side effects of medication

Figure 4.5 shows the respondents' views on the education of different types of the side effects of different medications for treatment of congenital heart disease.

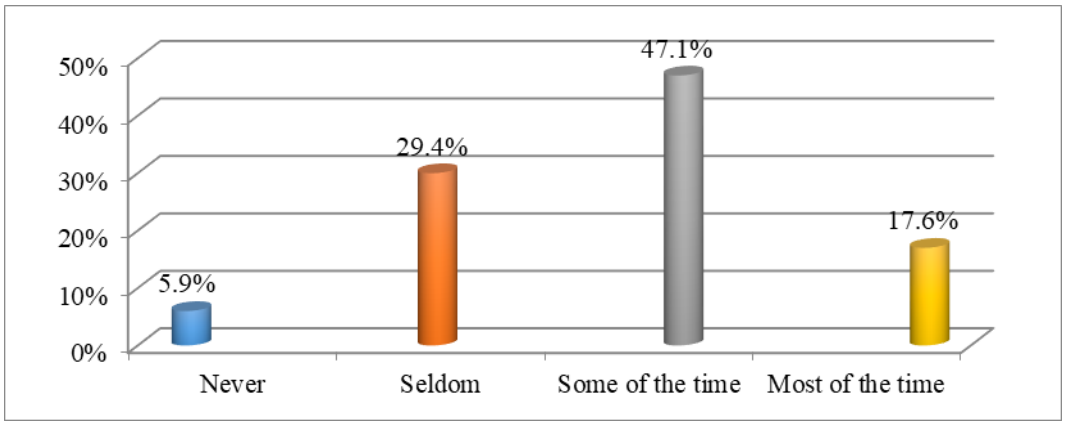

Figure 4.5: Respondents' views on the education of adolescents with CHD on different types of side effects of medication (N = 17)

This result shows that only an insignificant 17.6% had the knowledge that adolescents with congenital heart diseases should be educated on the side effects of the medications, whereas 47.1% of the respondents had no knowledge that adolescents with CHD in the transition period to adulthood should be educated on the side effects of the medications. Moreover, only 29.4% were knowledgeable that adolescents with CHD in the transition period to adulthood should seldom be educated on the medications' side effects while another 5.9% of the respondents had no knowledge at all that adolescents with CHD should be educated on the side effects of the medications.

From the qualitative data the nurses' experiences identified: inform patients, educate and train them and the future of adolescents living with CHD as the main themes which emerged.

Inform patients

Participant 8 shared that they make the patient aware by giving them a picture of what they are going through. This is echoed by Participant 13 who then gives them follow up dates.

Participant 8

To prepare them about the disease you must give them a picture on what it is and give them a better understanding on what it is…..The role of the nurse is that you must make them aware about the disease like the signs the symptoms and the complications of the disease.

Participant 13

The patient's themselves to take responsibility about their condition since we are not always together. Thereby I mean to adhere to the follow up dates, to adhere to taking their medication, yes taking their medication and follow up dates and how to generally take care of themselves, that is what we taught them, to take care of themselves.

Educate or train them

The adolescents were further given advice on the transition they are going through. Advice on when and how to take their medication is given. This information is mostly shared individually, as some of them may be in denial of the condition. Training ensures that one takes full responsibility of their way of life. The effects of stopping medication are clearly articulated. The information shared is also crucial in assisting with the side effects of medication. Advices on what not to eat is also given and for INR training to be effective family members are also included. Therefore, participants stated the following:

Participant 3

The health education that we are giving, for example their career choices the normal work they need to do not the difficult work, like working in the gardens or

work that are very difficult for them….What we do is, some of them we send them for training for INR or Warfarin training, because they need to be taught how to use it, as it is a very dangerous tablet.

Participant 10

Teach them with different coping methods, side effects and medical attention on what to do and when

Participant 11

As they are getting older, we give them an inside as to what to expect, as they will be worried about the conditions they have, and to let them know they can still be productive like studying or find a job. educated them to open up about their conditions if they have a partner or if they want to start a family, go for regular follow-up so the doctor can see if she's fit to have a baby…Let them know they are not limited, not only a person that is sick but, a person that can get a job, someone that contribute to their own family and as well as to the society and to others who are going through the same process

The future of adolescents living with CHD

Counselling is a vital support structure for adolescent with congenital heart disease and as they transit to adulthood. Counselling prepares the adolescents with CHD for their future as they deal with physical and psychological changes, and are required to take ownership of the disease so that they can live a normal life post diagnosis. In that regards, one participant stated:

Participant 2

Like I said we do not do counseling in the ward, we do on the spot counseling while giving their medication, how to use their medication, when to use their medication, when it's done and follow-ups. Here we focus more on treatment and their follow-ups, when their medication is finished as they can't stay without their medication. They also must know the side effects of their medication as well. That's basically what we're doing, basic counseling.

4.3.1.3 Adolescent education on when to seek medical attention

Table 4.2 shows the respondents' views on when adolescents with CHD in transition period to adulthood should seek medical attention in case of the side effects of the medication (N = 17).

Table 4.2: Respondents' views on when to seek medical attention in case of the side effect of medication occurs

Participants' responses	Frequency	Percentages
Never	0	0%
Seldom	2	11.8%
Some of the time	4	23.5%
Most of time	11	64.7%
Total		100%

The result shows a remarkable 64.7% of the respondents had knowledge that adolescents with CHD in the transition period should seek medical attention in case side effects occurred most of the time.

In relation to seeking medical attention in case side effects occurred, in the qualitative findings the following themes emerged: educate or train them and informing patients on the nature of CHD.

Educate or train them

Participants 13 indicated that patients need to be trained on what to do when the have problems. They are also informed on where to go when problems arise post consultation.

Participant 13

They need to know when to come for follow ups dates, or whenever they have problems, where to go whenever you have problems.

Inform them on the nature of CHD

Informing patients on the nature of CHD was identified as one of the key steps in assisting one to accept the condition. When they are aware they can continue with key activities such as education. Although the nurses may be understaffed, they ensure they inform clients on the nature of CHD as stated below.

Participant 12

Yes acceptance of the disease and then also before the patients are going for surgery also we counsel the patient, before the surgery. General counselling, we are telling the patients what to do, what not to do. How to take the medicine and when to come for follow up and we also, if they have a problem, we let the parents come in so that we can talk to the parents if they do not understand what is going on here at the clinic. We are only four nurses here at the clinic and need to attend to all patients.

4.3.1.4 Whether adolescents with CHD should stop taking medication in cases of the side effects

Figure 4.6 shows the respondents' opinions on whether adolescents should stop taking medication in the case of the side effects.

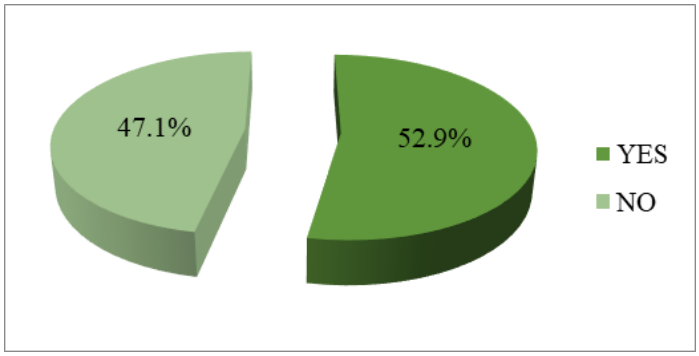

Figure 4.6: Respondents' opinions on whether patients should stop taking medications immediately if they experience side effects (N = 17)

With regards to the knowledge of nurses on whether adolescents with CHD in the transition period should stop taking medication when the side effects are experienced, an average 52.9% of the participants had the knowledge that the adolescents should stop taking medication immediately when the side effects of medication are experienced, while a significant 47.1% of the participants did not have the knowledge that adolescents with CHD should not stop taking the medication.

Participants further gave more insight from the interviews. The theme which emerged was centred of knowledge.

Knowledge

Nurses also shared with participants' knowledge in relation to their sexual health, social life. as noted by Participant 4 she had to educate herself on the types of CHD so as to assist her to give patients the correct information. Participant 7 and 11 underwent the same process. What is crucial to note is that the nurses had to self-educate so that they can better assist the adolescents in question, even though a registered nurse might be present. As indicated in the following quotes by the participants:

Participant 7

The nurse should have knowledge on what it is, before you talk to an adolescent themselves than we should make the patient aware on what it is, what condition they have and before they go home, we explain how they should take of themselves.

They should continue taking their medication and not to stop taking their medication but only on doctor's advice.

Participant 11

As a nurse I have to know the conditions the patient has, to have the knowledge about it on what type of Congenital Heart Disease to prepare and assist the adolescent patients…The focus here in the cardiac unit is that treatment adherence is important to take their medication correctly as prescribed by the doctor and go for regular follow up, depending on their follow-up date.

4.3.1.5: Respondents' opinions on whether the adolescents should visit the nearest health facility when the side effects on medication occur

Figure 4.7 show the respondents' knowledge that adolescents with CHD in the transition period should visit the nearest health facility if side effects of the medications occur.

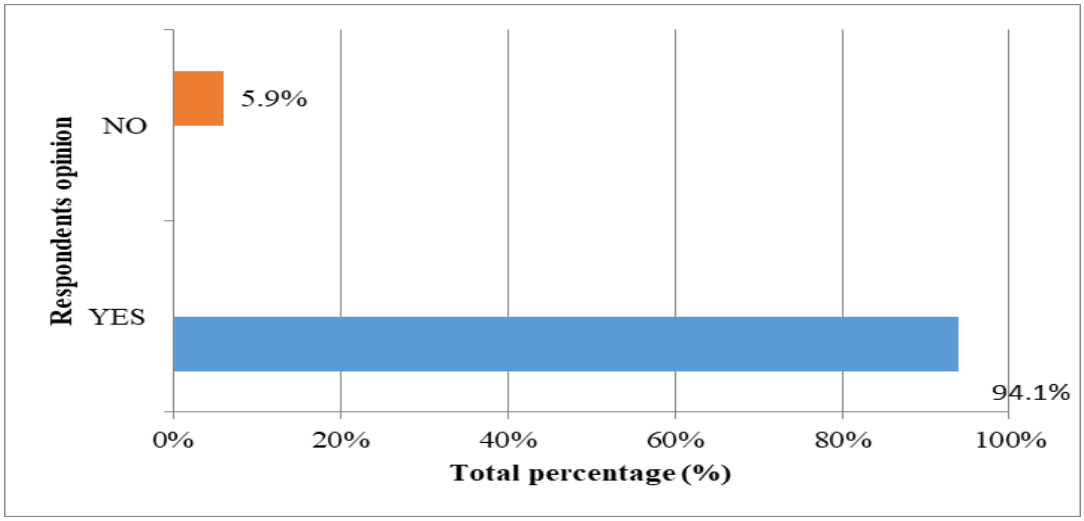

Figure 4.7: Respondents' opinions on whether adolescents should visit the nearest health facility when the side effects on medication occur (N = 17)

Based on figure 4.7, overall 94.1% of the respondents had outstanding knowledge that adolescents with CHD in the transition period should visit the nearest health facility when they experience the side effects on medication, and only 5.9% of the participants did not agree.

From the qualitative findings, the main theme that appeared is: educate or train them. Participant 13 indicated that the patients need to be informed on follow up dates and where to go in case they have problems, but this lacked important information on what the adolescents should do in case side effect on medication occurs.

Participant 13

They need to know when to come for follow ups dates, or whenever they have problems, where to go whenever you have problems.

4.3.2 Physical activities

Table 4.3 shows the respondents' opinions with regards to whether adolescents with CHD in the transition period should partake in physical activities.

Table 4.3: Respondents' opinions on physical activities (N = 17)

Variables	Yes	No	Total
Partakes in any kind of physical activities	64.7%	35.3%	100%
Partakes in any competitive sports that requires training	23.5%	76.5%	100%
Chooses a too demanding physical occupation	0%	100%	100%

Table 4.3 indicates the opinions of the respondents on the physical activities of the adolescents with CHD in the transition period. The variable for partaking in any kind of physical activities records that 64.9% of participants agreeing, while 35.3% did not agree. In terms of adolescents with CHD in the transition period partaking in any competitive sport that requires training, 23.5% agreed, whilst 76.5% did not agree. On whether adolescents with CHD in the transition period should be advised to choose a too physical demanding occupation, all 100% responded had good knowledge and correctly stated that adolescents with CHD prepared for adulthood may not choose a too demanding physical occupation.

From the qualitative data the themes that arose are: extreme physical activities, sexual education and career choice among others.

Extreme physical activities

Due to the nature of their condition, the adolescence is discouraged to partaking in strenuous physical activities. Activities they partake must not exert pressure on them. In this regard, participant 15 mentions the male patients in particular. This aids them in making informed choices .Other participants mentioned the following:

Participant 1

They can do most of the jobs, but things that are very energy consuming, jobs that are intense like competitive sports or risky sports, such things we'll not advise them to do and also some things that are very deep that they can't access medical care.

Participant 14

Ok with them I will recommend jobs that won't put much pressure on them, ones that do not give them so much stress or any excessive physical activity, yes that one I would really recommend it, yes although it is their own choices but we need to guide them in that particular juncture.

Participant 15

The male patients we teach them regarding the activities….The physical activities, it is not only for male for this method it is for male and for female, in this case. So what do we teach them about it, it is that how to take care of themselves, what activities do they need to prevent themselves from, that might cause potential side effect regarding their condition, and the treatment also and their follow up dates. We have to emphasize on them, why is it important to stick to their follow up dates that they are given, why they have to stick on the medication, how to recognize the

side effects or any sign that there is something wrong and how to manage it immediately when they are home.

Sex education

In relation to sex education, the education was about self-care, in case they became parents on how to cope. The alternative such as contraceptives was offered as a family planning method. Pregnancy was identified as high risk as most patients were identified not to able to carry the pregnancy to full term. The medication they get also has blood thinners, which are not advisable during pregnancy. The focus in the CHD unit is on treatment adherence.

Participant 10

Educate them on Family planning, what sport they can do, as some sports can be risky and what kind of jobs that will suit their conditions.

Participant 12

The ladies who take contraceptives, most of them get implants here in the hospital. We give advice, we must educate the patients to choose condoms if they are sexually active….Yes sister we are giving them specific, we have a booklet for the patients and then there is a specific contraceptive that we tell them to use. Like the implant, because we are sending them to gynaecologist clinic every Friday and then most of our patients are getting the implant.

Career choice

The participants are also advised to change careers if possible or take careers which are not heavy. These choices are essential in adjusting with the condition. Light jobs are advised

post diagnosis. Adolescents are also advised to be mindful of their general hygiene. Due to the nature of their condition, the adolescence is discouraged to partaking in strenuous physical activities. Activities they partake must not exert pressure on them. Participant 15 mentions the male patients in particular. This aids them in making informed career choices.

Participant 2

When choosing a career or the type of job they do, they should remember not to choose the job that is very exhausting they should try to do light jobs.

Participant 14

Ok with them I will recommend jobs that won't put much pressure on them, ones that do not give them so much stress or any excessive physical activity, yes that one I would really recommend it, yes although it is their own choices but we need to guide them in that particular juncture.

The future of adolescents living with CHD

From the basic counseling they offer, such a support structure is vital. It prepares the patients for their future as they deal with so that they can leave a normal life post diagnosis.

Participant 7

They should remember not to choose the job that is very exhausting they should try to do light jobs.

4.3.3 Sexuality

Table 4.4 shows the respondents' views on whether adolescents with CHD in the transition period can engage in physical sexual activities.

Table 4.4: Respondents' views on whether adolescents in the transition period should engagement in physical sexual activities

Variables	**Number of participants**	**Percentage (%)**
Engage in physical sexual activities if you feel capable of doing so	12	70.6%
Engage in all physical sexual activities at all time	0	0%
Avoid engaging in all physical sexual activities at all times	2	11.8%
Avoid engaging in all physical sexual activities only when feeling sick	3	17.6%
Total	17	100%

The result shows that the majority of nurses 70.6% had good knowledge that adolescents with CHD in the transition period may engage in physical sexual activities only if they feel capable of doing so.

4.3.4 Heredity

A five (5) item Likert scale score was used to determine if the participants had knowledge on whether there is a possibility of a child born to adolescents with CHD can have congenital heart disease.

Table 4.5 shows the respondents' opinions on the possibility of a child being born to an adolescent with CHD to have CHD.

Table 4.5: Possibility of a child born to an adolescent with CHD to have CHD (N = 17)

Possible responses	Frequency (n=)	Percentage (%)
Always	n=2	11.8%
Very often	n=3	17.6%
Sometimes	n=5	29.4%
Rarely	n=3	17.6%
Never	n=4	23.5%
		99.9%

A score of 11.8% responded as "Always", 17.6% responded as "Very often", 29.4% responded as "Sometimes", 17.6% responded as "Rarely" and 23.5% responded that there is never a possibility of children born to adolescents with CHD to inherit congenital heart disease.

This result shows that the majority of respondents 29.4% had moderate knowledge and indicated that it is only sometimes that children born to adolescents with CHD can have a possibility to have CHD. A significant 23.5% responded had poor knowledge and are not well informed that the possibility of adolescents with CHD to give birth to a child with CHD is likely.

4.3.5 Knowledge regarding contraceptive and pregnancy for female adolescents with congenital heart disease

4.3.5.1 Contraceptive methods

Table 4.6 illustrates the respondents' knowledge on the appropriate method of contraceptives for adolescents with CHD in the transition period.

Table 4.6: Contraceptive methods for adolescents with CHD (N = 17)

TECHNIQUE	FREQUENCIES			
	Definitely will not (1)	Probably will not (2)	Definitely will (3)	Probably will (4)
The Pill	64.7%	11.8%	5.9%	17.6%
Implanon	-	-	82.4%	17.6%
Coil	41.2%	35.3%	11.8%	11.8%
Female Condom	29.4%	5.9%	41.2%	23.5%

The results show that for the "Pill" as a contraceptive method, 64.7% of the participants indicated that they will definitely not recommend the pill as the most advisable contraceptive method for the adolescents with CHD, 11.8% "Probably will not", 5.9%, "Definitely will" and 17.6% responded that they "Probably will" recommend the pill.

The results show that for Implanon as contraceptive method, 82.4% of the participants responded with "Definitely will" recommend the Implanon, while only 17.6% of the participants indicated "Probably will" recommend. The Implanon is the most advisable contraception method for adolescents with CHD.

The results indicate that for Coil (Intrauterine device) as a contraceptive method, 41,2% of the participants responded with "Definitely will not", 35.3% with "Probably will not", 11.8% with "Definitely will not", and 11.8% indicated "Probably will" recommend the coil as the most advisable contraception method for adolescents with CHD.

The results indicate that for female condom as the contraception method, 29.4% of the participants responded with "Definitely will not", 5.9% with "Probably will not", 41.2% of

the participants indicated “Definitely will” and 23.5% indicated “Probably will” recommend the use of the female condom as the most advisable contraception method for adolescents with CHD. The results indicate that the majority of nurses (82.4%) who took part in this study correctly recommended the Implanon as the most advisable contraceptive method for the adolescents with CHD in transition period.

Participants had sufficient knowledge and identified the Implanon and condom as the methods that they recommend to adolescents with CHD being prepared for adulthood regarding reproductive health education. As stated below by participants 9, 12 and 15

Participant 9

According to our experience we only use one method of the contraceptive which is Implanon

Participant 12

The ladies who take contraceptives, most of them get implants here in the hospital. We give advice, we must educate the patients to choose condoms if they are sexually active….Yes sister we are giving them specific, we have a booklet for the patients and then there is a specific contraceptive that we tell them to use. Like the implant, because we are sending them to gynaecologist clinic every Friday and then most of our patients are getting the implant

Participant 15

Ok I talk about the contraceptive, most of the time that I’ve experienced here, we only focus on one method. So first we have to teach them the potential or impact for them to use.

4.3.5.2 Risk of complications during pregnancy

Figure 4.8 presents the respondents' opinions on whether the adolescents with CHD are at risk of complications during pregnancy.

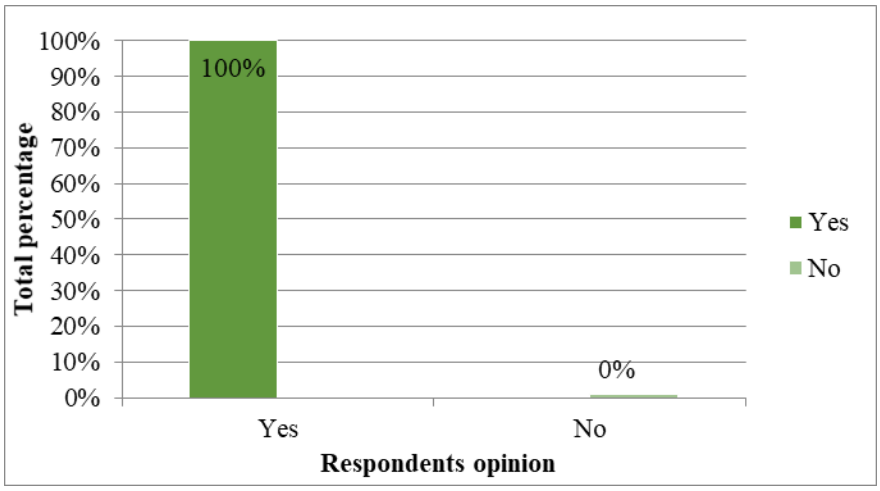

Figure 4.8: Respondents' opinions on whether the adolescents with CHD are at risk of complications during pregnancy (N = 17)

The results indicate that all the nurse respondents 100% had adequate knowledge and agreed that adolescents with CHD are at risk of complications during pregnancy.

The next section presents the findings from the qualitative data on the nurses' experiences with regards to education and counselling of the adolescents with congenital heart diseases in preparation for adulthood.

Sex education

In relation to sex education, the education was about self-care, in case they became parents on how to cope. The alternative such as contraceptives was offered as a family planning method. Pregnancy was identified as high risk as most patients were identified not to able to carry the pregnancy to full term. The medication they get also has blood thinners, which are not advisable during pregnancy.

The focus in the Windhoek Central Hospital In- and Out- Cardiac Department is on treatment adherence. These findings are substantiated by the following quotes from the participants.

Participant 13

We focus on how to see the difference in their bodies when their growing up, we talk about sex, we talk about pregnancies, the danger of pregnancies when they have this condition and so on. ..We tell them about the dangers of getting pregnant with this condition so the possibility that they may not have children or the possibility that they might be limited, the children they want might be limited….. Through experience, for instance the experience we had with patients who got pregnant with this congenital disease. The side effects they develop or the dangers they go through, so that is how we educate them that is how we are preventing them, not to go into the same situation.

Participant 17

The focus here in the cardiac unit its treatment adherence is important to take their medication correctly as prescribed by the doctor and go for regular follow up, depending on their follow-up dates. Secondly, we focus on medical help in case they develop any complications due to treatment or anything for example, heart failure or they start getting tired we also teach them to recognize the signs of ineffective endocarditis to mention a few…..We also focus on family planning and contraceptives, different options of contraceptives how they work and how they can interfere with the medication we also inform patients of the possible complications of pregnancy and to inform their doctor when they suspect they might be pregnant.

Participant 8

We encourage patient not to fall pregnant, because through experience I notice that when they fall pregnant they are unable to carry the pregnancy to term sometimes loose the pregnancy or give birth to premature babies.

4.4 Nurses experiences at Windhoek Central Hospital In- and Out- Cardiac Department

Participants further shared their experience with patients living with CHD. From their opinions the themes which emerged were empathy, lack of policy or guideline, career choice and psychological support.

Empathy

The role of the nurse does not only end in informing patients what they will face. But the nurses also address the worries and concerns of the adolescence. The nurses then offer the moral support where required and even refer the patients to professionals.

Participant 9 clearly open up that she stands with her patients, participant 11 further adds that this is key so that the adolescence can take up their medication.

Participant 1

So personally I keep my attention more on them trying to listen to them, their worries and their concerns about life and try as much as possible to counsel them and hear them and answer as many questions as much as I can.

Participant 5

My role here is to make sure and ensure that the patient understands their conditions and just support them through the whole situation.

Participant 6

My role as a nurse is to make sure that the patients understand their condition and just to support them throughout….Psychological support, they need this most of the time as this is a condition that is very difficult to understand. Most of them are adolescents and they don't have all the necessary information.

Participant 9

Me, as a nurse I stand by my patients help them when necessary give them advice, as well as give them advise on how to take their medication keep their medication around hygienic places and when they see their medication is almost done they should come in for a refill and come on time for their follow-ups….Yes, I must know illnesses and differentiate them, identify them, what are the complications and the treatment and how to handle the patient and the different treatment accordingly as well

Participant 11

We make them aware they have to take full responsibility to take care of themselves or take care of their health, like going for regular follow-ups, taking their own medication.

Participant 16

In my scope of practice as a registered nurse I have an educational role not only to transition the adolescence with Congenital Heart Disease, but to all my patients and to my subordinates. This role include preventive, promotive measure to ensure good health; also in the promotive measure providing the adolescence with

information on reproductive health and sexuality as a priority, as pregnancy is high risk in most of the Congenital Heart Disease patients for example TOF. Contraceptive methods for the female adolescence with Congenital Heart Disease must be individualized taking into account the primary Cardiac defect….Adherence to treatment, it is another thing that we look at the clinic, follow ups is also an important aspect at the Cardiac Clinic. INR training to all patients on warfarin, INR training depends on their INR blood results"

Lack of policy/guidelines

What was key to note was irrespective of the support the nurses offer, they were not compelled to do so as there was no policy to guide them on what to do. Even though it is out of the nurses job description, especially the nurses at In-patient Cardiac Department they are required to offer support to the adolescents as they can see that the adolescents are in need of such support. Nurses were also clear that it was not in their job descriptions. The unit also did not have a policy or educational materials. Irrespective of these downturns, nurses still go out their way to assist their patients in the best way they can.

Participant 3

Currently we don't have standard guideline we just referring them as a normal adolescents we are giving health education to each of them making sure that family planning is implemented making sure they understand what family planning they should be using actually preparing them as normal adolescents we are actually asking them to come and collect their medication as a normal adolescents,

Participant 7

We don't have any protocol or guidelines, but what we do is spot teaching while treating the patient we give them health education they need.

Participant 8

We don't have education materials here in the unit but, we do educate them on how to use their medication and always come for their follow-ups.

Participant 13

No, we do not have any guideline or standard program.

Participant 14

No, we don't have a specific guideline or protocol, so as a nurse we just use our own skill and understanding and experience of these types of conditions since we work here

Participant 15

There is not that policy but I can call it a protocol. So most of the time after they are operated on, usually we have to sit with them and tell them more the importance door them to take contraceptives while they are recovering… So we did not develop a written policy or protocol from the ministry or from the unit, but according to our experience we only use one method of the contraceptive which is implant. Most of the time according to the studies they say it has less impact to the treatment of the patient and it is also a long acting method

Participant 16

My experience, sometimes we don't have time for follow up assessment, because we don't have a guideline or protocol that guides us on how to do it but, a WhatsApp group was creating for patients with Congenital Heart Disease and rheumatic heart disease just for them to share among each other information on how to live with the disease.

They should also continue with general hygiene at home like brushing teeth, taking a bath every day and keeping the environment around them clean.

Participant 9

Here at the Cardiac Unit, there is not really guidelines but, we prepare them for their social lives and take care of themselves for example not to drink or smoke

Participant 12

Sister currently we don't have such a policy, but as a registered nurse and someone in charge for the clinic if the patients are coming, adolescence are coming, we give them education about contraceptive, if they want. We give them a choice if they want contraceptive or not and then I'm also giving them advice about patients health, I give them education about the patients' health. When to come to the clinic, what to do? And if they don't have time to come to the clinic especially in the morning they are going to school then I tell them to come at one o 'clock in the afternoon for their follow ups.

Participant 14

The role of nurses' with regard to preparation of adolescents to adulthood. At the moment currently especially us here at cardiac unit, we are not directly involved in their preparation, but we usually, like right now we do not have any protocol, with regard to that, but even the guidelines we currently do not have.

Career choice

The adolescents are also advised to change careers if possible or take careers which are not heavy. These choices are key in adjusting with the condition. Light jobs are advised post diagnosis. Adolescents are also advised to be mindful of their general hygiene.

Participant 2

When choosing a career or the type of job they do, they should remember not to choose the job that is very exhausting they should try to do light jobs.

Participant 4

We are also teaching them on career choices, how they can go on with their lives as normal. We also send them to the Cardiac Clinic for training, on their daily lives how to take care of themselves, how to take their medications on a daily basis and what type of food they need to eat, what type of job they have to do.

Participant 7

They should also continue with general hygiene at home and when choosing a career or the type of job they do, they should remember not to choose the job that is very exhausting they should try to do light jobs

Participant 14

Ok especially us here we do very little, especially we talk to them about the kind of jobs to take as they are growing as you know these people have congenital heart defect per say, so there are a lot of factors with regards to their jobs that they going to do that will have an impact on their health, ja so we talk that a little bit and we let them ask questions if they don't understand.

Psychological support

Although the nurses offer counselling, depending on nature of need. Critical cases are referred to the professionals and support services such as the social workers. The following are claims the participants made in that regards.

Participant 1

When we see there is a need for more counselling because time is limited here, we have sisters who do counselling in the hospital, like we have social workers and we also have psychologists who are at the mental hospital who can be called just in case if it sounds severe. In the (Cardiac Clinic) they have found support groups. We tell the sisters there to put them in support groups so that they can be able to talk with each other who are in the same situation or who have been through it. only when we see they have like social problems or they have other problems then we have a social worker which we refer them to

Participant 2

In the unit you give the patient daily counseling individually but then we refer them to the Social Worker…. We don't have protocol guidelines.

Participant 5

We focus on family planning; do on spot counseling depending on the needs if we have to assist or realize that the patient needs intensive counselling, we refer the patient to the social worker.

Participant 8

Here in the unit we have no counselling sessions or counselling groups but, we do attend to our patients to whatever need arise and we give them counselling according to what is needed, for example, regarding on their treatment and their follow-ups especially here in the unit. If the need arises for broader counselling, we refer them to the clinic we do have a social worker there and nurses that are trained to do that at the clinic level.

Participant 14

Yes, I don't do it but I regard it to be top priority, which is why I usually send them to the social worker

Participant 15

Ok thank you, most of the time we really do not do that much counseling, we most of the time refer them to the social worker but we can do and provide the little information that we have.

Participant 16

Regarding counseling here in the clinic we do not do counseling in detail we only assist and refer a patient to a department social worker at the clinic. The department has its own social worker trained into that regards.

4.5 Conclusion

This chapter presented the study findings from both the quantitative and qualitative findings. The merit of mixed methods is shown in heading 4.4 as the rich experiences of participants were shared.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

5.1 Introduction

This chapter discusses the findings from the study of nurses' knowledge and experience in preparing adolescents with congenital heart disease for adulthood at Windhoek Central Hospital. The study findings led to a conclusion that was consistent with the study objectives. Based on the analysis and discussions, recommendations for the study's conclusion and limitations are also presented.

5.2 Discussion of the findings

In essence of determining the quantitative data findings, the following were considered: a) prevention of complications, b) physical activities, c) sexuality, heredity, contraceptives and pregnancy planning. For the findings from the qualitative study on the nurses' experiences with regards to the education and counselling in the preparation of adolescents with CHD for adulthood are discussed.

5.2.1 Participants' demographic characteristics

Participants were asked about their demographic characteristics of which they had the opportunity to select responses from the provided options. The questionnaire comprised of information concerning the gender of nurses, current position of nurses, duration of qualification as a nurse, and the nurses' duration of working at Windhoek Central Hospital's Cardiac In- and Out-patient department.

In addition, the demographic characteristic of the current study corroborates other studies. The majority of the nurses were females because nursing is a female dominated profession.

In terms of the current position of nurses, 5.9% were cardiac specialist nurses, 76.5% were registered nurses and 17.6% were enrolled nurses. This result shows that the cardiac unit at Windhoek Central Hospital is served by a few cardiac specialised nurses. The majority of nurses who provide direct nursing care to the adolescents with CHD in a transition period at Windhoek Central Hospital's Cardiac In- and Out-patient departments are registered nurses only, however without specialisation in cardiac nursing care. Therefore, there is a need to increase the number of cardiac specialised nurses in the cardiac department. Sufficient cardiac specialised nurses in the department would provide the desired quality care for cardiac patients including the preparation of adolescents with congenital heart diseases to adulthood.

5.2.2 Objective 1: Determine the nurses' knowledge on preparation of the adolescents with congenital heart disease for adulthood with regard to the prevention of complication, physical activities, sexuality and heredity, contraception and pregnancy planning.

Objective 1 relates to section B of the questionnaire. Respondents answered questions on the following: (1) prevention of complications; (2) physical activities; and (3) sexuality and heredity; and (4) contraception and pregnancy planning for the female adolescent with congenital heart disease. This objective is supported by the transition theory in nursing as developed by Schumachert and Meleis (1994) focus on human experience, the responses, and the consequences of transition on the well-being of people (Pegg 2018). This transition theory's goal in nursing is to help people go through a healthy transition, to enhance healthy outcomes (Meleis 2018). Transition is phenomenon often triggered by critical events and changes in individuals or environment.

Transition theory is used as a framework to understanding the nurses' knowledge and experiences of nurses regarding the preparation of adolescents with CHD for adulthood at Windhoek Central Hospital.

With regards to prevention of complications, all the respondents 100% had good knowledge and indicated compliance with the requirement to teach adolescents with congenital heart disease about the characteristics of complications of congenital heart diseases, of which endocarditis is one of such complications. This finding indicates that the participants are able to equip the adolescents living with CHD with the required health information about early detection of potential complications. Early detection would result in prompt treatment and prevention of fatal complications.

However, of concern is that there is a low score from the participants on teaching about the side effects of cardiac medications to the adolescents with congenital heart disease. This was reflected by a notable 5.6% of the respondents who had poor knowledge and indicated that they do not teach the side-effects of cardiac medications to the adolescents concerned. Only a mere 17.6% had the knowledge that adolescents with CHD should be taught the side-effects of cardiac medications to the adolescents concerned. A significant proportion of 47.1% had insufficient knowledge and indicated erratic patterns of provision of information on the side effects of cardiac medication to the adolescents with congenital heart disease. Nevertheless, these revelations raise concern. Cardiac medications can be lethal if the side effects are not noticed and reported on time, and as a result they may have severe life-threatening effects on the patient.

Regarding on when to seek medical attention in case the side effects of medication occurs, still a significant 35.2% did not have the knowledge as to when the patient should seek

medical attention in case the side effects occurred. As a result, out of lack of appropriate knowledge, a significant large number 47.2 % of the respondents did not know that the medications should be stopped immediately if the patients experience the side-effects. Uninformed nurses may provide wrong or insufficient information to patients and risk complications among adolescents with congenital heart diseases. Moreover, a submission by an overall 94.1% of the respondents that adolescents with CHD in the transition period ought to visit the nearest health facility when experiencing side effects on medications is not based on their knowledge and teaching of the side effects of cardiac medications to patients. Subsequently, adolescents concerned would not necessarily make an informed decision to report to the health care facility in case of experiences of the side effects from the medications.

As stated by participant 15 and participant 17, the nurse's prime focus is that the adolescents with CHD seek medical help when they develop complication or side effect due to treatment. The participant 15 further states that the adolescents with CHD are taught to recognise the signs of endocarditis.

The findings of this study agree with Sillman et al. (2016) understanding the indications for anticoagulation, common INR levels for varied indications, educational requirements, and precautions is crucial in offering guidance. Patient education by nurses should include dietary advice (the effect of vitamin K-containing foods on INR), adherence and interactions with other medications, and the importance of timely INR testing and requesting the result (the patient should be aware of the most recent INR reading) (Sillman et al., 2016). Study findings affirm Biering et al. (2015) who agree that congenital cardiac disease may be accompanied by bacterial endocarditis.

The result clearly depicts that there is still a gap on the knowledge about choices of physical activities for the adolescents with CHD in transition among nurses. Lack of knowledge translates into the provision of incorrect information to the adolescent with CHD in transition to adulthood and this increases chances of complications. Activities they partake must not exert pressure on them as stated by participant 1, participant 14 and participant 15 mentions the male patients in particular. Study findings affirm, Moceri et al. (2015) who viewed exercise as is rarely discussed in routine clinic visits. Discussions are generally focused on activity limitations instead of the promotion of exercise. Efforts therefore should be made to encourage exercise and a healthier lifestyle.

Contrary to this study's finding, different scholars Longmuir et al. (2013), Kwon et al. (2019) and Bredy et al. (2018) emphasis the benefits of physical activities as it increase the musculoskeletal fitness and the well-being of adolescents with CHD. Bredy et al. (2018) and Longmuir et al. (2013) further added that for physical activity in adolescents with CHD to be promoted or limited the following should be taken into concentration, the illness severity, the gender, and paucity of scientific data specific the adolescents with CHD.

The study findings reveal that choosing a career depended on the type of cardiac lesion the adolescents have and adolescents may choose a career depending on what the body can tolerate. This was clearly stated by participants 2, 4, 7 and 14. Sable et al. (2011) and Girouard and Kavacs 2020 agree with these study findings that adolescents with CHD should find the best fit employment for their physical and emotion capability depending on the adolescents in question physical capacity, mental and psychological nature. However, Girouard and Kavacs 2020 added that career choice or employment very by the type of CHD the adolescents have.

Although there is a gap in the qualitative findings in regard to sexual activities engagement of the adolescents with CHD, the quantitative findings conform to Sable et al. (2011), Abma et al. (2017) and Zubani et al. (2017)views that the majority of adolescents with CHD engage in sexual interactions. Therefore, there is a need for an age-appropriate transitional care programmes that involve routine sexual health risk screening, reproductive health information on sexual health, contraception, and screening for signs of high-risk behaviours that could expose adolescents with CHD to sexually transmitted infections, pregnancy and the possibilities of genetic aetiology and recurrence risk of a congenital cardiac abnormality in the offspring of adolescents with CHD respectively.

With regards to the use of contraceptives by the adolescent with a congenital heart disease, all the respondents 100% indicated that adolescents with CHD are at risk of complications during pregnancy. However, in spite of this knowledge, respondents 9 and 12 agree with the majority of quantitative findings that the Implanon and condoms are the exclusive method of contraception for the adolescent with congenital heart diseases.

Contrary to the above findings of this study, Sable et al. (2011) and World Health Organization (2009) emphasises that contraceptive choice selection for adolescents with CHD should be individualised by taking into account the cardiac lesions, the type of surgical intervention they had, type of pharmacological regiment they are on and how it interact with the contraceptive choice and adolescent maturity.

Nurses' lack of knowledge of the appropriate contraceptive methods for the adolescents with a congenital heart disease is a concern. An ill-informed nurse may provide wrong information on family planning to the adolescents concerned, and this may result into pregnancy related complications, such as hereditary congenital defects for the foetus and

even maternal death for the adolescents with the congenital heart disease. All nurses who render care to adolescents with a congenital heart disease should be well-versed with safe methods of contraception for adolescents with congenital heart diseases and provide appropriate information in that regard. With regards to pregnancy, the qualitative findings revealed that all respondents agreed that adolescents with CHD are at risk of complications during pregnancy. In support of these findings, participants 8, 13 and 17, spoke highly of the risk involved when adolescents with CHD fall pregnant, such as the risk of pre-term delivery or losing the pregnancy. This study findings show that while the nurse participants demonstrated good knowledge that the adolescents with CHD should be educated on prevention of pregnancy and that pregnancy is high risk for them, the findings lack justification as to what should be done in case an unplanned pregnancy occurs.

Although Burström et al. (2017) agrees with the findings above that pregnancy is high risk and has serious impact on the health of adolescents with CHD, Sable et al. (2011) is of the views that a further multi-disciplinary team should be engaged in order to provide a well-coordinated pregnancy and delivery plan that assist and support the adolescents with CHD in making the decision to keep the baby or place the baby in adoptive services.

In conclusion, The findings from the quantitative data indicated that although nurse demonstrate good knowledge that adolescent with CHD should consult health facilities in case of side effects of medication (94.1%), avoidance of physical demanding occupation (1re00%) moreover only 76.5% of nurses agreed that adolescents with CHD in transition should not partake in any competitive sport. While nurses acknowledged that adolescents with CHD may engage in sexual activities that they are capable of performing (70.6%) and that adolescents with CHD are at risk of pregnancy related complications (100%).

However, the respondents nevertheless had average knowledge about action adolescents with CHD should take in event of medication side effect (52.9%), poor knowledge about risks incurred by engagement in sexual activities (11.8%), subsequent poor knowledge about risk of hereditary of CHD to the offspring (11.8%) and average knowledge about the choices of contraceptive for adolescents with CHD, most respondents 82.4% correctly recommended the Implanon as the suitable method of contraceptive for adolescents with CHD, however this method of contraceptive is standard for all adolescents with CHD at Windhoek central hospital cardiac department, without considering the specific cardiac lesion, type of cardiac surgical intervention and treatment regimen for an individual adolescent with congenital heart disease, as proposed by Sable et., (2011) and World Health organization (2009).

5.2.3 Objective 2: Explore the nurses' experience with regards to education, counselling, and preparation of adolescents with CHD for adulthood.

Objective 2 was answered during the qualitative part of this study, and strongly supported by the theory of Interpersonal Relations proposed by Peplau (1952/1988a) (D'Antonio et al., 2014). This theory captures two important aspects, the professional skills and client requirements, which are vital in nursing practise (D'Antonio et al., 2014). Furthermore the theory's main aspect emphasises the objective of nursing as assisting others in identifying their felt issues through the formation of therapeutic relationships. Peplau (1952/1988a) highlights various tasks that nurse play, including resource person, teacher, leader, advocate, and counsellor (D'Antonio et al., 2014).

Under objective 2, the following themes emerged from the qualitative findings of this study but did not match with the quantitative findings: take care and empathy, policy/guideline, and psychological support

The themes that emerged were discussed in line with the two aspect of the theory of Interpersonal Relationship as proposed by Peplau (1952/1988).

The aspect of: the client requirement

Take care and empathy

Nurses at the Windhoek Central Hospital in and out cardiac department indicated that the role of nurses does not only end at informing the patient the challenges the adolescents may face after being diagnose with CHD. However, nurses also address the worries of the adolescents with CHD in the transition phase to adulthood by offering moral support and where needed referring to professionals where their felt needs are meet. Empathy is crucial to helping relationship and is recognised as a fundamental aspect of all helping relationships. Peplau refers to therapeutic relationship as a prolong relationship between a nurse and patient which allow patient to feel safe and express themselves without fear of rejection (D'Antonio et al., 2014).

Psychological support

Nurses indicated that CHD is difficult for the adolescents to understand as the adolescents with CHD lack knowledge about the disease and therefore these adolescents need psychological support to help them cope with the disease as CHD requires ongoing medical attention and limitations to the patient's daily activities. Nurses at the cardiac in- and out-patient department at the Windhoek Central Hospital do psychological assessments to patients during screening at the out-patient department or during report taking at the in-

patient department and they make appropriate referrals the department of social work where the adolescents get the required help, as indicated by participants 1,2,5,8,14,15 and 16.

Sillman et al. (2016) agree that psychological issues are common in adolescents with congenital heart disease. Mood or anxiety disorders are prevalent in approximately 50% of the population. Nurses can play an active role in identifying patients at an increased risk for psychological disorders and they should be aware of the characteristics that may suggest the need for specialised mental health care. This includes non-adherence to treatment regimen with poor self-care and self-harming behaviour or statements.

Other literature has divulged that the nurses can play an active role in identifying patients at increased risk of psychological disorders and they should be aware of the characteristics that may suggest the need for specialised mental health care (Saidi & Kovacs, 2009).

The aspect of: the professional skills

Lack of policy/guidelines

It is important to note that at the Windhoek Central Hospital in and out cardiac department prepare the adolescents with CHD transitioning to adulthood counselling and education without a transition policy to guide them on what to do. Furthermore, nurses are required to offer support to the adolescents as they can see that the adolescents need such support. The unit also did not have a policy, guideline or educational materials as stated by participants 3,7, 8, 9, 12, 13, 14, 15, 16. Irrespective of these downturns, nurses still go out of their way to assist their patients in the best way they can. Peplau theory of interrelations' plays a vital role in in influencing the development of professional training. The therapeutic theory has identified the role of nurses as a resource person providing scientific information to patient in order to promote to the clients' wellbeing (D'Antonio et al., 2014).

5.3 Delimitation

The study was only conducted in one public hospital in Namibia, which is Windhoek Central Hospital (Cardiac Department) within its unique context. Henceforth the findings of this study were only limited to the Windhoek Central Hospital cardiac department and they may not be generalised to private hospitals that provide cardiac services in Namibia.

5.4 Limitations

Nurses' knowledge on the preparation for the adolescents with congenital heart disease was assessed using the LKQCHD. LKQCHD was developed to measure the level of knowledge in patients with CHD using four domains, the reliability score still needs be explored on a larger sample size. However, in this study, nurses were only assessed using four applicable domains. The domains that assess the type of cardiac conditions were not applied as nurses offering cardiac nursing services at the study setting are familiar with cardiac conditions.

The data were gathered with the use of self-administered questionnaires and face to face interviews. The use of the self-administered questionnaire does not provide follow ups to clarify issues that respondents might have. Moreover, the reliability of data depended on the honesty of the participant, although the instrument was verified and approved by specialists in the field of cardiology and a pilot study was conducted prior to the main study.

A small sample size of 17 participants (all population samples) for the collection of quantitative data also poses limitation to the generalisation of the findings to cardiac unit of private health facilities locally or in the region.

Another limitation of this study was the timing of the interview for the collection of qualitative data, because the interviews were conducted immediately after the self-

administered questionnaire, thus fears of taking too long to complete interviews could have been captured from participants.

5.5 Conclusion

The goal of this study was to assess the knowledge and experience of nurses regarding the preparation of adolescents with CHD to adulthood with particular emphasis on nurses' role in educating and counselling adolescents with CHD with regards to preparation for adulthood.

In this study, the researcher is of the opinion that both objectives of the study were answered. The conclusions are thus formulated under the objectives of the study.

5.5.1 Conclusion of objective 1

Determine the nurses' knowledge on preparation of adolescents with congenital heart disease for adulthood with regard to the prevention of complications, physical activities, sexuality and heredity, contraception and pregnancy planning.

In this regard, it is indicated that nurses are able to equip the adolescents living with congenital heart disease in the transition period with the required informational about the prevention of complications, sexuality and heredity, contraception and pregnancy prevention. Nevertheless, a significantly large number of participants did not know that medication should be stopped immediately when patients experience side effects and these divulgences raise concerns. Furthermore, the study revealed that there is a gap on knowledge among nurses about the choices of physical activities for adolescents with CHD in transition. Therefore, the nurses expressed lack of knowledge on the best suitable physical activities for adolescents with CHD.

The Implanon is the recommended choice of conceptive method for adolescents with CHD at the Windhoek Central Hospital in- and out-patient cardiac department.

5.5.2 Conclusion of objective 2

Explore the nurses' experience with regards to education, counselling, and preparation of adolescents with CHD for adulthood.

In conclusion, the participants acknowledged the importance of providing proper education, counselling and preparation of adolescents with CHD for adulthood, for instance, participants during the interviews spoke highly of the importance of treatment adherence, advice on social issues, INR training and psychological support to the adolescents with CHD. Although psychological support to the adolescents with CHD was captured during the interviews, it is evident that family members of adolescents with CHD were not involved in the education sessions, which is highly likely to lead to lack of understanding about the adolescents' cardiac conditions, health care needs and prognosis of the disease. Conversely, the nurses at Windhoek Central Hospital in- and out-cardiac department acknowledged the involvement of family members during the INR training sessions for adolescents with CHD. Religion was highlighted by the participants as one of the obstacles that hinder the effective counselling of the adolescents with congenital heart disease.

5.6 Recommendations

Recommendations related to the improvement of nurses' knowledge on the preparation of adolescents with CHD to adulthood

Findings from this study could be considered in designing in-service training programmes for nurses providing cardiac nursing services. Nurses who have worked for a longer time at Windhoek Central Hospital's In- and Out-patient cardiac departments and cardiac

specialised nurses have practical skills and theoretical knowledge that could be utilised to plan and implement the in-service training programme.

- The Ministry of Health and Social Services can involve other competent trainers or experts in the field of CHD to offer in-service training to the nurses who provide cardiac nursing services to adolescents with CHD. These two groups could assist in drawing-up departmental policies and guidelines generated from the WHO guidelines on the preparation of adolescents with CHD. WHO guidelines include comprehensive care that is coordinated with primary care provider education of adult care providers in managing chronic conditions previously limited to the paediatric population and on-going coordinated communications between patients, the family and healthcare providers (Sable et al., 2011). Furthermore, Sable et al. (2011) state that the ultimate goal of a formal transition programmes is to optimise the quality of life, life expectancy and productivity of young patients, as this can only be achieved through the provision of high quality developmentally appropriate healthcare services that continue uninterrupted as the adolescents transfer to adulthood. Transitional health related issues, employability and sexuality should be targeted in such programmes to prepare adolescents with CHD for the future (Canobbio, 2011).

- This study shows that the cardiac unit at Windhoek Central Hospital is served by few cardiac specialised nurses. Only a mere 5.9% of nurses are cardiac specialised, and this may indicate that the department could lack the desired quality of care for the cardiac patients including the preparation of adolescents with CHD. Therefore, the study recommends that the MoHSS could consider sending more nurses to

specialise in cardiac nursing services. This might have an impact on how well the adolescents with Congenital Heart Disease are prepared for adulthood.

- The Ministry of Health and Social Services should emphasise again to all nurses providing cardiac nursing services the importance of health education to adolescents with CHD. The following topics need to be included in the health education, namely, prevention of complications, physical activities, sexuality, contraception and pregnancy planning.

- Parents and family members of adolescents with CHD need to be assessed by nurses on the knowledge of the adolescents' cardiac conditions, their emotional status, and spiritual needs in order to ensure that support to the adolescents is individualised, religion sensitive and time appropriate. Therefore, the MoHSS should offer family centred care by involving a treatment support person for the adolescents with CHD.

- Health education should adopt an adolescent friendly communication style, where the adolescents will feel free to have an open dialogue with the nurses.

Research related recommendations

- The findings from this study highlighted obstacles that hinder the provisions of the health education programme to adolescents with CHD related to sexuality, heredity and family planning. Further research is needed to elucidate these obstacles that prevent the effective implementation of adolescents with CHD in the medical transition programme and develop methods to overcome these obstacles.

- There is potential for further studies on the experience and knowledge of the adolescents with CHD within the identified themes of this study which could provide information on the felt needs of the adolescents themselves in order to develop internal policies and guidelines that can allow nurses to promote individualised transition programmes to the adolescents with CHD depending on the cardiac lesion and type of cardiac intervention the adolescent has.

- The study was only limited to public hospitals, therefore, further research is required to assess nurses' knowledge and experience in private hospitals who provide cardiac nursig care to adolescents with CHD as this may contribute to develop standardised guidelines to be used in the preparation of adolescents with congenital heart disease and to determine transferability in a wider perspective.

5.7 Chapter summary

In this chapter, discussions, conclusions and recommendations were drawn based on the two main objectives of the study. Interpretations were made to give meaning to the data after analysis with conclusions and recommendations were drawn based on the study's major finding.

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Annexure 1 Ethical clearance from UNAM Research Ethics Committee

UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SON /518/2019 **Date:** 13 November, 2019

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: 2 Experiences And Knowledge Of Nurses Regarding The Preparation Of Adolescent With Congenital Heart Disease To Adulthood At Windhoek Central Hospital Namibia

Researcher: CHAIRMAINE K. NJEMBO

Student Number: 200903837

Supervisor(s): *Dr. Amakali*

Faculty: School of Nursing

Take note of the following:

(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.

(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.

(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.

(d) The UREC retains the right to:

(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,

(ii) Request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Dr. J.E. de Villiers: Chairperson

Ms. P. Claassen: Secretary

Annexure 2 Permission Letter from Medical Superintendent of Windhoek Central Hospital

MINISTRY OF HEALTH AND SOCIAL SERVICES

Private Bag 13215 Windhoek Namibia	Harvey Street Windhoek Central Hospital	Tel. No: (061) 203 3024 Fax No: (061) 222886
Enquiries: Ms A.U.Mootu	Ref.	Date : 11 February 2019

OFFICE OF THE MEDICAL SUPERINTENDENT

Ms.C.NJEMBO
P.O.BOX 27603
WINDHOEK
0812858018

Dear Ms.Njembo

RE: PERMISSION TO CONDUCT A RESEARCH ON THE EXPERIENCES AND KNOWLEDGE OF NURSE REGARDING THE PREPARATION OF ADOLESCENT WITH CONGENITAL HEART DISEASE TO ADULTHOOD AT WINDHOEK CENTRAL HOSPITAL.

Reference is made to the above mentioned subject:

Kindly be informed that permission has been granted to conduct the study on the above mentioned subject under the following conditions:

1. Patient client information should be kept confidential at all times
2. The purpose for study is only for your study purposes as you have requested and it does not include any remuneration.
3. Permission to be obtained from each individual patient going to be studied.
4. **Preliminary findings to be submitted to Customer care office, Windhoek Central Hospital upon completion of the study.**

Thank you for your kind gesture.

Yours sincerely

.....

DR. D.I.UIRAB
CHIEF MEDICAL SUPERINTENDENT

Annexure 3: Request letter for validation

Mrs. Charmine Njembo
P O Box 27603
Windhoek
Namibia
Cell: 0812858018

To:
DR Simon I Beshir
Cardiologist
Cardiac unit WCH

Dear Sir/Madam

I am a Master Degree student in the Department of Nursing Science, in the School of Health Science, University of Namibia.

The topic of my MA research study is "Knowledge and Experiences of Nurses Regarding the Preparation of Adolescents with Congenital Heart Disease to Adulthood at Windhoek Central Hospital Namibia".

Please find enclosed herewith a set of tools developed for this research study with the objectives and variables included in the study.

I request you to check the tools for the appropriateness of:

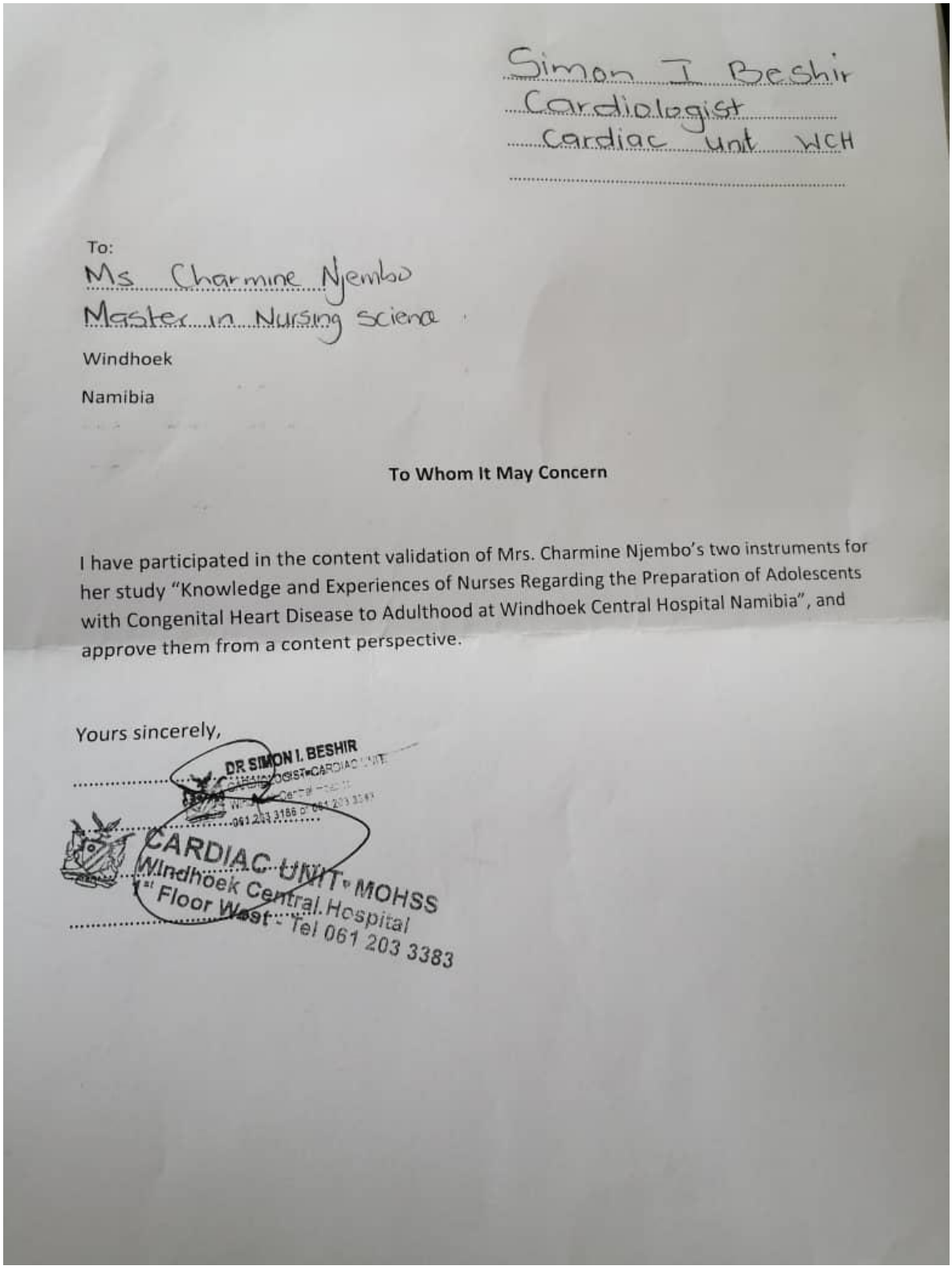
i) Content (content validity)
ii) Format
iii) Response system
iv) Language
v) Suitability for the sample

Kindly give your valuable suggestions and expert guidance to make a study complete and contributory.

With kind regards,

Mrs. Charmine Njembo

Annexure 4: Validation letter from expert in cardiac



Simon I Beshir
Cardiologist
Cardiac Unit WCH

To:
Ms Charmine Njembo
Master in Nursing sciena
Windhoek
Namibia

To Whom It May Concern

I have participated in the content validation of Mrs. Charmine Njembo's two instruments for her study "Knowledge and Experiences of Nurses Regarding the Preparation of Adolescents with Congenital Heart Disease to Adulthood at Windhoek Central Hospital Namibia", and approve them from a content perspective.

Yours sincerely,

DR SIMON I. BESHIR
CARDIAC UNIT
Windhoek Central Hospital
1st Floor West
Tel 061 203 3383

Annexure 5: Validation letter from expert in cardiac

REPUBLIC OF NAMBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: (061) 203- 20333388
Fax: (061) 234083
Email:

Enquiries: Dr A.U. Mureko

WINDHOEK CENTRAL HOSPITAL
CARDIAC UNIT

To:
Ms. Charmaine K Njembo
Masters Student Nursing Science, University of Namibia

To Whom It May Concern

I, Dr A.U. Mureko, Cardiothoracic Surgeon, hereby concede and confirm that I have read and validated Ms Charmaine Njembo's research instruments for her study "**Knowledge and Experiences of Nurses Regarding the Preparation of Adolescents with Congenital Heart Disease to Adulthood at Windhoek Central Hospital Namibia**".

I have therefore approved them as reliable and valid instruments for her study.

Yours Sincerely

.....

Dr A.U. Mureko
Cardiothoracic Specialist Surgeon
Windhoek Central Hospital
Cardiac Unit

"Health for all"

Annexure 6: Permission Letter from Permanent Secretary MoHSS

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198 Windhoek Namibia	Ministerial Building Harvey Street Windhoek	Tel: 061 – 203 2562 Fax: 061 – 222558 E-mail: hnangombe@gmail.com

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3 CN
Enquiries: Dr. H. Nangombe

Date: 22 January 2019

Ms. Charmine Njembo
P.O. Box 27603
Windhoek

Dear Ms. Njembo

Re: Experiences and knowledge of nurses regarding the preparation of adolescent with congenital heart disease to adulthood at Windhoek Central Hospital, Namibia.

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1 The data to be collected must only be used for academic purposes;
3.2 No other data should be collected other than the data stated in the proposal;
3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects' should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
3.4 A quarterly report to be submitted to the Ministry's Research Unit;
3.5 Preliminary findings to be submitted upon completion of the study;

Annexure 7: Consent for participant

CONSENT FORM FOR AN INFORMED CONSENT

Study Title: Experiences and knowledge of nurses regarding the preparation of adolescent with CHD to adulthood" at WCH.

Section A: Introduction

Hello. My name is Charmine Njembo, student number 200903837. I am a Master Nursing Science candidate at the University of Namibia. I am hereby inviting you to participate in my research study on "Experiences and knowledge of nurses regarding the preparation of adolescent with CHD to adulthood" at Cardiac unit at WHC.

The goal of this study is to assess the experiences and knowledge of nurses regarding the preparation of adolescent with congenital heart disease to adulthood, with particular emphasis on nurses' role in educating and counselling of adolescent with congenital heart diseases.

Section B: An informed Consent by the participant

I …….. have read the above invitation and grant my permission to partake in your study on "Experiences and knowledge of nurses regarding the preparation of adolescent with CHD to adulthood at WHC"

I understand all the information and am adequately informed on the aims of the research, the interview and questionnaire process.

I also understand that the researcher will take field note during the interview, all interviews will be taped and subsequently transcribed and all information I offer will be kept confidential and secured by the researcher. I have been informed that my anonymity will be protected through the use of pseudonyms.

It has been explained to me that my participation is voluntary and I can opt out of the study at all times and that there are no risks or benefits to participation in this study.

I understand that by signing this form, I am ensured my anonymity will be upheld and all information furnished will be totally voluntary and confidential.

Name and Surname of the participant……Signature of participant……...Date:……

Name & Surname of the researcher……Signature of researcher:……Date:……..

Annexure 8: Questionnaire

Appendix 1: Questionnaire for Nurses from Cardiac Unit, Windhoek Central Hospital

Thank you for voluntarily agreeing to take time to complete this questionnaire. The activity will be about of 20-35 minutes duration. As explained in the consent form, you do not need to include your name or any other personal information. There are no foreseeable risks for participating in this study; the survey is strictly anonymous and no responses can be traced to a specific Participant.

Research Topic: Knowledge and experiences of nurses regarding the preparation of adolescents with congenital heart disease to adulthood at Windhoek Central Hospital, Namibia

Student: Charmine K Njembo [200903837]

Date: February 2019 – April 2019.

Answer all questions

1. Demographic information of participants:

1.1 Sex [Tick (√) in the appropriate box]

1.1.1	Female	1
1.1.2	Male	2

1.2 Current Position [Tick (√) in the appropriate box]

1.2.1	Cardiac Nurse Specialist	1
1.2.2	Registered Nurse	2
1.2.3	Enrolled Nurse	3

1.3 Length of time qualified as a Nurse [Tick (√) in the appropriate box]

1.3.1	6 months – 12 months	1
1.3.2	13 months – 36 months	2
1.3.3	37 months – 60 months	3
1.3.4	61 months – 84 months	4
1.3.5	85 months – above	5

1.4 Length of time working at cardiac ward [Tick (√) in the appropriate box]

1.4.1	6 months – 12 months	1
1.4.2	13 months – 36 months	2
1.4.3	37 months – 60 months	3
1.4.4	61 months – 84 months	4
1.4.5	85 months – above	5

2. Nurses' knowledge assessment

2.1 Knowledge of nurses regarding prevention of complication [Tick (√) in the appropriate box]

2.1.1 Should patient be educated on characteristics and type of signs of endocarditis?	**Yes**	**No**
	1	2

2.1.2	**To what extend are patients educated on the following:**	**Never**	**Seldom**	**Some of the time**	**Most of the time**
2.1.2.1	different types of side effect of medication	1	2	3	4
2.1.2.2	In case when side effect occurs, when to seek medical attention	1	2	3	4

2.1.3	**In your opinion what should a patient do if experience side effect on medication?**	**Yes**	**No**
2.1.2.1	Stop taking medication immediately	1	2
2.1.2.2	Visit the nearest health facility	1	2

2.2 Knowledge of nurses regarding physical activities [Tick (√) in the appropriate box]

2.2.1	**In your opinion should adolescent with CHD :**	**Yes**	**No**
2.2.1.1	partake in any kind of physical activities	1	2
2.2.1.2	partake In any competitive sport that requires daily training	1	2
2.2.1.3	Advised to choose a too physical demanding occupation (e.g Mining)	1	2

2.3 Knowledge of nurses regarding sexuality and heredity

2.3.1	Can the adolescents with CHD transitioning to adulthood engage in all physical sexual activity (select one answer only):	
2.3.1.1	If adolescent feel capable of	1
2.3.1.2	Yes at all times	2
2.3.1.3	Avoid it all times	3
2.3.1.4	Avoid it only when feeling sick	4

2.3.2	Is there a possibility of a child born to a CHD adolescent to have CHD? (select only one answer)	Always 1	Very Often 2	Sometimes 3	Rarely 4	Never 5

2.4 Knowledge regarding contraceptive and pregnancy for female patients only

2.4.1	**Could you please rate the recommended methods of contraceptives most advisable for the transitioning adolescents with CHD (Please grade all).**	**Definitely won`t**	**Probably won`t**	**Definitely will**	**Probably will**
2.4.1.1	The pill	1	2	3	4
2.4.1.2	The implanon	1	2	3	4
2.4.1.3	The coil (Intrauterine device)	1	2	3	4
2.4.1.4	Female Condom	1	2	3	4

2.4.2 Do patient with CHD run a risk for complications during pregnancy? [Tick (√) in the appropriate box]	**Yes**	**No**
	1	2

Thank you for successfully completing this questionnaire.

Annexure 9: Participant Interview guide

Interview Guide

Study title: "Experiences and knowledge of nurses regarding the preparation of adolescent with CHD to adulthood"

1. **Location**
   - Quiet, comfortable and well ventilated room.
   -
   - Sign – "Do Not Disturb – interview in process" placed on outside of door,

2. **Expected Length of interview**
   - 20 – 35 minutes

3. **Opening the interview**
   - Introductions, welcome the participant, thank them and build rapport and trust to relax them. Advise on consent, anonymity and options to opt out at any time.
   - Ask if participant has any questions.
   - Explain that questions are open ended and semi structured to allow for discussion and exploration of topics of interest which may arise during interview. Each question should take approximately 10-15 minutes.

Question 1

Tell me the role of nurses regarding the preparation of adolescent to adulthood with CHD

Probes

Probes are follow up to/based on the responses to the open-ended question, e.g.

- Tell me more about what you have said

Clarify more……

Question 2

"Tell me your experience on educating the adolescent with congenital heart disease with regard to preparation to adulthood".

Probes

Probes are follow up to/based on the responses to the open-ended question, e.g.

- Tell me more about what you have said
- Clarify more……

Question 3

"Tell me about your experience on counselling of adolescent with congenital heart disease with regard to preparation to adulthood".

Probes:

Probes

Probes are follow up to/based on the responses to the open-ended question, e.g.

- Tell me more about what you have said
- Clarify more……

- What does counselling of an adolescent with CHD with regard to preparation to adulthood includes
- At what level of priority is counselling of an adolescent with CHD in preparation to adulthood in nursing care
- how do you conduct counselling session for adolescent with CHD in to prepare them for adulthood
-

4. Conclude Interview –

- Thank the participant for their time and input.
- Ask them if they are happy with their input and if there is anything else they would like to add.
- Enquire if they would be available to look over the findings of the study, prior to disseminating results, to confirm them.

Annexure 10: Editor's Note

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4 August 2021

To whom it may concern

LANGUAGE EDITING – CHARMINE K. NJEMBO

This letter serves to confirm that a **MASTER OF NURSING (MNSC)** thesis entitled ***KNOWLEDGE AND EXPERIENCES OF NURSES REGARDING THE PREPARATION OF ADOLESCENTS WITH CONGENITAL HEART DISEASE TO ADULTHOOD AT WINDHOEK CENTRAL HOSPITAL, WINDHOEK, NAMIBIA*** by CHARMINE K. NJEMBO was submitted to me for language editing.

The thesis was professionally edited and track changes and suggestions were made in the document. The research content or the author's intentions were not altered during the editing process and the author has the authority to accept or reject my suggestions.

Yours faithfully

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PhD in English
M.A. in Intercultural Communication
M.A. in English
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