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Tetralogy of Fallot: A Qualitative Study towards Identifying the Basic Needs of a Child with this Condition

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Abstract:- The consequences of surgical correction of Tetralogy of Fallot (TOF), remains an important aspect as children with TOF repair run the high risk of increase mortality resulting from cardiopulmonary nursing problems involving cardiorespiratory insufficiency and low cardiac output resulting from surgical management manipulation of the heart. A study that investigates the basic need of children living with surgically corrected Fallot's tetralogy integrates in a caring science discipline. The researcher sorted to investigate on identifying which basic needs of children living with TOF in one of the surgical heart centres of Africa could be used when modeling a caring approach for them. This was a phenomenological qualitative study which explored the nurses formal knowledge of the clinical needs faced by children with tetralogy of Fallot. The population under study were the nurses and were selected based on a non-probability convenient sampling technique. Data was collected using a semi-directed guided interview guide on a one-one interview strategy. Content of the information gathered from the participants was analyzed using Colaizzi's descriptive phenomenology method. The study revealed that especially during post-surgical repair, the child presents with the following basic needs like: biophysical, safety and security, psychophysical, psychosocial and spiritual needs.

Keywords:- *Basic Need, Tetralogy Of Fallot, Caring Behaviors.*

I. INTRODUCTION

➢ *Background to the Problem*

The consequences of surgical correction of Tetralogy of Fallot (TOF), remains an important aspect as children with TOF repair run the high risk of increase mortality resulting from cardiopulmonary nursing problems involving cardiorespiratory insufficiency and low cardiac output resulting from surgical management manipulation of the heart. The incision site is left with a risk for infection, altered levels of hemodynamic levels, low saturation levels, altered arterial blood gas levels, and fluid input/output volume level creating a negative fluid balance and acid-base imbalance warrant that a caring approach be developed to improve healing outcomes. The article by Worku et Allen (2020) supported that via a long-term follow-up of children with TOF repair of 0-20 years at the age of repair and who survived 1 year postoperatively had excess mortality registered from ventricular arrhythmia and sudden cardiac death. It was also reported that in a multicenter cross-sectional, 43.3% of studied patient had present or past arrhythmia, of which atrial arrhythmia were predominantly associated with a number of cardiac surgeries, atrial enlargement, left ventricular dysfunction, pulmonary regurgitation patient were at high risk of sudden death through ventricular tachycardia. Some consequences of surgically corrected TOF support the researcher's goal to identify the basic needs of children with TOF so as to help improve caring-healing outcomes for children with TOF repair in and out of the country.

Literature presents little knowledge and publications on the basic needs of children living with a surgically corrected TOF in Africa. It is obvious that complete repair of TOF from 6-12 months, a standard median sternotomy using full flow (150-250ml/kg/minute), and cardiopulmonary bypass with moderate systematic hypothermia together with blood or crystalloid prime leaves the child with surgically corrected related unmet basic needs. There is lack of research in the area of identifying the unmet needs for children with surgical repair of Fallot's tetralogy.

➢ *Problem Statement*

A study that investigates the basic need of children living with surgically corrected Fallot's tetralogy integrates in a caring science discipline. Observations during clinical working experience period of the researcher showed that in the pediatric units of most hospitals in Africa and Cameroon in particular, most children present with difficulty in

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respiration, failure to thrive, prolonged dry cough and fever, facial and lower limb edema, repeated tonsilitis, night sweats and deep cyanosis of the tongue when crying, just to name a few. Children presenting with one of the complex congenital cardiac defects like tetralogy of Fallot present with some of the symptoms signaled above. However, appropriate diagnosis and caring approach towards children with tetralogy of Fallot, still remains a challenge in Africa. Modeling a caring approach towards children living with the surgical repair of this condition highly demands a comprehensive knowledge of who a child with tetralogy of Fallot is. Therefore, this researcher decided to investigate on identifying which basic needs of children living with tetralogy of Fallot in one of the surgical heart centres of Africa could be used when modeling a caring approach for them.

II. METHODOLOGY APPROACH

- *Design*

This was a phenomenological qualitative study which explored the nurses formal knowledge of the clinical needs faced by children with tetralogy of Fallot.

- *Participants*

The population under study were the nurses and were selected based on a non-probability convenient sampling technique. Included in the study were nurses with experienced cardiac care, had assisted a child with Fallot repair on more than one occasion, and accepted to partake in the study. Excluded nurses were those with experienced cardiac care, had assisted a child with Fallot repair on more than one occasion, but was not available to participate in the study. Sampling size of 28 participants was determined by the saturation level.

- *Data Collection and Instrument*

Data was collected using a semi-directed guided interview guide on a one-one interview strategy bases in order to identify the basic needs of children living with TOF repair. The researcher gathered information concerning the basic health needs of the children during outreach consultations and surgical corrections pre-operative and post-operative.

- *Data Analysis*

Content of the information gathered from the participants was analyzed using Colaizzi's descriptive phenomenology method. Colaizzi's approach to phenomenological qualitative analysis runs in seven steps as shown below. The analysis began with familiarization, in which the researcher became acquainted with the data, and read through all the participants' description to carve out meaning of how the caring concept has been understood and practiced. The next step was identifying significant statements of direct implication with the caring phenomenon about a child living with surgically corrected TOF. Further, meanings were formulated from the transcription of the participants. At the same time, the researcher avoided pre-conceived ideas about the phenomenon under description and focused on the phenomenon as experienced and described by the participants before expressing, with clarity, the signification of each dominant opinion. Then, clustering of the themes follows as the researcher regrouped the views into themes establishing a link between the themes and original transcription while noting the divergence or convergence that might arise. Furthermore, the researcher developed an exhaustive description of the phenomenon while incorporating the significant themes identified in the previous steps. After this, there was a condensation of the exhaustive description to realize a fundamental structure, presenting only those aspects that could paint a closer image of the phenomenon under study. Lastly, the fundamental structure is verified by returning the basic structure statements to the participants to ask whether it captures the same experience (Morrow et al., 2015).

- *Credibility and Trustworthiness*

In this study, credibility was drawn from attributing a little longer during interviews with the participants to test for misinformation and get rich data. Moreover, trustworthiness and rigour were respected to maintain quality and reduce subjectivity and bias (Fook, 2002) through a series of measures. One of them was respect to ethical considerations and approval from the national ethical clearance committee.

III. RESULTS

The data analysis finally created twelve categories as follows: 1) infection risk; 2) unstable temperature; 3) respiratory function insufficiency; 4) cardiac insufficiency; 5) hypo perfusion and fluid balance restoration; 6) cardio-pulmonary-electro-stimuli imbalance; 7) anxiety and squatting position; 8) cardio-pulmonary insufficiency; 9) authentic presence seeking by family and child; 10) acido-hypoxic panel restoration support; 11) oxygen mechanical ventilator instability; and, 12) calorie growth factor insufficiency. The above categories were grouped into five themes as follows: biophysical needs; safety and security needs; psychophysical needs; psychosocial and spiritual needs; holistic need perspectives.

- *Respiratory Function Insufficiency*

The results of this study from the participants' opinions affirmed that children from birth presenting with "*child has cyanosis*", "*some do cough*", "*digital clubbing*", "dyspnea" should have their oxygen saturation level monitored as well as pre-operative echocardiography since "low oxygen saturation" was amongst the clinical manifestations that featured during the interview.

- *Cardiac Output Insufficiency*

Most participants during the interview process expressed that most children they admitted or cared for at the ICU presented with "*murmurs*", "*palpitations*", and "*irregular heart beat*".

- *Hypo-Perfusion and Fluid Balance Restoration*

The results of the study, based on the interview process, showed that hypo-perfusion and fluid balance were really problematic as the participants expressed that children

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mostly during postoperative periods do present with "*increase thirst*", "*decreased fluid balance level*", "*decreased blood pressure levels*", and "*unstable central pressure levels*". These are mostly manifestations of Fallot repair that occur postoperative.

➢ *Cardio-Pulmonary-Electro Stimuli Imbalance*

The resulting opinions of the participants of the interview revealed that "*premature ventricular heart rhythms*", "*irregular heart rate*", and "*electrolyte imbalance*" were possible clinical problems encountered with children after TOF repair. Immediately the child is received at the ICU, the nurse connects to the heart monitor such that the different hemodynamic parameters can be monitored some of these include "*premature ventricular contractions*" as a nurse sees fluttering wavelengths on the monitor, level of heart rate determining tachycardia or bradycardia as levels of "*irregular heart rate*".

➢ *Security and Safety Needs*

This category according to the participants includes risk for infection and unstable Temperature. Most participants expressed that most admitted children come with …"*chronic chest infections*" …after having had series of anti-biotherapy with no relief. One of the critical parameters that are being monitored during hemodynamic monitoring is the temperature. Moreover, the participants talked of "*fever*" as one of the children's basic needs with TOF. Fever is one of the determinants of ordering for complete blood count, either preoperative or postoperative, to identify the source of the "*fever*".

➢ *Psycho-Physical Needs*

Concerning psycho-physical needs, the participants mentioned anxiety, squatting position and Cardio-pulmonary insufficiency. The participants expressed that …"*feeding difficulties*," "*identify and relieve Tet spells*," "*physical exercise tolerance*", and "*frequent tiredness*"… were some of the needs identified during care of children with TOF. The participants expressed again that some children with TOF present with severe …"*chest congestion*"… especially postoperatively, the reason why suctioning is done at the bedside is one of the aspects of chest care. In addition, daily chest care with a nebulizer is done to relieve the "*chest congestion*».

➢ *Psychosocial and Spiritual Needs*

The participants expressed that children sometimes present with … "*delay speech expression*" and "*frequent crying.*"…Delivering a baby is usually good news for the family, but getting the news that the child is having a cardiac disease brings sadness to most families because of fear of the outcome of corrective surgery. Concerning the self-actualization need (holistic perspectives), acido-hypoxic panel restoration support was be the mean issue. The participants expressed that the children with TOF do suffer with …"*pain*," "hypothermia," and sometimes record "increase levels of lactate levels". "Pain" is one of the key things that the children start complaining about as soon as they recover from anesthesia.

Always about self-Actualization need (holistic perspectives), participants highly expressed that the children do manifest with basic needs like …"*decreased oxygen saturation levels*," "*decreased level of consciousness*", and "*cyanosis*"… With auto-transfusion during corrective surgery at times following bleeding or loss of blood during the procedure, oxygen levels do drop, and child presents with "decreased oxygen saturation levels". Furthermore, growth factor level was expressed by participants to be related with calorie intake postoperatively. Most attributed their opinions to..."*nutritional deficiency*" and "*growth retardation*"…

All Those needs are shown in the figure below.

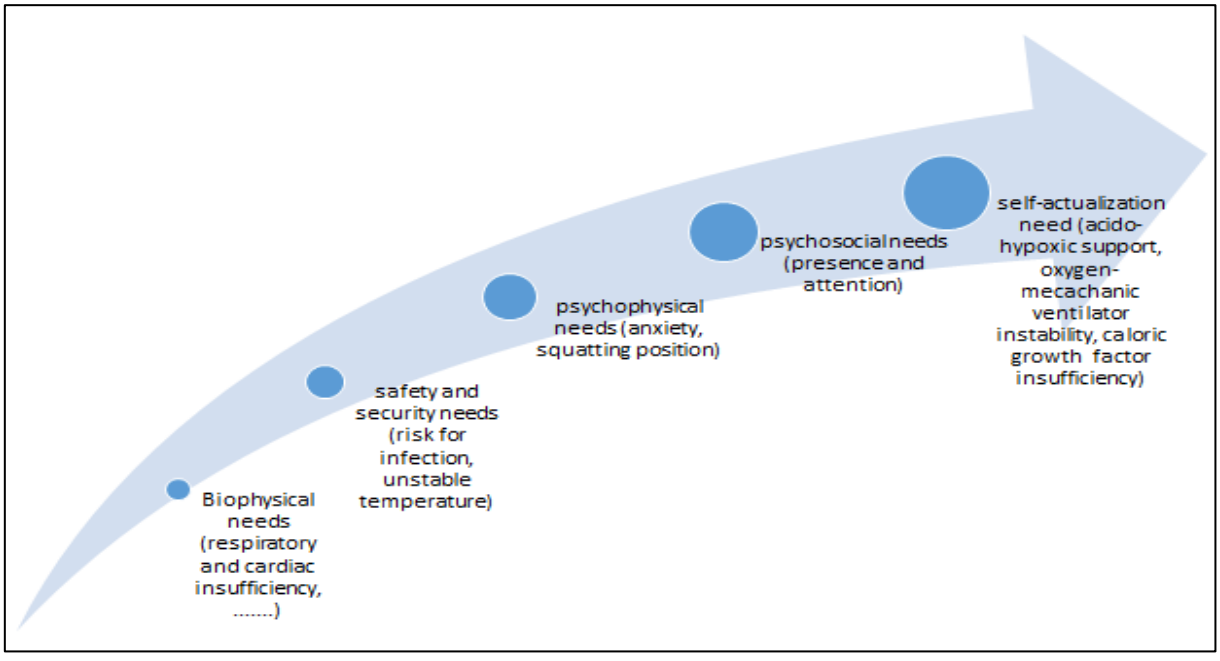

Fig 1: Category of Basic Needs According to the Participants Being Interviewed

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IV. DISCUSSION

The aim of this study was to identify the basic needs of children living with a surgically corrected tetralogy of Fallot.

The study postulated that the biological and physical dimensions were priority areas to be tackled for children with a surgically corrected TOF. This was not different from what Watson said in her book entitled 'Nursing: the Philosophy and Science of Caring' (Watson, 1985; McEwen & Wills, 2021). The authors considered the human needs to be classified as lower order needs which included biophysical and psychophysical, and higher order needs which included psychosocial and intrapersonal. Biophysical components include food and liquid, elimination, and ventilation, while psychophysical activity-inactivity could be considered paramount (Watson, 1985). The participants who were recruited for interview confirmed that children whose diagnoses were confirmed for TOF, either preoperative or postoperative, had respiratory function insufficiency, low cardiac output syndrome, altered levels of oxygen saturation in blood, problems in achieving a negative fluid balance control based on the fluid that was perfused before and during the surgical correction prior to intensive care unit care.

The results of this study were confirmed by that of Romanowski (2020) where the author affirmed that biophysical health problems of children with TOF pre-and postoperative might result from poor recognition and management of low cardiac output syndrome, such that emphasis should be laid on the fact that the nurse should initially assess for initial signs including persistent tachypnea or dyspnea, feeding difficulties, general irritability, poor perfusion that manifests with blue skin discoloration or cool periphery, heart murmurs, and cardiomegaly on chest radiography, cyanosis of saturation levels below 95%, even in normal hemoglobin levels.

Just like Hokemberry et Wilson (2017) stressed the normalcy of cardiac output as being the product of heart rate and stroke volume in order to detect cases of onset of low cardiac output syndrome that might arise from prolonged cardiopulmonary bypass and poor intraoperative management of anesthetic products, Romanowski (2020) added that during intensive care period, care should be taken when administering ionotropes as they might result to bradycardia which will reduce cardiac output that could eventually results to respiratory function insufficiency and cardiac output insufficiency, lower order needs as expressed in Jean Watson's caring theory (McEwen &Wills, 2021). The results of this study also showed that hypo-function and fluid Imbalance were some of the health needs falling under biophysical health needs. During care of children after TOF repair, fluid balance, and renal function were sometimes challenging to manage in the postoperative. In the retrospective analysis work on consecutive tetralogy of Fallot, cases operated at a single centre in 3 years by Griksaitis et al. (2014), it was noted that out of 41 children identified to have received loop diuretics, and 17% required support with a peritoneal dialysis catheter. The authors affirmed that the mean length of pediatric intensive care was prolonged given that fluid volume required of more than35ml/kg within the first 12-hour period after repair was administered and was highly significant at the 95% confidence interval with a $p< 0.01$ as a key factor to increase demand for peritoneal dialysis.

In the same vein, the results of the study, based on the interview process, showed that hypo-perfusion and fluid balance were problematic as the participants expressed that children mostly during postoperative periods do present with "*increased thirst",* "*decreased fluid balance level*," "*decreased blood pressure levels*," and "*unstable central pressure levels*." Sometimes, there is bleeding as a result of surgical intervention immediate complication or because of leakage from the site of insertion. The nurse proceeds to verify hemodynamic readings for confirmation of "decreased blood pressure levels," "unstable central venous pump," as expressed by the participants during the interview, that could eventually result to "increase thirst," "decreased fluid balance level," This was confirmed by Siemens et al. (2020) who admitted that bleeding is common especially around the mediastinal, following pediatric cardiopulmonary bypass surgery for congenital heart disease and proposed that fibrinogen concentrate be applied to combat this need.

Moreover, temperature is one of the essential variables of hemodynamic monitoring in most intensive care units for children undergoing open heart surgery for TOF correction. This is usually documented in the monitoring sheet for all the children. The results of this present study agreed that temperatures were being taken for children with a surgically corrected TOF to detect early onset of fever. Nwafor et Eze (2021) in their article on Post-Operative Fever (POF) after cardiac surgery in a low and middle-income –country, a 7-year institutional experience carried out a retrospective study to assess the causes of POF after cardiac surgery and to determine its impact on the outcome on patients in Nigeria. The authors reiterated on the fact that in low and middle-income countries, more emphasis is laid on the quest for malaria, given its endemic nature in Africa and other developing countries, meanwhile, the situation might be different for children with an immediate history of TOF repair after confirmatory negative results for malaria post-operative. The authors confirmed that out of 266 surgeries in Nigeria university teaching hospitals, 115 were pediatric cases, and 34 patients (14.1%) were diagnosed with POF between 24 and 144 hours, following surgery. Their results confirmed the need for advanced experts in the post-operative intensive care units to quickly distinguish fever and post-operative infections related to malaria and non-malaria infections (Nwafor & Eze, 2021).

Moreover, the results of this study confirmed that inactivity-activity does affect human functioning as a child living with a surgically repaired TOF as to what concerns psychophysical needs. There was no equilibrium between energy restoration and expenditure due to inappropriate flow between the exogenous and endogenous rhythms as most

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developed altered heart rate and ventricular dysfunction. Most participants said the children had *feeding difficulties*, *insufficient knowledge to identify Tet spells and what to do*, *physical exercise intolerance*, and *frequent tiredness.* This concurred with that of Takken et al. (2011) that affirmed that the rate or level of activity and inactivity energy expenditure and restoration do vary and need the caregiver's attention to assess the client's ventricular or cardiopulmonary output before embarking on physical activity exercise with children after TOF repair. One of the recent updates by Coomans et al in 2020 with the aim of assessing the recovery patterns of gas exchange parameters and heart rate in children with repaired Tetralogy of Fallot compared to healthy peers and investigating the correlation with ventricular function and QRS complex duration, concluded that these children do have diminished exercise performance and slower recovery of oxygen debt via vital oxygen uptake and carbon dioxide production compared to their peers.

The concept of psychosocial and spiritual need gratification from the human caring need classification panel is considered a higher order need, which embodied psychosocial, intrapersonal, and interpersonal needs. Watson (1985) considered psychosocial needs as a function of the expectation of a person that certain behaviors at a given time could bring the person the reinforcement of values that could promote an internal sense of satisfaction. The author stated that some relevant structures like opportunity structure to help client access desired opportunities, normative structure to help client respect and fit within social norms, and social control structure to help clients access family, church, and school.

The results of this work portrayed those psychosocial needs of the children who underwent TOF repair included the need for presence and attention from family and health personnel, as the participants expressed children sometimes present with delayed speech expression and frequent crying. Kothari (1992) advocated for mechanoreceptor stimulation might result in TET spells. The the results of this study, affirmed that frequent crying serves as one of the psychosocial needs playing a key role in stimulating tet spells, a serious crisis of hypoxia that aggravates the child's condition. This impairs the child social control reinforces the value of internal sense of satisfaction for the child. Another aspect of the findings of this research presented delayed speech expression as a psychosocial speech need problem.

Just like the aspect of seeking attention from the family support system, children with delayed speech expresses what Watson (1985) called affiliation, the need to overcome separateness, loneliness, or aloneness. To Watson (1985) this is the need that the person seeks to reveal the core of humanness or humanism. Watson, in her book titled *Nursing: The Philosophy and Science of Caring* (1985). reiterated the affiliation serves as a focal point for nurses as it promotes the achievement of potential within and between people as the child seeks inclusion (search for attention, identity, and association with others), control (need for autonomy, influence in decision-making process between people), and affection (need for intimacy, emotional relationship between people). The participants in this study clearly expressed that the speech centers underdeveloped nature leaves children with the need for affection, coupled with frequent crying, which leads to tet spells that results in physical instability for the child. Moreover, pain also came out as one of the complaints of the children as they recover from anesthesia, and this increases the child's affiliation need ability such that they remain in need of attention as they seek to find out their identity in the society.

In the same vein, acido-hypoxic panel restoration support came out as one of the themes under participant interview results as the participants expressed that children with TOF do have increased levels of lactate during the point of laboratory ABG testing as well as oxygen-mechanical ventilator instability where most of the children manifest with decreased oxygen saturation levels and decreased consciousness. The variation in lactate levels was confirmed by the study of Arsdell et al. (2000) where they said that the time to serum lactate normalization was least in children less than 3 months of age and greatest for those greater than 12 months of age. In the same way, Chakravarti et al. (2009) stated that inadequate tissue oxygen delivery resulting from impaired cardiac output present as a relatively common problem following pediatric cardiac surgery has been associated with significant morbidity and mortality. Therefore, nurses embark on the point of laboratory in order to monitory oxygen delivery and consumption, including blood lactate levels. The authors measured blood lactate levels minimally at 0, 2-, 4-, 6-, and 24-hours post-operative correlated with oxy-hemoglobin saturation, (rSO2), values derived by averaging all values recorded during the 60 minutes preceding the blood draw. It resulted that out of the 23 patients with 163 lactate levels measured, with 39,000 rSO2 observations analyzed, cerebral rSO2 had the strongest inverse correlation with lactate levels, as cerebral and renal rSO2 value less than 65% predicted a lactate level greater than and equal to 3mmol/L with a sensitivity of 95% and specificity of 83%. This is a clear sign confirmed that varied levels of lactate affect the balance between oxygen demand and supply at the level of the tissues, the reason why high levels recorded during point-of-care laboratory testing do correlate with low cardiac output syndrome and low oxygen saturation levels.

The work of Kapoor et al. (2016) was based on exploring the hypothesis that lactate, endothelin, and central venous oxygen saturation (ScVO2) (balance between oxygen demand and supply) before induction might be predictive of mortality in pediatric cardiac surgery affirmed the conclusion of Chakravarti et al. (2009) in that lactate, ScVO2, and endothelin all showed association with mortality and that lactate had maximum prediction as it stood out as an independent measure of prediction of mortality in patients TOF repair (Phillips et al., 2012; Chakravarti et al. 2009). Most literature about congenital cardiac surgery and care has confirmed that lactate has been predicted in multiple clinical scenarios as a predictor of mortality and morbidity for children with TOF repair. A

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study in a pediatric intensive care unit showed that lactate levels greater than 5mmol/L were seen to be 75% sensitive and 63% specific for mortality meanwhile, another large study with 2380 patients had a statistical significance difference reported in mean lactate levels between survivors (3mmol/L) and non-survivors (6.6mmol/L) (Bhardwaj et al., 2017; Kapoor et al., 2016; Hatherill et al., 2003; Morris et al, 2012). In the same line, a prospective and observational study carried out on 150 TOF patients to determine the basic arterial blood gas biomarkers as a predictor of mortality in TOF showed that out of 139 patient survivors, there were significant changes with time in lactate trends (Bhardwaj et al., 2017).

Moreover, the results of this study also brought spiritual needs as one of the higher-order needs for children living with TOF. In many multicultural societies today, talking about a disease of the heart raises a lot of doubts about the outcome of the disease. In one article written by Gooding et al. (2020), they found out that perceptions of age, gender, and social norms could contribute to low heart disease awareness among young women, which may limit heart-healthy behaviors. Many authors consider spiritual need as a self-actualized need that should be accomplished for someone to achieve wholeness. Watson (1985) considered spiritual need next to self-actualization, closely related to the values and meanings perceived as relevant and important to oneself. Young et Koopsen (2010) spoke of spirituality as a highly subjective, personal, and individualized concept, which some authors consider it a necessary essence of life that energizes thought and action. Therefore, a child with TOF brings a lot of preoccupation to an African family, and the nurse needs to work with them to handle their perceptions about the disease well. This works already in spiritual need satisfaction as in healthcare practice, where the nurse becomes concerned about the client's spirituality because it provides insights into the client's experience, which provides a context for making healthcare decisions to relieve suffering (Young & Koopsen, 2010). To Jean Watson (Falk-Rafael, 2000), caring is rooted in spiritual, existential and phenomenology orientations drawn from Eastern philosophies and acknowledges the fact that the nurses incorporate spirituality from different perspectives like spiritual wellbeing and spiritual perspectives, self-transcendence, hope, religiousness, and having a purpose in life. From the perspective of spiritual need satisfaction, nurses will be called to initiate and work in a transpersonal relationship where they can best understand patient perspectives about his or her purpose in life. Since the work is based on children living with a surgically corrected TOF, nurses and other caregivers need to work in collaboration with the parents of these children to understand what is best for their children as geared towards meeting the purpose of life of the child or helping the child to find meaning in life.

V. CONCLUSION

The aim of the study was to identify the different basic needs that could be of great help towards planning a caring approach for children with surgically repaired TOF. Modeling a caring approach for children going in for Fallot's tetralogy repair requires a comprehensive knowledge of the basic needs of these children. The study revealed that especially during post-surgical repair, the child presents with the following basic needs like: biophysical, safety and security, psychophysical, psychosocial and spiritual needs. Biophysical need was as a result of respiratory and cardiac function insufficiencies that needed continuous monitoring of oxygen saturation as an essential part of care for the children after TOF correction. Most children presented with problems of low cardiac output that worsened the effect of respiratory insufficiency, necessitating appropriate assessment immediately post-surgical TOF correction. Moreover, biophysical need choice was also linked to hypo-perfusion and fluid balance restoration as most of these children sometimes come out of the operation with fluid volume imbalance. This was coupled with cardio-pulmonary-electro stimuli imbalance as it affected the heart beat stimulation and heart function, resulting in poor restoration of biophysical needs as children manifested with irregular heart rates. The advent of security and safety need reflected on the area of the fact that participants reiterated that the children come out of the operation room with a central line dressing that needs to be changed and run the risk of being infected. Recognition of the basic needs is a success for better planning of care for children before and after surgical repair of TOF. Furthermore, research is needed to propose modeling a caring approach for those children that are living with a surgically repaired TOF so as to achieve better healing outcomes for children with Fallot's tetralogy repair.

VI. IMPLICATIONS FOR NURSING PRACTICE AND FUTURE RESEARCH

The nurses under study did demonstrate knowledge on advancing practice and research in the area of pediatric cardiac nursing and research especially in the domain of congenital cardiac malformations. The nursing curricular particularly focusing in the realm of caring sciences should be taught so as to address the teaching and learning on the concept of need assessment and gratification, exploration of caring behaviors within the working environments to allow integration of caring theories and practice when managing clients with TOF or congenital heart defects, and how it could contribute immensely towards improving caring outcomes for children with TOF surgical repair. In addition, further research on the concept of need assessment for children with surgically corrected TOF especially during the immediate post-operative care is still needed. Moreover, exploration of the details of having participants of cultural diversities so as to hermeneutically appreciate their experiences as to what it means to live with children with TOF and undergoing surgical repair in Africa is important and need to be addressed in further research.

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➢ *Ethical Considerations*

An authorization was gotten from the university and presented to the Heart Centre as an application for permission to collect the data. This was joined with the national ethical clearance before data collection commenced. All was observed as laid down in line with the Nuremberg Law of Research subjects, together with the code of ethics for researchers carrying out research on human subjects. Autonomy was insured by explaining the aim and objective of the study to the nurses beforehand, and informing them that if they do not want to take part in the study they do not have to, and that this non-participation did not have any bearing on their salary.

Risk, inconveniences, discomforts were avoided during the study. A child who has undergone surgical correction of TOF needs close attention of the nurse especially during immediate postoperative periods. Therefore, initiating data collection through interviews could present a risk of time consumption on the part of the nurse. Time consumption during post-operative period could alter concentration. In order to minimize time wasting, interviews were only organized during off days and public holidays.

Better still, the intensive care unit nurses were not involved during operation session, they were only contacted prior to the reception of the children in the ICU ward but this was done only when they must have received and cared for the first case post-operatively. So there was to be no risk, discomfort, or inconveniences involved in the study neither for the child nor for the nurse.

➢ *Limitations*

The limits of the present study mostly centered on the methodological approach. The inclusion criteria showed that the study was carried out in a research setting limiting the representation of a culturally diverse nature as it included nurses of one culture. The opinions of the nurses could have varied had it been the study involved nurses of diverse cultures. Just like Momah et al. (2023) said, the population under study only included nurses and a handful of parent experiences were not included. Further research should include parent experiences regarding the lived experiences of what it means talking about the basic needs of a child with surgical correction of TOF.

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