



**NEAR EAST UNIVERSITY**

**INSTITUTE OF GRADUATE STUDIES**

**DEPARTMENT OF NURSING**

**ASSESSMENT OF NICU NURSES KNOWLEDGE,  
ATTITUDE AND INFLUENCING FACTORS TOWARDS  
NEWBORN INDIVIDUALIZED DEVELOPMENTAL CARE.**

**M.Sc. THESIS**

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**Nicosia**

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**ASSESSMENT OF NICU**

**MASTER THESIS**

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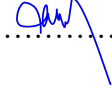

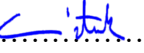
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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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**Signature:**

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**Fummi Jennifer Yakubu**

## ABSTRACT

**Background:** The newborn individualized developmental care and assessment program (NIDCAP) is a unique multimodal strategy that promotes health developmentally and functionally in preterm babies in neonatal intensive care units (NICU). Several evidence has shown that premature newborns benefit from improved brain structure and function as well as improved behavioral outcomes once they enter school age. Hence, this study is aimed to examine the knowledge, attitude, and influencing factors towards NIDCAP among NICU nurses in Nigeria

**Method:** A correlational design was used to assess nurses' knowledge, attitude and influencing factors pertaining individualized developmental care in the neonatal intensive care unit. A total number of 118 nurses participated in the study, questionnaires were distributed amongst nurses working in Lagos states health service commissions general hospitals. Statistical Package of Social Sciences (SPSS) version 22 program was used to analyze the data, spearman correlation coefficient was used to determine the relationship between knowledge and Attitude at a significance of  $p < 0.05$ .

**Results:** The results showed that about 84.7% of respondent knew what individualized developmental care (IDC) was, only 59.3% received information on IDC in their NICU orientation, about (83%-97%) of respondents reported following the principles and carrying out the interventions of IDC. A significant moderate positive correlation between knowledge and attitude ( $P < 0.001$ ) was found. There was no significant association between knowledge and certifications ( $p = 0.100$ ), marital status ( $p = 0.085$ ), and age ( $p = 0.072$ ). The most identified barrier by the nurses in the study was the environment  $N = 54$  (45.7%) and the most popularly recognized facilitator in the study was having a developmental care specialist in NICU ( $N = 50$  42.4%).

**Conclusion:** NICU nurses generally had a good knowledge and attitude on IDC. There was a significant association between increased knowledge and positive attitude. Educational and administrative strategies to maintain and improve nurse's knowledge regarding IDC is recommended. Further research is needed to be carried out in other parts of Nigeria to explore more on IDC in Nigeria.

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### List of Abbreviation

**NIDCAP:** Newborn individualized developmental care

**NICU:** Neonatal Intensive Care Unit

**WHO:** World Health Organization

**UTI:** Urinary Tract Infection

**SDT:** Synactive Developmental Theory

**DC:** Developmental Care

**VLBW:** Very Low Birth Weight

**SBCU:** Special Baby Care Unit

**IRB:** International Reviews Board

**CUNY:** City University of New York

**QI:** Quality Improvement

**SPSS:** Statistical Package of Social Sciences

**HSC:** Health Service Commission

**LASUTH:** Lagos State University Teaching

**PPP:** Public Private Partnership

**KMC:** Kangaroo Mother Care



## CHAPTER I

### 1.0 Introduction

This chapter explores the dimensions of the research problem pertaining the knowledge, attitude, and influencing factors of NICU nurses in Nigeria. It also contains the purpose of the study, the research questions, significance, limitations and the definition of terms.

### 1.1 Problem Definition

The newborn individualized developmental care and assessment program (NIDCAP) is a unique multimodal strategy that promotes health developmentally and functionally in preterm babies in neonatal intensive care units (NICU). This program has been adopted in North and South America, Europe, Middle East, America, Australia(international, 2021). There have been several studies that has examined the effects NIDCAP has on preterm infants (Moody, et al, 2017; mcanulty, et al, 2009).

In Nigeria a lot of studies has been conducted on the causes of prematurity (zini 2019), the major causes of neonatal morbidity and mortality (Ochoga et al., 2018; Audu et al., 2020; Abdullahi,2018; Pius et al., 2019; Akinta et al), and the quality of neonatal care (Emeka, et al., 2020). A study (Emeka, et al., 2020) proved that nurses in Nigeria offered high quality neonatal care, but the nurses generally had poor attitude. However, no research on NIDCAP has been undertaken in nigeria .in addition the knowledge, attitude and percieved barriers of nurses pertaining NIDCAP has not been examined in Nigeria. On this basis, the researcher intends to fill this gap by studying the knowledge and altitude exhibited by NICU nurses towards NIDCAP in Nigeria, and the percieved barrier that may inhibit or facilitate the implementation of NIDCAP.

Based on research this study will be the first of its kind. The result will provide information on the knowledge nurses, the sources of their knowledge, the altitude of the nurses, the percieved barriers like lack of training, staff resistance or shortage, lack of supplies, and what facilate the implementation of NIDCAP such asadministrative support. This information can be utilised to improve the implementation of NIDCAP

consequently increasing the bond between infant and family, gain shorter stay in the NICU for infants, improve infants weight gain and facilitates family's involvement in infants care. In addition, this research will act as a source of reference for future research in this field.

### **1.3 Aim Of Study**

1. To examine the knowledge of NICU nurses regarding NIDCAP in Nigeria.
2. To explore the attitude of NICU nurses pertaining NIDCAP in Nigeria.
3. To determine the factors that hinders the implementation of NIDCAP in Nigeria
4. To identify factors that facilitates the implementation of NIDCAP in Nigeria

### **1.4 Research Questions**

1. How knowledgeable are Nigerian NICU nurses about NIDCAP?
2. What is the attitude of Nigerian NICU nurses towards NIDCAP?
3. Is there an association between knowledge and attitudes?
4. How the selected variables affect nurses' knowledge?
5. How the selected variables are affects nurses' attitude?
6. What are the barriers that hinders the implementation of NIDCAP in Nigeria?
7. What are the influencing factors that facilitates the implementation of NIDCAP in Nigeria?

### **Limitations**

**Access:** Because Lagos city is a very populated city, transportation was difficult due to very heavy traffic, going to all the 12 hospital was not an easy task. In addition, the covid 19 pandemic resulted in some restrictions, the researcher could not supervise the filling of the questionnaires, the questionnaires were handed over to a staff and once filled the staff returned the questionnaire.

**Lack Of Prior Research Studies on The Topic:** due to the fact that the research was the first to be conducted in the country, prior data to this topic was limited.

***Lack Of Available And/or Reliable Data:*** the hospitals had little to no data regarding, the number of beds, number of nurses on the internet. Which lead to the researcher asking the hospital staffs for some missing data. Furthermore, most of the hospital rotate their staffs to a different ward every year which in turns give them vast but shallow knowledge.

### **1.5 Definition of Terms**

The following theoretical definition will be used to describe the meaning and application of these terminologies for the purpose of clarification.

Knowledge- The nurses, information, and skills gained by education or experience; theoretical or practical understanding of a subject.

Attitude- The nurse's opinion or feelings about individualized developmental care

Synergy- Two or more organizations, substances, or other agents interacting or cooperating to generate a combined impact greater than the sum of their individual effects.

## CHAPTER II

### Literature Review

This chapter discusses the literature review of newborn individualized developmental care assessment program within the existing literature. The chapter begins by discussing the prevalence of prematurity all over the world, in Nigeria, and the long- and short-term effects of prematurity. Furthermore, the chapter elaborates on individualized developmental care, its effects on infants and the Synactive theory.

#### 2.1 Prematurity

According to World Health Organization (WHO) Preterm is described as infants born alive before they complete 37 weeks of gestation. The WHO (WHO, 2018) reports an estimated 15 million babies are born too early each year with the number rising. In 2015, preterm birth complications were the major cause of death among children under the age of five, accounting for about one million deaths. With existing, cost-effective solutions, three-quarters of these deaths may be avoided. Preterm birth rates appear to be rising in several nations. According to Blencowe et al. (2012), 62 of the 65 nations with available preterm birth statistics indicated a rise between 2000 and 2010. Preterm birth is a syndrome that has a range of reasons that can be divided into two categories:

(1) spontaneous premature birth and (2) provider-initiated preterm birth (defined as induction of labor or elective caesarean section before 37 weeks of pregnancy for maternal or fetal reasons or other non-medical reasons, and previously referred to as "iatrogenic") In middle-income countries, inefficient use of technology is leading to a rise in the burden of impairment among preterm newborns who survive the newborn period. In low-income settings, lack of practical cost-effective interventions such as breastfeeding support, warmth and fundamental care for breathing problems and



infections lead to the death of about half of the infants born before 32 weeks. However, in high income countries, most of these infants survive. On average, 12 percent of birth are premature in low-income nations, opposed to 9 percent in high-income nations with poorer families being on higher risk.

Although preterm birth is a global concern, Africa and South Asia accounts for more than 60% of all preterm births. Nigeria is among the top three countries with the highest cases of prematurity. India has highest cases with 3, 519, 100 birth, followed by China with 1, 172, 300 and Nigeria with 773, 600. Preterm birth rate in Nigeria is around 12.2 per 100 live births yet prematurity (31.1 percent) was the major cause of neonatal mortality in 2015. (UNICEF, 2015). The major cause of morbidity and mortality in neonates in Nigeria is birth asphyxia, jaundice, neonatal sepsis and prematurity. (Ochoga et al., 2018; Audu et al., 2020; Abdullahi,2018; Pius et al., 2019; Akinta et al).

While the majority of preterm birth occur spontaneously, there are so many factors that could predispose one to preterm delivery. According to (Zini 2019) the incidence of preterm birth was. Maternal, booking status, socio – economic class, multiple pregnancy, pre – eclampsia/eclampsia, anemia, malaria, urinary tract infection (UTI), premature rupture of membrane and antepartum hemorrhage. Others include uncontrolled chronic conditions like diabetes and high blood pressure, genetic influence (WHO 2018). In 2019 Preterm birth was nearly 50 percent greater among non-Hispanic black women (14.4 percent) than among non-Hispanic white women (9.3 percent) or Hispanic women (10 percent ).(CDC, 2020).

## **2.2 Long- and short-term Effects of prematurity**

The main reason neonates are hospitalized in the neonatal intensive care unit (NICU) is due to prematurity, because preterm infants are not able to live beyond the uterus due to the fact that they are physically not matured. Sadly, the change in environment from the uterus to the stressful NICU deprives preterm infants from their basic developmental needs and has the ability to permanently change the normal brain development of the infant.

Evidence shows that prematurely born babies are immature thus becoming more at risk mentally, cognitively, intellectually and in behavioral control including social and emotional adaptation. Extremely preterm infants are at an increased risk of short-term morbidities such as necrotizing enterocolitis, patent ductus arteriosus, bronchopulmonary dysplasia, respiratory distress syndrome, retinopathy of prematurity, infections. Intraventricular hemorrhage and cerebral palsy (Patel, 2016). Such medical issues can lead to long-term medical vulnerability leading to lower quality of life, developmental, behavioral and cognitive delays (Patel, 2016). The brain is in a crucial phase of growth, maturation, and sensory development in premature infants. Preterm transition from an optimal intrauterine atmosphere into an atmosphere of several detrimental stimuli such as painful and stressful procedures, louder noises and brighter lights which can negatively impact the neonate's neurodevelopment. (Symington, 2006) (Soleimani et al., 2020)

Due to maternal deprivation and over-stimulation, the NICU environment contains several stress stimuli, such as light, sound, and pain, that interfere with the brain's growth requirements. NIDCAP is a comprehensive program aimed at reducing environmental stress, promoting early parent-infant connections, and supporting the infant's neuro-behavioral maturation and organization. The introduction of NIDCAP-based developmental care is a long, in-depth systems transformation process that involves all elements of NICU care. (Silberstein & Litmanovitz 2016).

### **2.3 Individualized developmental care**

In 1986 Dr Als and colleague noticed that even after infants survived and were discharged from NICU they still experienced a variety of developmental delays. As a result, they created an individualized developmental care model, which is grounded on

the synactive theory of development which changes the surrounding of the newborn hereby

1. reducing unnecessary light and noise in the newborns environment noise
2. controlling how the infant is been touched or handled
3. supporting the implementation of appropriate positioning methods,
4. Encouraging parental engagement through social interactions that is properly timed.

As a vital component of optimal neonatal care, developmental care is a caregiving method that meets the preterm infant's early developmental needs. Dr. Heidelise Als' developmental care model and NIDCAP were initially introduced to China by nurse researcher Jie Fan (2004), and several NICUs there have now adopted this preterm care idea.

Als 2011, The goal of NIDCAP's holistic strategy, in which plays a key part, is to reduce the gap between the expectation of young human brain of the all-encompassing environment of the womb and the exact experience of a typical NICU. The purpose of the NIDCAP relationship-based approach is to give each prematurely born infant and family with tailored, developmentally supportive, family-centered care, which incorporates kangaroo mother care, in order to promote their shared attainment of optimal health and development.

NIDCAP has been demonstrated to the severity of developmental difficulties for infants who are "at risk," such as those born preterm or with low birth weights, while also enhancing parental confidence in reading and responding to their infant's signs. (Als et.al 2012, Cheryl Blauw-Hospers&Hadders-Algra,2005 McAnulty et al., 2012). The goal of this quality improvement (QI) project is to see how NIDCAP-based care affects the length of stay of infants who are 32 weeks or less in the womb.

Improved neurodevelopmental outcomes have also been documented. Peters et al. (2009) discovered that at 18 months adjusted age, the NIDCAP group of babies showed decreased impairment, notably mental delay.

Moody et. al (2017), NIDCAP is a developmental care intervention that fosters relationship-based caregiving by managing the interactions of parents and other caregivers in the NICU with the infant.

## 2.4 Synactive theory

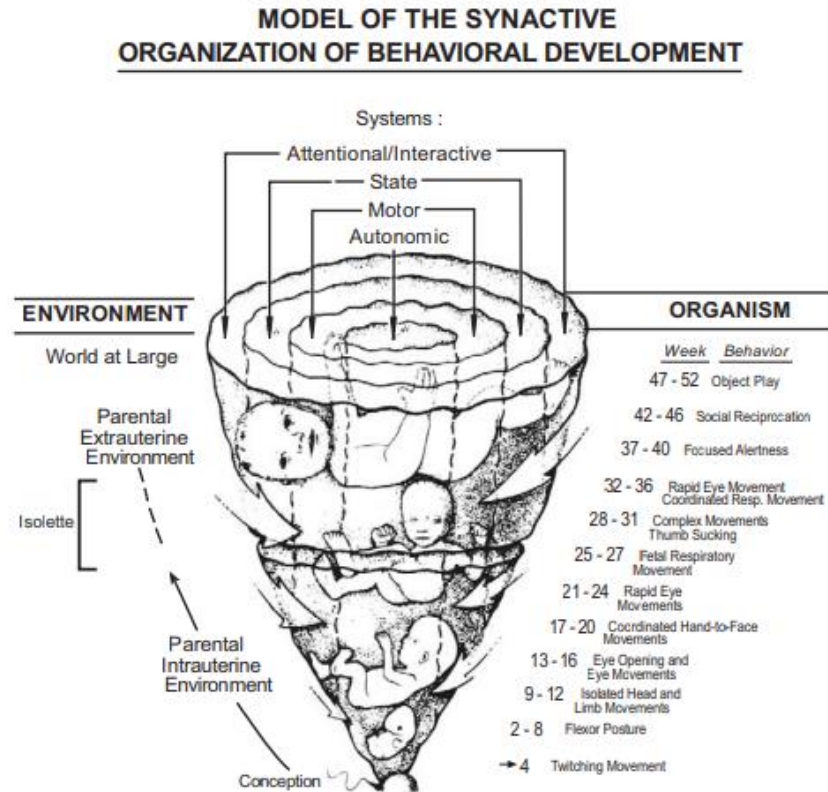


FIGURE 1. Model of the Synactive organizational of behavioral development (Als 1982)

Als 2011, Around the 6th week of pregnancy, when the embryo is just 1.5 cm long, the human cortex begins to grow. The embryo's superficial musculature is already established at this point. By 12 weeks, skin sensitivity in and around the mouth, eyes, palms of the hands, genitalia, and soles of the feet has established itself.

These physiological changes set in motion experience-feedback loops that help to construct the human central nervous system, which is extremely complex. The embryonic infant's initial developing regions of cutaneous sensitivity appear to be particularly difficult to fulfill behaviorally outside of the womb. (Als, 2011).

Preterm infants have been observed bracing with their feet, grasping with their hands and feet, bringing their hands to their lips, searching with their mouths and tongues, sucking, and attempting to tuck into flexion, as if seeking the control, they had in the womb environment.

The synactive developmental theory (SDT) focuses on how the infant appears to handle the experience of the world around them. These systems are developed in the embryo, fetus, and newborn in a well-defined sequence, according to independent development. Nonetheless, the five systems are continually influenced, while being interdependent, and their growth occurs in an interactive manner with the environment.

The systems we are speaking of include the autonomic system, the motor system, the state organizational system, the attention and interaction system, and a self-regulatory, balancing system (Als 1982). SDT allows the nurse to observe and discern the infant's intents and efforts to self-regulate and encourage them with supportive movements and handling.

The SDT discusses the need of including the infant's self-regulation efforts into all caregiving interactions between newborns and nurses in the NICU.

The NIDCAP uses the following care strategies, as well as assessment, to provide individualized care for preterm infants in the NICU, based on the Synactive Theory of Development. (Als, 1982, 1986).

According to A.Maltese 2017, Development is defined by SDT as an interactive and hierarchical process with five subsystems:

- 1) autonomic/neurovegetative system
- 2) the drive train,

- 3) a psychological system
- 4) system of attention-to-interaction,
- 5) Self-control system

These systems develop in the embryo, the fetus, and the newborn in a well-defined sequence, according to their own development. Despite this, the five systems are constantly influenced, despite their interdependence, and their growth occurs in tandem with the environment.

The goals of SDT are diverse; first, we want to recommend studying an infant's behavior through signs of self-regulation or, conversely, signs of stress of the know to provide a tool for a more detailed and practical observation of the infant's behavior, to fully understand the development, and finally to plan customized care measures tailored to that individual's child in order to promote their development.

The destabilization of the entire preterm organism is induced by stress caused by care maneuvers, invasiveness of environmental stimuli, and medical interventions. Stress tolerance thresholds, level of organization, growing capacities, self-regulation, and self-differentiation can all be observed using neuro-vascular, motor, behavioral, attention-interaction, and self-regulation skills. (A.Maltese 2017).

## **2.5 Effect of individualized developmental care on infants**

Macho, Patricia (2016) in child's development the full involvement of the family most especially the father can be very beneficial to the child. Positive outcome in a child's development physically, psychologically, behaviorally and cognitive domain has been attributed to the father's early involvement.

According to Children's Medical Center Corporation, Boston (2006), in recent years, developmental care (DC) and the structured program of individualized care known as NICU have received a lot of attention in the field of neonatology. Als established the Newborn Individualized Developmental Care and Assessment Program (NIDCAP). We refer to DC as care designed to promote neurosensory and emotional development in newborns while reducing stress during neonatal unit admission.

Consolidating different nursing activities including positioning, regulating and reinforcing the relationship between the family and infant through linking bonds are examples of development care as well as modifying external stimuli (tactile, vestibular, visual and auditory).

NIDCAP is a care paradigm that reduces the discrepancy between baby neurobiological demands and the NICU environment, lowering the recurrence and/or severity of adverse effects on high-risk infants. Parent participation, cue-based care, and the provision of a supportive environment are all essential components of NIDCAP. There have been numerous examples of NIDCAP's excellent outcomes. (Als H, Duffy FH 2004).

McAnulty G.et. al (2012). The Neonatal Individualized Developmental Care and Assessment Program (NIDCAP) has shown that premature newborns benefit from improved brain structure and function as well as improved behavioral outcomes once they enter school age.

In addition, medical benefits like as shorter NICU and hospital stays, earlier oral feeding, and improved weight gain have been recorded, as well as parental engagement, bond to their newborn, and confidence in caregiving. (Ohlsson A 2013, Als H, Duffy F, McAnulty GB, et al. 2004).

For the successful implementation of developmental care in any clinical context, six critical components are required (Als, 2006):

- (a) developing a specialist for developmental care as well as nurse educator for training purpose specifics.
- (b) ensuring that a well-paid salary structure is dedicated to these two roles;
- (c) Creating a multidisciplinary leadership support team
- (d) developing a group of core nursing staff to represent both day and night shifts ensuring full dedication to their duties.
- (e) Establishing a parent forum,
- (f) establishing a reflective process

(g) Furthering continuing education options

Behavioral observations utilized as a measure of the infant's tolerance to the environment and caregiving activities are used to assess these individual demands (Als, 2011). (Harrison 2000) stressed Furthermore the importance of mothers in the care of very low birth weight (VLBW) newborns has been underlined, and family-centered care has been widely supported.



## CHAPTER III

### Material And Methods

This chapter presents the methodological approach that was used to study the knowledge, attitude, and influencing factors of Lagos state NICU nurses. It also includes the study design, population setting, sample, sampling technique, sample size, instruments, ethical considerations, data collection plan, and planned statistical analysis that were used in this study.

#### 3.1 Study Design

A correlational design was used to assess nurses' knowledge, attitude and influencing factors pertaining individualized developmental care in the neonatal intensive care unit. A questionnaire was distributed amongst nurses working in Lagos states health service commissions general hospitals. To conduct this study, Inclusion criteria were created which includes, being a registered nurse, having 6 months or more experience in NICU, presently working in NICU..

#### 3.2 Study settings

The study was conducted as a multicenter study carried out in Lagos state Nigeria. Nigeria, with a population of almost 200 million people, is the most populous African country. Lagos State is Nigeria's smallest state, yet it has the biggest urban population, accounting for 27.4% of the country's total [UN-Habitat]. According to the 2006 National Census, Lagos State has a population of 9,013,534 people, compared to 140,003,542 for the entire country. According to UN-Habitat and international development agencies' estimates, Lagos State had a population of around 24.6 million people in 2015. and according to Metropolitan Lagos accounts for over 85% of this population on an area that is 37% of the State's land area. Lagos is Nigeria's largest city, as well as the largest city in Sub-Saharan Africa, as of 2021. Lagos is the country's principal financial, cultural, and educational hub. (Varrella, 2021; Karmer, 2022),

Lagos state Health Service Commission (HSC) is the Lagos state body in charge of all medical activities. the Lagos State HSC has 27 general hospitals under their supervision, out of the 27, 12 hospitals have neonatal intensive care unit. The Lagos state HSC ensures manpower, planning, development, training of hospital employees, and also monitors the activities of public hospital on appointment, discipline and promotion. The 12 hospitals that had NICU are as follows;

1. **General Hospital Orile Agege;** Orile Agege General Hospital was founded in 1982 as a health care center under the control of the Agege Local Government, and was upgraded to a General Hospital in 1999 under the Military Administration of Col. M.B Marwa to provide secondary level healthcare services to the people of Agege, Alimosho, Abule-Egba, Ipaja, Ayobo, Command, Ota, Idiroko, and other neighboring towns and villages, indeed all Nigerians, in all areas of healthcare such as, medical, surgical, child and maternal health, nursing care, pharmaceuticals, diagnostics and rehabilitative medicine.
2. **General Hospital Surulere;** Surulere General Hospital was founded in 1964 to provide secondary health care services in the areas of medical, surgical, maternity and child health, nursing, dentistry, pharmaceuticals, diagnostics, and rehabilitative health care  

Blood-bank, Dental, Laboratory, Obstetrics and Gynecology, Pediatrics, Pharmacy, Radiology, and Surgery are among the services provided by the Surulere general hospital. The hospital also contains cutting-edge technology such as anesthetic machines, blood banks, and X-ray machines.
3. **General Hospital Ifako Ijaye;** The hospital performs the following services; Laboratory, Medicine, Obstetrics and Gynecology, Pediatrics, Pharmacy, Radiology (USS) and Surgery.
4. **General Hospital Ajegunle;** The government of Alhaji L. K.Jakande established Ajeromi General Hospital in April 1983 as a health center to provide basic healthcare services to the immediate neighborhood and its outskirts. On the 12th of March, 2004, during Senator Bola Ahmed Tinubu's tenure, it was

upgraded to a secondary facility, i.e. General hospital, in order to provide secondary healthcare.

With a population of about 2.8 million people, the catchment areas include Ajeromi/Ifelodun local government area, Ifelodun LCDA, and Amuwo Odofin LCDA. Patients, on the other hand, frequently come from areas outside the catchment area, such as Ojo, Iyana Iba, Okokomaiko, Ijanikin, Agbara, and even Otta, Ado Odo, Igbesa, and Attan in Ogun state. They offer emergency services 24 hours a day, as well as medical, surgical, dental, gynecological, and pediatric services etc.

5. **General Hospital Badagry:** it is a 110 bedded mother and child center. It's a one-stop center for everything reproductive, including family planning, gynecology, paediatrics, vaccinations, obstetrics, emergency, and surgical services among others.

6. **General Hospital Amuwo Odofin;** it is a maternal and child center that offers Prenatal, Postnatal, Neonatal, Radiology, gynecology, pediatric, Family Planning, accidents and emergency services.

7. **General Hospital Ikorodu**

General Hospital Ikorodu began as a cottage hospital in 1950 in the Agbala region of Ikorodu. On Monday, November 21, 1983, it relocated to its current home on TOS Benson Road in Ikorodu. Alhaji Lateef Kayode Jakande, the first Civilian Governor of Lagos State, commissioned it. It sees about 40,000 patients per month on average. Old Agbala, where General Hospital Ikorodu is located, is a four-in-one hospital with annexes. The hospital is the busiest secondary facility in Lagos State in terms of patient load. It is a multi-specialist hospital with a bed capacity of 265 and a staff of over 700 people. Governor Raji Babatunde Fashola commissioned the 1st Maternal and Child Centre (MCC) in Lagos State on Thursday, February 4th, 2010, due to the need for expansion and quality enhancement.

8. **Eti-Osa Maternal and Child Centre;** This is a four-story, 110-bed institution dedicated to providing comprehensive specialty healthcare for mothers and children. It has a sufficient number of specialists in mother and

child health, as well as competent nurses, pharmacists, medical laboratory scientists, and others.

9. **Lagos Island Maternity Hospital;** Lagos Island Maternity Hospital, owned by the Lagos State Government and located on Campbell Street in Lagos, is a specialist hospital that treats all aspects of obstetrics and gynecology. It also serves as a referral secondary center for many private hospitals, other Lagos State Government hospitals, and Tertiary Institutions throughout Lagos State and beyond. Her Royal Highness, the Duchess of Gloucester, lay the foundation stone for the Lagos Island Maternity Hospital on May 13, 1959. On July 20, 1960, Lady Robertson, wife of the then-Governor-General of the Federation of Nigeria, formally opened the hospital. Prior to the opening of this hospital, Lagos residents relied on the Maternity Services offered by the then-attached Massey Street Hospital. It is a 110 bedded unit , with the in born unit housed has 10 incubators and 10 cots as well as a 4 bedded Kangaroo Mother Care (KMC) room.

10. **Massey Street Children's Hospital;** The modern Massey Children's Hospital first opened its doors in 1914 as Lagos State's First General Outpatient Clinic and Referral Centre. In 1961, it was upgraded to a full-fledged pediatric hospital. Approximately 1500 newborns are admitted to the unit each year. 56-bed Neonatal Unit is housed among two state-run hospitals on Lagos Island in Lagos State, Nigeria's economic metropolis. Massey Street Children's Hospital features an out-of-hospital birthing unit with nine incubators and 27 cots, including seven in the emergency room. A moms' room is also available.

11. **General Hospital, Apapa;** It is a health facility that provides general and specialized care in a number of medical services including Dental, Laboratory, Medicine, Obstetrics and Gynecology, Pediatrics, Pharmacy, Physiotherapy, Radiology, Surgery, and VCT.

12. **General Hospital Gbagada;** The hospital features over 35 departments, including a full-fledged Burns and Trauma tertiary center under the supervision of Lagos State University Teaching Hospital (LASUTH); a maternal and

paediatric department; and a Public Private Partnership (PPP) initiative Cardio Renal Centre, among others.

### 3.3 Study Sample

The targeted population in the current study were the NICU nurses from the 12 general hospital that has NICU. The inclusion criteria include (a) registered nurses, (b) the nurses presently working in NICU, (c) nurses who have worked for at least 6 months in the NICU, and nurses who volunteered.

**Sample size justification** the participants are NICU nurses that met the inclusion criteria from the 12 general hospitals in Lagos state HSC with a NICU. The number of NICU nurses in Lagos state HSC were 205. 205 questionnaires were given out to all the nurses and 138 questionnaires were returned which leads to the responds rate of 67.3%. of the 138, 20 did not meet the inclusion criteria. Resulting to 118 voluntary NICU nurses participating in the study.

When calculating sample size on a population of 205, a confidence level of 90%, margin of error 5% and a Population Proportion 50% was used. It resulted to a sample size of 118. Which means that the sample size in this study is adequate for the study.

### 3.4 Study Tools

The study tool used was developed by Patricia Macho (2018) and was used to measure Nurses' Knowledge, Attitude and Perceived Self-competency Regarding Individualized Developmental Care in the Neonatal intensive Care Unit and permission to use the tool was obtained (Appendix....)

The study tool consists of 48 items, it is divided into 2 parts. The first section of the questionnaire has the 3 eligibility questions, the social demographics and working characteristics of the nurses

The second section of the questionnaire contains questions that will measure the knowledge, attitude and barriers of NICU nurses towards individualized developmental care. There are 12 unsure/no/yes items and 21 4-point Likert scale items ranging from 1) Most of the time, 2) some of the time, 3) seldom, and 4) never.

Using registered nurses working in two NICUs in a large suburban health system in the North East, a pilot study was carried out. Cronbach's alpha co-efficient was calculated. Items with a 4-point Likert scale-(1) most of the time, (2) some of the time, (3) seldom, and (4) never, were analyzed together and questions with a yes/no/ answer were analyzed together. Cronbach's alpha for knowledge and four attitude questions was 0.70 and for competency and remaining Likert scale attitude questions was 0.90. to establish internal reliability, Taber (2018) classified (0.70–0.77) as relatively high

### **3.5 Data Collection:**

Data were collected using a questionnaire between January 2021- May 2021. The questionnaires were administered by researcher on nurses while they are on the wards or clinics during duty shift with Face to face, self-completion method. The questionnaire was given distributed and collected a week after distribution.

The completion of the questionnaire took between 20 and 30minutes.

### **3.6 Ethical Consideration**

Ethical approval was obtained from the IRB of Near East University to carry out the research (Appendix...). In addition, the Lagos state health service commission and the ministry of health's approval was obtained also (Appendix...). All nurses were given adequate information about the research, its aim and objective, consent was obtained verbally to ensure the willingness to participate in the study and voluntary participation, confidentiality, reliability, and validity of data collected.

Permission was obtained to use the study was obtained from the author Patricia Macho via email attached in the (Appendix...

### 3.7 Data Analysis

The knowledge domain has eight yes/no/unsure questions with a score range of 0 to 8. There were correct and incorrect answers for each question. For a correct answer 1 point was given. To create a total knowledge domain score, the questions were added together.

The attitude aspect had 2 different kinds of questions. It consisted of 10 4-point Likert scale questions (1=most of the time, 2 = some of the time, 3 = seldom and 4 = never) for a total of 13 questions and 3 yes/no/unsure questions. Nevertheless, because most of the Likert scale responds were in the top two scale, they were paired up into “most of the time” and “not most of the time”. Most of the time was indicated as the right answer, which was summed up to create an attitude domain ranging from 0-13.

Questions that were not answered were considered to be an incorrect answer.

Statistical Package of Social Sciences (SPSS) version 22 program was used to analyze the collected data. Data was double checked to prevent data entry error. The methods used to analyze the data include an analysis of descriptive statistic variables such as frequency and percentages for the categorical variables. The chosen level of significance is  $p < 0.05$ .

Spearman correlation coefficient was used to determine the relationship between knowledge of IDC and Attitude towards IDC. Parametric assumptions were checked and because it did not hold Mann-Whitney test was used for variables with only 2 categories and Kruskal-Wallis was test used for variables with categories greater than 2.

## CHAPTER IV

### Introduction

This chapter presents the results of the study. It contains descriptive statistics of nurses' socio demographic characteristics. Results of the findings, association between knowledge, attitude, and some factors of interest. Results of the influencing factors of IDC are also presented.

#### 4.1 Descriptive Characteristics of the Nurses (N: 118)

The researcher distributed 205 questionnaires among NICU Nurses at the 12 general Hospitals that has NICU. A total of 138 questionnaires were returned. 20 did not meet the eligibility criteria and therefore excluded. There was a total of 118 registered nurses presently working in the NICU with at least 6 months experience who participated in the survey.

**Table 1**

#### *Sociodemographic Characteristics of The Nurses*

Variables	N	%
<b>Marital status</b>		
Married	87	73.7
Single	29	24.6
Missing	2	1.7
<b>Age</b>		
20-30	34	28.7
31-40	48	40.7
41-50	20	17.0
51-60	16	13.6
<b>Work in NICU</b>		
No	0	0
Yes	118	100
<b>Experience in NICU</b>		
6 months - 1 year	20	16.9
1-5year	64	54.2
6-10 year	14	11.9
11-20 years	6	5.1
> 21 years	2	1.7
Missing	12	10.2



<b>Registered nurse</b>		
No	0	0
Yes	118	100
<b>Education</b>		
<b>Highest level of education</b>		
BSN	73	61.9
AAS	12	10.2
Msn	11	9.3
Doctorate	17	14.4
Others	3	2.5
Missing	2	1.7
<b>Certifications</b>		
RNC-NIC	41	34.7
RN-RM	14	11.9
Others not listed	23	19.5
Missing	40	33.9

Table 1 below shows the sociodemographic characteristics of the nurses in the study. The study has 87 (73.7%) married nurses and 29(24.6%) single nurses while 2(1.7%) respondents left the question unanswered. The results show that a large proportion of the study are middle age. 28.7(n=34) are aged between 20-30 years while 40.7% (n=48) are aged between 31-40; only 17%(n=20) are aged between 41-50 while 13.6%(n=16) are aged between 51-60 and 6.8% (n=8) left the questions unanswered.

The table also displays the 3 inclusion criteria questions which showed all the respondent were presently working in NICU, they have at least 6 months of NICU experience, and they all registered nurses.

Furthermore, the table indicates descriptive characteristics on the years of experience and work structure of nurses. The study shows that about 16.9%(n=20) of nurses have 6 months – 1 year experience, the majority of the respondents 54.2% (n=64) have spent between 1-5 years as nurses, 11.9% (n=14) have 6-10 years' experience, about 5.1%(n=6) have 11-20years of experience, and only 1.7% (n=2) have spent >21 years in nursing practice, in NICU.

Subsequently table 4.1 shows the characteristic of the respondent's education. The majority which is about 73 (61.9%) of the respondents said the highest level of education they have attained is a bachelor's of science in nursing (BSN), 12 (10.2%) attained an

associate degree in applied science (AAS), about 16 (13.5%) of the respondent's highest level of education was Doctor of Nursing Practise (DNP), while a master's degree was attained by 11 (9.3%) of the respondents. 3 (2.5%) of the respondents left the question unanswered and 2 (1.7%) selected others.

In addition, the result shows that 41 (34.7%) of the respondent are Certified in Neonatal Intensive Care (RNC-NIC), 14 (11.9%) of the respondent are Registered Nurse Registered Midwife (RN RM). 23 (19.5%) of the respondents have other certifications that are not listed, and about 40 (33.9%) of the respondent left the question unanswered.

#### 4.2 Knowledge of Developmental care

**Table 2**

*Distribution of responses to knowledge question*

<b>Knowledge Questions</b>	<b>Frequency</b>	<b>Percentage</b>
<b>I know what Individualized Developmental Care is</b>		
Unsure	8	6.8
No	2	1.7
Yes	100	84.7
Missing	8	6.8
<b>I have heard of The NIDCAP</b>		
Unsure	2	1.7
No	12	10.2
Yes	98	83.1
Missing	6	5.1
<b>IDC was a topic covered in my NICU orientation</b>		
Unsure	6	5.1
No	34	28.8
Yes	70	59.3
Missing	8	6.8
<b>I received a unit-based in-service on IDC to premature infants</b>		
Unsure	4	3.4
No	40	33.9
Yes	64	54.2
Missing	10	8.5
<b>IDC interventions have no effect on length of stay</b>		
Unsure	12	10.2
No	68	57.6

Yes	32	27.1
Missing	6	5.1
<b>IDC interventions shorten length of stay by decreasing days on mechanical ventilation</b>		
Unsure	10	8.5
No	16	13.6
Yes	86	72.9
Missing	6	5.1
<b>infants who receive IDC obtain full per oral feedings quicker than those who do not receive IDC</b>		
Unsure	21	17.8
No	7	5.9
Yes	88	74.6
Missing	2	1.7
<b>IDC interventions lead to improve behavioral outcomes at age 2 years</b>		
Unsure	37	31.4
No	14	11.9
Yes	63	53.4
Missing	4	3.4

Table 2 shows the Neonatal Intensive Care Unit (NICU) nurses' knowledge of Individualized Developmental care. 8 questions were asked of participants about their knowledge of individualized developmental care. All of the questions were true. Yes, no, or unsure were the possible responses.

Most of the respondents n=100 (84.7%) knew what IDC was, n=98 (83.1%) has heard about NIDCAP, about n=70(59.3%) covered IDC in their NICU orientation, and about n=64 (54.2%) participants received a unit-based in-service on individualized developmental care.

Subsequently, n=68(57.6%) believed individualized developmental care interventions have an effect on length of stay , about n=86(72.9%) confirmed that individualized developmental care interventions shorten length of stay by decreasing days on mechanical ventilation, 88(74.6%) said Infants who receive individualized developmental care obtain full Per Oral feedings quicker than those who do not receive individualized developmental care, and 63(53.4%) believed Individualized developmental care interventions lead to improve behavioural outcomes at age 2 years

### 4.3. Attitude on developmental care in Nigeria

**Table 3**

*Distributions Of Responses to Attitude Questions*

<b>Attitude questions</b>	<b>Frequency</b>	<b>Percent</b>
<b>Individualized Developmental Care has no positive outcomes for infant's father</b>		
Unsure	17	14.4
No	73	61.9
Yes	20	16.9
Missing	8	6.8
<b>Individualized Developmental Care has positive outcomes for infant's mother</b>		
No	18	15.3
Yes	96	81.4
Missing	4	3.4
<b>Individualized Developmental Care is not important for premature infants</b>		
Unsure	6	5.1
No	98	83.1
Yes	12	10.2
Missing	2	1.7
<b>I do not do any non-emergent care when infant is sleeping</b>		
Never	2	1.7
Seldom	6	5.1
Some of the time	26	22.0
Most of the time	80	67.8
Missing	4	3.4
<b>I cluster my care</b>		
Never	2	1.7
Seldom	2	1.7
Some of the time	39	33.1
Most of the time	67	56.8
Missing	8	6.8
<b>I interact with the infant when they are awake</b>		
Never	4	3.4
Seldom	8	6.8
Some of the time	45	38.1
Most of the time	59	50.0
Missing	2	1.7
<b>I stop an intervention if the infant shows any sign of distress</b>		
Never	10	8.5

Seldom	6	5.1
Some of the time	27	22.9
Most of the time	71	60.2
Missing	4	3.4
<b>I offer the parents the opportunity to do skin to skin at each visit based on the infant's condition</b>		
Never	4	3.4
Seldom	6	5.1
Some of the time	34	28.8
Most of time	70	59.3
Missing	4	3.4
<b>I encourage mothers to breast feed or pump breast milk for their infants</b>		
Seldom	2	1.7
Some of the time	26	22.0
Most of the time	86	72.9
Missing	4	3.4
<b>I update parents on their infant's condition at each visit</b>		
Seldom	2	1.7
Some of the time	33	28.0
Most of the time	81	68.6
Missing	2	1.7
<b>I encourage parents to ask questions</b>		
Seldom	2	1.7
Some of the time	22	18.6
Most of the time	92	78.0
Missing	2	1.7
<b>I have all the supplies i need to provide individualized developmental care</b>		
Never	6	5.1
Seldom	10	8.5
Some of the time	50	42.4
All the time	48	40.7
Missing	4	3.4
<b>There is enough staff working each day to allow me to implement individualized developmental care</b>		
Never	13	11.0
Seldom	23	19.5
Some of the time	40	33.9
All the time	36	30.5
Missing	6	5.1

Table 3 shows the attitude of nurses to IDC. They were about 13 attitude questions. Results of the study showed n=73 (61.9%) believed individualized developmental care has positive outcomes for infant's father, n=96 (81.4%) also said IDC has positive

outcomes for infant's mother, and n=98 (83.1%) said individualized developmental care is not important for premature infants.

In addition, the table reveals that majority of the respondent answered “most of the time” to the Likert questions. I do not do any non-emergent care when infant is sleeping n=80 (67.8%), I cluster my care n=67 (56.8%), I interact with the infant when they are awake n=59 (50.0%), I stop an intervention if the infant shows any sign of distress n=71 (60.2%), I offer the parents the opportunity to do skin to skin at each visit based on the infant’s condition n=70 (59.3%), I encourage mothers to breast feed or pump breast milk for their infants n=86 (72.9%), I update parents on their infant’s condition at each visit n=81 (68.6%), I encourage parents to ask questions n=92 (78.0%), I have all the supplies I need to provide individualized developmental care n=50 (42.4%), and there is enough staff working each day to allow me to implement individualized developmental care n=36 (30.5%)

#### 4.4 Association between knowledge and Attitude

The summary statistics of knowledge and attitude are illustrated below

**Table 4**

##### *Summary Result of Knowledge and Attitude*

variable	N	Mean	Std Dev	Median	Lower Quartile	Upper Quartile	Minimum	Maximum
Knowledge	118	5.59	1.99	6.50	4.00	7.00	1.00	8.00
Attitude	118	11.10	1.88	12.00	10.00	12.00	0.00	13.00

As shown in table 5, there were significant moderate positive correlation between knowledge and attitude ( $P < 0.001$ ).

**Table 5**

##### *Correlation Between Knowledge and Attitude*

Spearman Correlation	P =
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<i>Knowledge vs. Attitude</i>	0.476	<0.001
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#### 4.5 Association Between Knowledge, Attitude and Other Independent Variables

**Table 6**

*Summary Result Between Knowledge, Attitude and Other Independent Variables*

<b>Independent Variables</b>	<b>knowledge</b>	<b>Attitude</b>
IDC covered in NICU orientation	<b>&lt;0.001</b>	<b>0.035</b>
Received an in-service on IDC	<b>&lt;0.001</b>	<b>&lt;0.001</b>
Written practice guidelines	<b>0.002</b>	<b>&lt;0.001</b>
Certifications	0.100	0.073
Marital status	0.085	<b>0.034</b>
Age	0.072	0.613
Highest level of education	<b>0.004</b>	0.110
Years of practice	<b>0.003</b>	<b>0.016</b>

***knowledge***

As seen in table 6 above, the result showed that the association between knowledge and IDC covered in NICU orientation was statistically significant ( $p < 0.001$ ), those who received an in-service on IDC were more knowledgeable ( $p < 0.001$ ). In addition, there was an association between written practice guidelines ( $p = 0.002$ ), highest level of education ( $p = 0.004$ ), and increased years of practice ( $p = 0.003$ )

However, there was no significant association between knowledge and certifications ( $p = 0.100$ ), marital status ( $p = 0.085$ ), and age ( $p = 0.072$ ).

***Attitude***

There was a significant association between attitude and IDC covered in NICU orientation ( $p = 0.035$ ), in service on IDC, NICU written guidelines ( $p < 0.001$ ), marital status ( $p = 0.034$ ), and increased years of practice ( $p = 0.016$ ).

The relationship between attitude and certifications ( $p= 0.073$ ), age ( $p=0.613$ ), highest level of education ( $p=0.110$ ), was not statistically significant.

#### 4.6 Factors That Hinders the Implementation of NIDCAP

**Table 7**

*Distribution of Factors That Hinder the Implementation of NIDCAP*

<b>Factors that hinder</b>	<b>N</b>	<b>%</b>
<b>Staff resistance</b>	17	14.4
<b>Lack of administrative support</b>	29	24.6
<b>Lack of supplies</b>	46	39.0
<b>Inadequate staffing environment</b>	50	42.4
<b>Lack of education or training</b>	22	18.6
<b>Other</b>	10 (inadequate funding)	8.5

The table above illustrates barriers selected by the respondents. The majority  $n=50$  (42.4%) believes inadequate staffing environment,  $n=46$  (39.0%) lack of supplies,  $n=29$  (24.6%) lack of administrative support,  $n=22$  (18.6%) lack of education or training,  $n=17$  (14.4%) staff resistance, and about  $n=10$  (8.5%) others (inadequate funding).

#### 4.7 Factors That Facilitates the Implementation of NIDCAP

**Table 8**

*Distribution of Factors That the Implementation of NIDCAP*

<b>Factors That Facilitate</b>	<b>Frequency</b>	<b>Percent</b>
<b>NIDCAP training</b>	40	33.9
<b>Developmental Care Specialist in NICU</b>	50	42.4
<b>Single Patient Rooms</b>	8	6.8
<b>Administrative Support</b>	26	22.0



<b>Parent Support Classes</b>	32	27.1
<b>Lactation Consultant</b>	14	11.9
<b>Baby Care Classes</b>	22	18.6
<b>Other</b>	2	1.7

The table above illustrates factors that facilitates the implementation of IDC. Majority of the respondents n=50 (42.4%) identified having a developmental care specialist in NICU as a facilitator, n=40 (33.9%) NIDCAP training, n=32 (27.1%) parent support classes, n=26 (22.0%) administrative support, n=22 (18.6%) baby care classes, n=14 (11.9%) lactation consultant, and n= 8 (6.8%) single parent room.

## CHAPTER V

### **Introduction**

This chapter comprehensively discuss the result of the research study. It also discusses association between each domain and results presented in chapter iv. Furthermore, it explains the implication of the results of the study for policy and research, and final conclusions based on the results of the study.

### **Knowledge**

The results showed that about 84.7% of respondent knew what IDC is, 59.3% received information on IDC in their NICU orientation and only 54.2% had received a unit based in service on IDC. Although only half of the respondent has received either a unit based in-service information or an orientation on IDC, it is surprising that majority of respondents knew what IDC is. It could be that a lot of NICU nurses got their information on IDC on their own from schools, journal articles or conferences.

55%-75% responded that IDC decreased days on mechanical ventilator, had positive effects on length of stay, time to obtain full PO feeding and, improved behavioral outcome at age 2, which is slightly lower than the response rate of 70-80% in macho 2018.

### **Attitude**

The results of this study showed an impeccable number of respondents have a positive attitude pertaining the provision of IDC to both the infants and their family. Although only 54-59% had received either an orientation or a unit based in-service information on IDC, about (83%-97%). respondents reported following the principles of IDC and carrying out the interventions of IDC.

More than 80% of respondents believed IDC is important for both mother and infants. However, only 61.9% believed IDC has positive outcomes for fathers. A study carried out by Sousan et al 2018 found that conditions in the NICU for the presence of parents were appropriate for the mothers and they were encouraged to engage in family-centered

care but the fathers' participation was limited due to cultural-religious background, traditional attitudes, and difficulties relating to the hospitals' organizational rules.

### **Associations**

There was a significant moderate positive correlation between the variables. The result of this study showed a positive correlation between levels of knowledge and attitude ( $p=0.000$ ).

As there was a positive correlation, it means the more knowledgeable the nurses are, the higher their attitude score. Therefore, increased knowledge will positively affect their attitude.

### **Association between Knowledge and other independent variable**

Several studies have proven that when nurses receive an orientation on a particular topic, they tend to have more knowledge on that subject. Macho (2018), found a relationship between the nurse's knowledge on IDC and an orientation on IDC. Winstead and Moore (2020) revealed that knowledge increase was greater immediately after the orientation workshop compared with 3 months after the workshop and the increase in knowledge was sustained over time. Similarly, the result of this current study (table 6) has proven that the nurses that received a NICU orientation on IDC were significantly more knowledgeable than those who did not.

The study by El-Sayed et al. (2018) on the assessment of nurses' knowledge and practice regarding kangaroo care in the NICU found a statistically significant differences between nurse's knowledge of kangaroo, their educational level, and their years of experience in NICU. Comparably Bogale et al. (2021) assessed NICU nurses' knowledge on neonatal resuscitation and found a relationship with level of education, Al-Shaer et al. (2011) carried out a study on Nurses' knowledge and attitudes regarding pain Assessment and reported that nurses who had worked on a unit for at least 16 years knew more about pain assessment and intervention more than those who had worked there for 1-5 years. The findings of this study (table 6) agrees that the longer a nurse works in the NICU, the more opportunity to increase knowledge becomes possible. So

also, higher level education increases the more chances nurses have to acquire knowledge. On the other hand, the study carried out by Bogale et al. (2021) claimed that nurse's level of experience in the NICU has no effect on nurses' knowledge on neonatal resuscitation.

Clinical practice guidelines, according to the American Nurses Association, are "standardized interventions acquired via abundant and reliable findings that prevent practical errors." (Saeedi, 2014; Hosseinalizadeh et al., 2016). Several studies have proven that written guidelines have guided nurses in their practice and has also positively affect the nurse's knowledge. A study by Ahmed et al. (2018) found out that the hospital in the study had no written guidelines on enteral feeding, which resulted to the majority of nurses in the study to have an unsatisfactory total knowledge score before the guidelines were implemented. After the implementation of the educational guidelines, there was a highly statistically significant difference in mean scores of total knowledges among pre, post and follow up. Another research stated a significant association between nurses' knowledge and their practice based on clinical practice guidelines (Ojong et al. 2014). Correspondingly the result of this study believed that having an evidence-based guideline policy in the NICU, will help increase the knowledge of the nurses (table 6).

In contrary to the study carried out by Baghlani et al. (2019) on NICU nurses' knowledge and perception on NIDCAP which reported that knowledge on NIDCAP had a significant relationship with marital status, the result of this present study demonstrated that knowledge on IDC does not have an effect on marital status (table 6). Macho (2018) found a positive correlation between nurses' knowledge on IDC and having an RNC-NIC certification. However, the current study (table 6) proves that certifications does not result to the nurses having more knowledge on IDC neither does age have a relationship with NICU nurses' knowledge on IDC.

### **Association between Attitude and other independent variable**

A literature review on the Influence of nurses' characteristics and education on their attitudes towards death and dying Khader et al (2010), explored how experience has a

significant influence on attitude change, it also discussed how years working as a registered nurse (RN) and years working in a cancer center emerged as the strongest markers of having a good attitude toward caring for dying patients (Lange et al., 2008). In corresponding with the literature review, the finding of this study pointed out that nurses who worked longer in the NICU had a good attitude towards IDC (table 6). That can be as a result of the Length of neonatal nursing experience increases likelihood of having received in-service training in IDC (Huei-chen et al. 2013).

Subsequently, this study demonstrated how receiving an in-service training on IDC, covering IDC in NICU orientation and having written policy guidelines could have an effect of the attitude towards IDC (table 6). On the other hand, the findings of Khader et al. (2010) discussed how previous education did not have an effect on attitude.

Polkki et al. (2010) found that Nurses' attitudes towards pain assessment in neonatal critical care were generally positive however, the demographic parameters that were significantly associated to the nurses' attitudes and perceptions were education, work experience, and the working unit. Having consistent guidelines on IDC, in service training on IDC, and NICU orientation that talks about IDC is a good way to increase nurses' knowledge especially nurses with less experience hence increasing attitude towards IDC.

### **Barriers**

The most identified barrier by the nurses in the study was the environment N=54 (45.7%) (table 7) therefore, the importance of light and sound guidelines in delivering care should be emphasized. Environmental factor was also the most selected barrier in the study by macho (2018) (n=46, 57%). According to Hendricks-Munoz and Prendergast (2007), Because many IDC interventions rely on changing the environment—dimming lights, reducing noise, privacy, sleeping accommodations, and skin-to-skin contact, the noise and physical structure of the NICU makes it difficult to deliver these environmental interventions and this is a typical issue among nurses when it comes to implementing or integrating IDC.

Some of the environmental barriers can be improved by Installing better dim light switches, the use of screen privacy. Other environmental barriers are more difficult to overcome. Providing individual quarters or even additional space for each infant can be costly, and such large changes normally require Administration permission.

Inadequate staffing was the second most chosen barrier in this study (N= 50, 42.4%) (table 7) this is in comparison to the (N=35 43.75%) in Macho's (2018) study.

According to Foladi N. et.al. (2020), the results of the physicians' perspectives on the difficulties to NIDCAP implementation, environmental and structural barriers were ranked first with the highest score. Management and human resource barriers, on the other hand, were ranked second and third, respectively, as stumbling blocks to the implementation of this style of care. Family-based care and communication problems, on the other hand, were not regarded roadblocks to NIDCAP implementation.

Based on the findings of this study, lack of supplies (N= 46, 39%), lack of administrative support (N= 29, 24.6%) and lack of education or training (N=22, 18.6%) respectively were mentioned as barriers (table 7) in comparison to Macho (2018), lack of supplies (N=31 38.75%), whereas lack of administrative support which is relatively the lowest identified barrier in the study amounted to (N= 6, 7.50%). IDC must be implemented properly, which necessitates individualized care for each patient and their family. This necessitates training and education for all nurses and personnel involved in NICU care. This can take a long time to deploy and may necessitate additional human resource. Als et al., 1994; Als et al., 2003 Studies shows that proper implementation of IDC has led to decreased cost in the NICU.

As stated by the findings in this study (table 7), staff resistance n=17 (14.4%) and about n=10 (8.5%) others (inadequate funding) are the least chosen barriers identified in this study. Staff resistance and apathy as a result of prior disappointments; diminished readiness to modify practice; some employees may sabotage the efforts of others to assist their development. Established practices, ritualistic nursing behavior, and resistance to change by certain personnel made it difficult for the nurses to adopt changes in their care, among the barriers to application of theoretical knowledge noted by the nurses. (Carol 2002). Inability or unwillingness by many administrations to

invest needed funds for staff increment that will eventually lead to decrement in cost at the end of the year or admission is also a barrier.

### **Facilitators**

The most popularly recognized facilitator in the study was having a developmental care specialist in NICU (N= 50 42.4%) (table 8). In Macho's (2018) study 86% identified facilitator was also developmental care specialist in NICU. According to studies, NICUs with specialized developmental care specialists adopt IDC more effectively than those without. (Lawhon & Hedlund, 2008; Montirosso Tronick, & Borgatti, 2012). In order to implement IDC, the Developmental Care Specialist can educate and support the personnel.

Getting NIDCAP training and Parent support classes are the next identified facilitators (N=40 33.9%), (N= 32 27.1%) respectively (table 8). A big component of implementing IDC properly is successfully incorporating the infants' parents and families in the process.

Lactation consultants play an important role in teaching and aiding families with breast feeding and skin-to-skin contact. Offering baby care lessons and parent support groups will aid in the implementation of IDC by assisting parents and families in providing developmentally appropriate care for their newborns and allowing them to obtain support from both the staff and other families.

Single patient rooms (n=8, 6.8%) were the least mentioned facilitators (table 8) in comparison with Macho 2018 (n= 16 20%) despite the fact that in both studies the environment was the most often mentioned barrier. Many respondents may see the environment as a barrier, but they may not feel that single patient rooms are the most critical environmental adjustment required to make IDC a success.

## CHAPTER VI

**Introduction:** this chapters explores the result and the recommendation of the study

### 6.1 Results

In this descriptive and cross-sectional study that was conducted with the aim of examining nurses' knowledge and attitude on individualized developmental care:

- There was a total of 118 registered nurses presently working in the NICU with at least 6 months experience who participated in the survey. In table 1, the study has 87 (73.7%) married nurses and 29(24.6%) single nurses while 2(1.7%) respondents left the question unanswered. The results show that a large proportion of the study are middle age. 28.7(n=34) are aged between 20-30 years while 40.7% (n=48) are aged between 31-40; only 17%(n=20) are aged between 41-50 while 13.6%(n=16) are aged between 51-60 and 6.8% (n=8) left the questions unanswered.
- Regarding the nurse's knowledge of individualized developmental care, table 2 shows that most of the respondents n=100 (84.7%) knew what IDC was, n=98 (83.1%) has heard about NIDCAP, about n=70(59.3%) covered IDC in their NICU orientation, and about n=64 (54.2%) participants received a unit-based in-service on individualized developmental care.
- Nurse's response regarding their attitude towards individualized developmental care as shown in table 3 illustrate that n=73 (61.9%) believed individualized developmental care has positive outcomes for infant's father, n=96 (81.4%) also said IDC has positive outcomes for infant's mother, and n=98 (83.1%) said individualized developmental care is not important for premature infants.
- Table 4 and 5 shows the correlation and association summary statistics of knowledge and attitude there were significant moderate positive correlation between knowledge and attitude ( $P < 0.001$ ).
- As seen in table 6 above, the result showed that the association between knowledge and IDC covered in NICU orientation was statistically significant ( $p < 0.001$ ), those who received an in-service on IDC were more knowledgeable ( $p < 0.001$ ). In addition, there was an association between written practice guidelines



( $p=0.002$ ), highest level of education ( $p=0.004$ ), and increased years of practice ( $p=0.003$ )

- However, there was no significant association between knowledge and certifications ( $p=0.100$ ), marital status ( $p=0.085$ ), and age ( $p=0.072$ ).
- Factors that hinder the Implementation of NIDCAP as shown in table 7 illustrate that the majority  $n=50$  (42.4%) believes inadequate staffing environment,  $n=46$  (39.0%) lack of supplies,  $n=29$  (24.6%) lack of administrative support,  $n=22$  (18.6%) lack of education or training,  $n=17$  (14.4%) staff resistance, and about  $n=10$  (8.5%) others (inadequate funding).
- Regarding the facilitators in table 8 illustrates factors that facilitates the implementation of IDC. Majority of the respondents  $n=50$  (42.4%) identified having a developmental care specialist in NICU as a facilitator,  $n=40$  (33.9%) NIDCAP training,  $n=32$  (27.1%) parent support classes,  $n=26$  (22.0%) administrative support,  $n=22$  (18.6%) baby care classes,  $n=14$  (11.9%) lactation consultant, and  $n= 8$  (6.8%) single parent room.

## 6.2 Recommendation

- Educational and administrative strategies to maintain and improve nurse's knowledge regarding individualized developmental care as recommended by the nurses the need for continuous education for all NICU nurses. This finding might also provide educators with current information on the notion of care, allowing them to focus on such research with nurses in order to improve their view of treating patients on all levels of health: physical, psychological, emotional, and cognitive.
- To see if there are any disparities based on location, level, or size of NICU, a nationwide study of NICU nurse knowledge, attitudes, and perceived self-competency should be done. A nationwide study might assist uncover any discrepancies that could be corrected so that preterm infants receive the same high quality of IDC regardless of where they are treated in Nigeria or what level of NICU they are in.

- Qualitative research on the experiences of NICU nurses with IDC is required. There has been no research to date on how NICU nurses feel about IDC, and only a few studies on their perceptions of its benefits. Knowing how NICU nurses feel about IDC might lead to better ways of teaching about it and putting it into practice.
- An easily accessible system should be put in place to help future researchers reach data and information about the hospital settings as well as the exact number of nurses responsible for each facility or department.
- Follow up to assess the implementation and effect of IDC after providing in service education may be recommended.
- Administrators in health-care settings have a critical role in driving nursing practice rules in the best possible direction in order to achieve high-quality patient care. Policymakers should emphasise ideas or standards that nurses can use to enhance their workplace. Improving the caring behaviours of nurses under policy supervision would undoubtedly increase the quality of care delivered while reducing unintended effects, lowering the hospital's financial responsibilities.

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## APPENDIX

### Appendix 1: Permission from Tools' Author



**Macho, Patricia** <pmacho@northwell.edu>  
To: 'jenniferfummi@yahoo.com'



Tue, Oct 13, 2020 at 7:41 PM ★

Thank-you for your email requesting permission to use the survey tool - Nurses' Knowledge, Attitudes, and perceived self-competency of Newborn Individualized Developmental Care and Assessment Program tool that I developed. You have my permission to use the tool for your research. The tool was developed for my research. It has only been used for my research study and for that reason does not have strong psychometric results. Below is the information on the validity and reliability of the tool based on the pilot study performed and my full research study.

Pilot study results-Cronbach's alpha co-efficient was calculated. Items that had a yes/no/ answer were analyzed together and questions using a four point Likert scale-most of the time, some of the time, seldom, never were analyzed together. Cronbach's alpha for knowledge and four attitude questions was 0.70 and for competency and remaining Likert scale attitude questions was 0.90.

Full research study results-Cronbach's alpha was computed on the complete dataset of eligible survey participants. All domains had an alpha greater than 0.60, which allowed us to sum questions together to create total domain scores.

Attitude alpha = 0.72

Knowledge alpha = 0.64

Competency alpha = 0.64

## Appendix 2: Socio-demographic Data and Questionnaire

### Nurse's knowledge survey

You are being asked to participate in a survey about Individualized Developmental Care. This survey asks questions regarding individualized developmental care in the NICU and factors associated with implementing individualized developmental care. Please answer the following statements to the best of your ability and submit electronically via link at the completion of the survey.

A letter of introduction and information on consent are attached

Thank-you for your time and participation.

- |   |   |
|---|---|
| 1. Marital status                                     | <input type="checkbox"/> Married<br><input type="checkbox"/> Single   |
| 2. What is your age?                                  | <input type="checkbox"/> 20-30<br><input type="checkbox"/> 31-40<br><input type="checkbox"/> 41-50<br><input type="checkbox"/> 51-60<br><input type="checkbox"/> > 60   |
| 3. I am currently licensed as an RN                   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |
| 4. I am currently working in a NICU                   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |
| What is your current work status?                     | <input type="checkbox"/> Full-time-day shift<br><input type="checkbox"/> Part-time-day shift<br><input type="checkbox"/> Full-time-night shift<br><input type="checkbox"/> Part-time-night shift<br><input type="checkbox"/> Per Diem |
| 5. I have a year or more experience working in a NICU | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |
| 6. Initial nursing degree obtained                    | <input type="checkbox"/> Diploma<br><input type="checkbox"/> AAS<br><input type="checkbox"/> BSN  |
| 7. Highest level of education                         | <input type="checkbox"/> AAS<br><input type="checkbox"/> BSN<br><input type="checkbox"/> MS / MSN / MA<br><input type="checkbox"/> NP   |

Please list any degree not obtained listed above

- DNP  
 DNS  
 PhD  
 EdD  
 Other
- 

8. Years practicing in a NICU

- <1  
 1-5  
 6-10  
 11-20  
 > 21

9. Certification/s currently held-check all that apply

- RNC-NIC  
 CCRN-NICU  
 NIDCAP  
 NANN Developmental Care Specialist  
 IBCLC  
 Other not listed
- 

Please list any other certifications you have that are not listed above

10. I know what individualized developmental care is

- Yes  
 No  
 Unsure

How did you FIRST hear about individualized developmental care? Check all that apply

- School  
 Conference  
 Journal article  
 Orientation  
 In-service  
 At work  
 Formal NIDCAP Training  
 Other
- 

Please add any other way you heard about individualized developmental care not listed above

11. I have heard of The New-born Individualized Developmental Care and Assessment

- Yes  
 No  
 Unsure

How did you hear about NIDCAP

- Conference  
 Brochure  
 Journal article  
 Orientation  
 Other Program
- 

Please add any other way you learned about NIDCAP not listed above

12. Individualized developmental care was a topic covered in my NICU orientation in my hospital  
 Yes  
 No  
 Unsure
- 13.** I received a unit based in-service on individualized developmental care  
 Yes  
 No  
 Unsure
14. My NICU has written practice guidelines to help me determine how to provide Individualized developmental care to premature infants  
 Yes  
 No  
 Unsure
15. Individualized developmental care is not important for premature infants  
 Yes  
 No  
 Unsure
16. Individualized developmental care has positive outcomes for infant's mother  
 Yes  
 No  
 Unsure
17.  
 Yes  
 No  
 Unsure
18. Individualized developmental care has no positive outcomes for infant's father  
 Yes  
 No  
 Unsure
- 19.** Individualized developmental care interventions shorten length of stay by decreasing days on mechanical ventilation  
 Yes  
 No  
 Unsure
20. Infants who receive individualized developmental care obtain full po feedings quicker than those who do not receive individualized developmental care  
 Yes  
 No  
 Unsure
21. Individualized developmental care interventions lead to improve behavioural outcomes at age 2 years.  
 Yes  
 No  
 Unsure
22. I provide individualized developmental care to my patients  
 Most of the time  
 Some of the time  
 Seldom  
 Never
23. My interventions are based on the behaviours and cues the infant displays  
 Most of the time  
 Some of the time  
 Seldom  
 Never

24. I feel competent in my ability to provide individualized developmental care
- Most of the time  
 Some of the time  
 Seldom  
 Never
25. I include the parents and family in all aspects of the infant's care according to their level of interest
- Most of the time  
 Some of the time  
 Seldom  
 Never
26. I include the parents and family in all aspects of the infant's care according to how the infant tolerates interventions provided.
- Most of the time  
 Some of the time  
 Seldom  
 Never
27. I feel competent to answer questions from parents regarding their infant's condition and prognosis
- Most of the time  
 Some of the time  
 Seldom  
 Never
28. I feel competent to answer questions from parents about their infant's individualized developmental care
- Most of the time  
 Some of the time  
 Seldom  
 Never
29. I am comfortable reading and interpreting infant's cues
- Most of the time  
 Some of the time  
 Seldom  
 Never
30. I note any signs of distress before, during, and after a feeding
- Most of the time  
 Some of the time  
 Seldom  
 Never
31. I adjust the infant's feeding based on the infant's behaviour before, during, and after the feeding.
- Most of the time  
 Some of the time  
 Seldom  
 Never
32. I dim the lights and keep the noise level low in the infant's environment
- Most of the time  
 Some of the time  
 Seldom  
 Never
33. Non-emergent care is defined as taking routine
- Most of the time

- vital signs, changing diaper, feeding, bathing, routine once daily lab work or x-ray, positioning infant, skincare, and routine physical examination of infant.
34. Clustering care is defined as doing non-emergent care in a cluster or together in an effort to minimize stress to infant.  
I cluster my care
35. I interact with the infant when they are awake
36. I stop an intervention if the infant shows signs of distress
37. I offer the parents the opportunity to do skin to skin at each visit based on the infant's
38. I encourage mothers to breast feed or pump breast milk for their infant
39. I update parents on their infant's condition at each visit
40. I encourage parents to ask questions
41. I have all the supplies I need to provide individualized developmental care
42. There is enough staff working each day to allow me to implement individualized developmental care
43. Please choose any of the following barriers that
- Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Most of the time  
 Some of the time  
 Seldom  
 Never
- Staff resistance

may exist regarding implementing individualized developmental care in your NICU

- Lack of administrative support  
Lack of supplies  
Inadequate staffing Environment  
Lack of education or training  
Other
- 

Please add any other barriers not listed above

44. Please choose any of the below that facilitate implementation of individualized developmental care

- NIDCAP training  
Developmental Care Specialist in NICU  
Single patient rooms  
Administrative support  
Parent support classes  
Lactation consultant  
Baby care classes  
Other
- 

Please add any other facilitators not listed above

45. NICU Unit Level

- Level I  
Level II  
Level III / IV

46. Single patient rooms

- Yes  
No

47. 24 hours parent visiting  
 What is unit policy

- Yes  
No
- 

48. Infant's sibling visiting allowed

- Yes  
No

### **Appendix 3: Informed Consent for the nurses**

#### **Consent to Act as A subject In A research Study**

**Study Title: ASSESMENT OF NICU NURSES KNOWLEDGE, ATTITUDE AND INFLUENCING FACTORS TOWARDS NEWBORN INDIVIDUALIZED DEVELOPMENTAL CARE.**

**Study Aim:**

1. To examine the knowledge of NICU nurses regarding NIDCAP in Nigeria.
2. To explore the attitude of NICU nurses pertaining NIDCAP in Nigeria.
3. To determine the factors that hinders the implementation of NIDCAP in Nigeria
4. To identify factors that facilitates the implementation of NIDCAP in Nigeria

**Why I have being asked to participate in this research study?** You are being asked to participate in this study because you have the inclusion criteria such as; a neonatal intensive care nurse in lagos state, minimum of two 6 or more years of experience in the nursing faculty.

**Is the collected data will be treated confidentially?** you will be informed regarding the privacy and confidentiality of the study (a) all of given information is only for the research purpose and no one other than the researcher can access it (b) questionnaire will be given to them with closed envelop and get back in closed envelop.

**What is the expected risks of participating in this study?** There are no risks during your participating in the study.

**Can I withdraw from the study without any risks?** The participation is totally voluntary without any risk of participation or withdrawal from the study. You can withdraw from the study at any time without any physical or emotional harm. And you have the right to unresponsive for any question of the questionnaire.

**How much time I need to fill the questionnaire?** If you decide to participate in the study; the questionnaire need from 20-30 minutes to be filled in.

**Could I informed about the result of this study?** At any time you can contact with the researcher at the title below to get any further information about the study result.

#### **Voluntary Conccent**

All of the above questions had been explained to me and all of my questioned had been answered. I understand that I am encouraged to ask any current and future questions about this study at any time to the researcher. By signing this form, I agree to participate in this research study. A copy of this consent form will be given to me.



Participant Signature

Date: \_\_\_\_\_

Researcher Signature

Date: \_\_\_\_\_

*Researcher Principal:*

Fummi Jennifer Yakubu

Faculty of Nursing-Near East University

Tel: +905428790752

Email: [Jenniferfummi@gmail.com](mailto:Jenniferfummi@gmail.com)

## Appendix 4: Ethical approval from Lagos state health service commission



### LAGOS STATE GOVERNMENT

LSHSC/DNS/RESEARCH/VOL.II/36


9th October, 2020

**Miss Funmi Jennifer Yakubu**  
 Bsc (Nursing) M.B.A.  
 Institution Near East University,  
 Near East Boulevard,  
 ZIP99138, Nicosia,  
 TRNC Mersin 10 Turkey.

#### RE: APPROVAL FOR RESEARCH STUDY

The Commission is in receipt of your letter dated 8th October, 2020 in respect of the above captioned subject.


2. Following the review of your request, I am directed to convey the Commission's approval to you to carry out the study titled "**Assessment of Neonatal Intensive Care Unit Nurses Knowledge and Attitude or Development Care in Nigeria in General Hospital Ikorodu.**"
3. Please note that you are mandated to submit a copy of your findings to the Commission as soon as the study is concluded.
4. Thank you.

  
**F. O. Animashaun (Ms)**  
 Director of Nursing Services  
 For: Permanent Secretary

#### HEALTH SERVICE COMMISSION

1, Ganiu Smith Street, Lagos Island, Lagos.  
 Telephone: **0814 609 6996** | Email: [hsc@lagosstate.gov.ng](mailto:hsc@lagosstate.gov.ng)


## Appendix 5: Ethical approval from Near East University

  
YAKIN DOĞU ÜNİVERSİTESİ  
BİLİMSEL ARAŞTIRMALAR ETİK KURULU

**ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU**

Toplantı Tarihi : 26.11.2020  
Toplantı No : 2020/85  
Proje No :1181

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Prof. Dr. Candan Oztürk'ün sorumlu araştırmacısı olduğu, YDU/2020/85-1181 proje numaralı ve "**Assessment of NICU Nurses Knowledge,Attitude and Influencing Factorstowards Individualized Developmental Care in Nigeria**" başlıklı proje önerisi kurulumuzca online toplantıda değerlendirilmiş olup, etik olarak uygun bulunmuştur.

  
Prof. Dr. Rüştü Onur

Yakın Doğu Üniversitesi  
Bilimsel Araştırmalar Etik Kurulu Başkanı

## CURRICULUM VITAE

Name	FUMMI JENNIFER	Surname	YAKUBU
Place of Birth	NIGERIA \24\02\1999	Tel	+905428790752
Nationality	NIGERIA		
E-mail	jenniferfummi@yahoo.com		

### Educational Level

	Name of the Institution	Graduation year
Masters	Near East University	Till Date
Undergraduate	Near East University	2019
High school	St. micheals Anglican school	2014

Foreign Languages	Reading comprehension	Speaking*	Writing*
English	Excellent	Excellent	Excellent
Turkish	Intermediate	Intermediate	intermediate

### Computer Knowledge

Program	Use proficiency
Ms Office	Very good
SPSS	good