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EVALUATION OF THE STRESS AND PSYCHOMETRIC CHARACTERISTICS OF PARENTS OF CHILDREN TREATED IN THE PEDIATRIC INTENSIVE CARE UNIT

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Advisor

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BY
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ACCEPTANCE AND APPROVAL

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ETHICS STATEMENT

The thesis entitled ‘‘Evaluation of the stress and psychometric characteristics of parents of children treated in the pediatric intensive care unit’’which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

Signature

/11/2023

Wısam Hammood Salman SALMAN

ABSTRACT

EVALUATION OF THE STRESS AND PSYCHOMETRIC CHARACTERİSTICS OF PARENTS OF CHİLDREN TREATED İN THE PEDİATRIC İNTENSIVE CARE UNIT

Wısam Hammood Salman SALMAN

Master of Science in Nursing

Advisor:Asst. Prof. Dr. Nedret Tekin KAYA

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Pediatric intensive care units are units where children in critical condition between the ages of 1 month and 18 are monitored and treated. Families whose children are treated in intensive care have difficulty coping with the process due to the problems the child experiences during treatment.

This research was conducted as a cross-sectional descriptive study to evaluate the stress and psychometric characteristics of the parents of children treated in the pediatric intensive care unit.

This research was conducted as a descriptive cross-sectional study. The research was conducted between January 2023 and May 2023 at the Martyr Muhammad al-Musawi children's hospital in Nasiriyah city, Dhi Qar Governorate, Iraq. The sample consisted of 132 mothers and fathers whose children were hospitalized in the intensive care unit at Mohammed Al-Mousawi Children's Hospital.Sociodemographic Form, Arabic version of the Parent Stress Scale was used as a data collection tool.In evaluating the data; number, percentage, mean, standard deviation, Independent Sample t-test, One-Way Anova tests were used. Pearson correlation test was used to examine the relationship between variables. It was examined whether the data were normally distributed or not. The values of the two groups were compared according to normality with Student's t-test and ANOVA tests.Mann-Whitney U test and Kruskal Wallis Test were used to analyze quantitative data. In the study, p values less than 0.05 were considered significant.

In the research, the mean age of the children was 2.67± 2.96; The mean age of the parents was 29.52 ± 6.81.In the research, it was determined that the gender of the children of the parents was 64.4% male, the rate of parents with two children was 28.8%, the rate of those with sufficient economic status was 40.9%, the parents were 83.3% working, 34.8% of the parents' educational status was literate, and 79.5% of the forms were filled in by the mother.The proportion of parents who experienced minimal stress due to bloating depending on the appearance of the child was 34.8%; The proportion of those who were very stressed in case of color change was 37.9%; The rate of those who experienced moderate stress when the child was cold was found to be 37.1%. In general, it was found that the stress level of parents was moderate.According to the sub-dimensions of the scale, the parents' appearance of the child, Images and sounds, Procedures are very stressful for the parents; Professional staff communication, Child's behavior and emotions, Professional staff behavior, Parental roles were identified as moderately stressful.

Health personnel should regularly inform parents about the child's health status to reduce the stress of parents whose child is in the neonatal intensive care unit. Parents should be evaluated psychologically and, when necessary, supported by a psychologist, family counselor or social worker other than a nurse.It is of great importance to determine the needs of parents in this process and reduce their stress level. Parents' needs or sources of stress should be identified by health professionals, especially to reduce parents' stress levels.

2023, 51 pages

Keywords: Intensive care unit, Stress, Parents, Child, Psychometric characteristics

ÖZET

ÇOCUK YOĞUN BAKIM ÜNİTESİNDE TEDAVİ GÖREN ÇOCUKLARIN EBEVEYNLERİNİN STRESİ VE PSİKOMETRİK ÖZELLİKLERİN DEĞERLENDİRİLMESİ

Wısam Hammood Salman SALMAN

Hemşirelik, Yüksek Lisans

Tez Danışmanı: . Dr. Öğr. Üyesi Nedret Tekin KAYA

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Çocuk yoğun bakım üniteleri, durumu kritik olan 1 ay ile 18 yaş arasındaki çocukların takip ve tedavilerinin yapıldığı ünitelerdir. Çocukları yoğun bakımda tedavi gören aileler, çocuğun tedavi sırasında yaşadığı sorunlar nedeniyle süreçle baş etmede zorluk yaşamaktadır.

Bu araştırma çocuk yoğun bakım ünitesinde tedavi gören çocukların ebeveynlerinin stresi ve psikometrik özelliklerini değerlendirmek amacıyla kesitsel tanımlayıcı olarak yapılmıştır.

Bu çalışma tanımlayıcı kesitsel çalışma olarak yapılmıştır. Çalışma, Irak'ın Dhi Qar Valiliği, Nasiriyahşehrinde ŞehitMuhammed el-Musawi çocuk hastanesinde Ocak 2023- ile Mayıs 2023 arasında gerçekleştirmiştir.Örneklemi Muhammed El-Mousawi Çocuk Hastanesi'nde yoğun bakım ünitesinde çocuğu yatan 132 anne ve baba oluşturmuştur.Araştırmada verilerin toplanmasındaVeri toplama aracı olarak; Sosyodemografik Form, Ebeveyn Stres Ölçeği'nin Arapça versiyonu kullanılmıştır.Örneklemden elde edilen veriler, IBM Statistical Package for the Social Sciences (SPSS) 25.0 Statistics Paket Programı aracılığı ile analiz edilmiştir.Verilerin analizine başlamadan önce normal dağılım gösterip göstermediği incelenmiştir. Verilerin değerlendirilmesinde; sayı, yüzde, ortalama, standart sapma, Independent Sample t-testi, One-Way Anova testleri kullanılmıştır. Değişkenler arasındaki ilişkinin incelenmesinde Pearson korelayon testi kullanılmıştır.Verilerin normal dağılıp dağılmadığı incelenmiştir. İki grubun değerleri Student t-testi ve ANOVA testleri ile normalliğe göre karşılaştırılmıştır. Nicel verilerin analizinde Mann-Whitney U testi ve Kruskal Wallis Testi kullanılmıştır. Araştırmada p değerleri 0,05 altında olan değerleranlamlı değer olarak kabul edilmiştir.

Araştırmadaçocukların yaş ortalamasının 2,67± 2.96; ebeveynlerin yaş ortalaması 29,52 ± 6.81 olduğubelirlenmiştir. Araştırmada ebeveynlerin çocuklarının cinsiyeti

%64,4’i erkek, iki çocuklu olanebeveynlerin oranı %28,8, ekonomik durumlarının yeterli olanların oranı %40,9, formların %79,5’ianne tarafından doldurulduğu, ebeveynlerinin %83,3çalışıyor olduğu, ebeveynlerin eğitim durumunun%34,8’inin okuryazar olduğu belirlenmiştir.Çocuğun görünümüne bağlı olarak şişkinlik nedeniyle minimal stres yaşayan ebeveynlerin oranı %34,8; renk değişimi durumunda çok stresli olanların oranı %37,9; çocuk soğuk olduğunda orta derecede stres yaşayanların oranı %37,1 bulunmuştur. Genel olarak ebeveynlerin stres düzeyinin orta düzeyde olduğu bulunmuştur. Ölçeğin alt boyutlarına göre, ebeveynlerin çocuğun görünümü,Görüntüler ve sesler, Prosedürler ebeveynlerde çok stresli; Profesyonel personel iletişimi, Çocuğun davranışları ve duyguları, Profesyonel personel davranışları, Ebeveyn rolleri orta derecede stresli olarak belirlenmiştir.

Sağlık personeli, çocuğu yenidoğan yoğun bakım ünitesinde yatan ebeveynlerin stresinin azaltılmasını sağlamak için çocuğun sağlık durumu hakkında düzenli olarak ebeveynleri bilgilendirmelidir. Ebeveynlerin psikolojik açıdan değerlendirilmesi ve gerekli durumlarda hemşire dışında psikolog, aile danışmanı veya sosyal hizmet uzmanı tarafından desteklenmesi gerekmektedir.Ebeveynlerin bu süreçteki ihtiyaçlarının belirlenmesi ve stres düzeyinin azaltılması büyük önem taşımaktadır. Özellikle ebeveynlerin stres düzeylerini azaltmak içinsağlık profesyonelleri tarafından ebeveynlerin ihtiyaçları veya stres kaynakları belirlenmelidir.

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2023, 51 sayfa

Anahtar Kelimeler: Yoğun bakım ünitesi, Stres, Ebeveyn, Çocuk, Psikometrik özellikler

PREFACE AND ACKNOWLEDGEMENTS

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Wısam Hammood Salman SALMAN

Çankırı-2023

CONTENTS

INDEX OF ABBREVIATIONS AND SYMBOLS

N	Number
%	Percentages
SD	Standard deviation
F	The value of the variance between the group
M	Mean

LIST OF ABBREVIATIONS

NICU	Neonatal ıntensive care unit
PTS	Posttraumatic stress
FCC	Family centered care
GCU	General care unit
HCPs	Healthcare professionals
ICU	Intensive care unit
PTSD	Posttraumatic stress disorder
bCPAP	Bubble continuous positive airway pressure
CCFNI	Critical care family needs ınventory
PICS	Post-Intensive Care Syndrome
PICU	Pediatric ıntensive care unit

LIST OF TABLES

1. INTRODUCTION

Intensive care units are units where patients with real and potentially life-threatening critical problems are monitored 24 hours a day. High technologies with complex structures are used in these units. In intensive care units, vital signs of critically ill patients such as respiration, pulse, blood pressure, body temperature and oxygen saturation are constantly monitored. This is one of the departments where medical treatment and nursing care services have a privileged importance (Nyholm and Koskinen, 2017).

Provision of timely and advanced care by medical staff in intensive care unit (ICU) results in significant differences in outcomes (Pollack et al. 2018) .The equipment available in the pediatric intensive care unit (PICU) is specifically designed to cater to the requirements of pediatric patients. This unit provides a level of care that is not commonly available in other areas of the hospital.The field of paediatric intensive care has undergone significant advancements in medical knowledge and technology, resulting in improved outcomes for children who require hospitalization (Abela *et al*. 2020).

A continuous negative impact on survival and functional functioning is linked to critical illness.After discharge, mortality and fresh morbidity seem to rise significantly (Pinto *et al.* 2017). Long-term morbidity following PICU hospitalization is a developing issue, though. The number of days spent in the PICU and the intensity of the disease have not altered over the past three decades, however there has been a marked decline in pediatric critical care unit mortality. However, there was a considerable rise in the percentage of survivors who had a moderate or severe handicap (De Sonnaville *et al.* 2022).

Admitting a child to the PICU is an extremely difficult experience for parents. because these children are at high risk of death.This deterioration in parental mental health can have devastating consequences on the family structure and the quality of life of sick children and siblings (Rodríguez-Rey *et al.* 2018).

A child's critical illness is a stressful event for the entire family. This condition causes significant emotional distress among parents and changes in family functioning. When compared to dads, mothers had almost The percentage of parents who received a new mental health diagnosis after their kid double the likelihood of getting a new mental health diagnosis and starting a new mental health prescription. In long-term outcomes studies, the proportion of parents seeking mental health care is substantially lower than the percentage of parents reporting mental health symptoms (Logan *et al.* 2020). It is stated that even 1-2 years after the previously ill child or the child who was in the intensive care unit is discharged from the hospital, the parents and the child's (patient's) siblings still show symptoms of anxiety, stress and sleep disorders (Terp and Sjöström-Strand 2017). PICU-related stressors include severity of illness, prognosis and outcomes, the child's physical appearance and emotional responses, multiple procedures or interventions, and the overall PICU environment (Hagstrom 2017).

Post-traumatic stress disorder (PTSD), depression, and anxiety have been found in parents of children discharged from the PICU (Logan *et al.* 2020). In a study, post-traumatic stress disorder incidence rates in parents after their child's admission to the intensive care unit ranged between 10.5% and 21%, and symptom rates approached 84%. It has been suggested that mothers are at higher risk of developing post-traumatic stress disorder than fathers (Nelson and Gold 2012).

Healthcare professionals who downplay parents' role in child care can add to parents' stress in the PICU (Grandjean C *et al.* 2021). Individuals who overreact to stress after traumatic events may have difficulty choosing effective coping strategies. therefore, they may tend to use negative emotion-focused coping strategies (Vaughn-Coaxum *et al.* 2018). Acute stress disorder has been found to be the best predictor of PTSD in parents of critically ill children (Villasana *et al.* 2016).

It is crucial to determine risk and protective variables at the time of the child's admission since not everyone who is exposed to this potentially traumatic event will experience severe discomfort (Rodríguez-Rey *et al.* 2018). The majority of kids who are admitted to the PICU survive and make strong physical recoveries (Fraser *et al.* 2017; Straney *et al.* 2015). Despite these advancements, the number of kids hospitalized to the PICU with long-term psychological morbidities is rising. The psychological health of these kids should be taken into account while focusing on survivability following PICU hospitalization (Ko *et al.* 2022,).

In a study conducted between 2003 and 2012, there were 71,425 PICU admissions in total. 1.86% of all admissions (1,329 instances) were related to cardiac arrest overall, with 677 cases (51.0%) occurring in hospitals and 652 cases (49.0%) occurring outside of them. The odds of PICU survival for all pediatric hospitalizations have increased by 29.6% during the past ten years. However, neither the risk-adjusted chances of survival for in-hospital cardiac arrest admissions ($p = 0.92$) nor the odds-adjusted odds of survival for out-of-hospital cardiac arrest admissions ($p = 0.94$) showed any discernible improvement (Straney *et al.* 2015).

Our study aimed to reveal stress factors which parents experienced during their PICU stay. The study was conducted to determine the stress and psychometric properties of parents of children treated in the Pediatric intensive care unit at Martyr Muhammad al-Musawi children's hospital in Nasiriyah city, Dhi Qar Governorate, Iraq.

1.1 Study questions

A. What are the sources of stress that parents experinece in PICU
B. Is there a correlation between stress sourcess and parents' psychometric characteristics.

2. GENERAL INFORMATION

The first 28 days of life from birth are defined as the neonatal period. İt is regarded as a crucial stage in a newborn's existence. During the first year of life, approximately 65% of all fatalities take place. A infant that is considered high-risk is one who typically has a higher likelihood of morbidity and mortality (Datta 2009). Regardless of gestational week and birth weight, a baby with a high risk of mortality and morbidity is defined as a "high-risk newborn".It is generally thought that the most sensitive and dynamic period of life in infant deaths is the newborn period. Among the causes of mortality, there are primarily premature birth and related undesirable conditions (complications). However, with the rapid change in technology and increasing knowledge, more than 75% of these deaths can be prevented in intensive care conditions(Yiğit and Üğücü 2019).

Vital sign measurement is one of the nursing techniques offered in the incubator department (temperature, breathing, pulse). One of the most crucial is body temperature as it is a component of the full nursing evaluation and shouldn't be overlooked. It is kept apart from the other evaluation methods and from areas (mouth, under the nose) where body temperature can be taken. Armpit, rectum, tympanic membrane, and skin), and the nursing care required is administered in accordance with the measurement location selected. Temperature measurement in degrees (Ochs 2009)

The infant (infant) mortality rate is defined as the number of deaths of infants under one year of age per 1,000 live births (https://www.who.int/data/gho/indicator-metadata-registry/imr-details/1). The infant mortality rate per 1000 live births in IRAQ was found to be 19.2. This rate was found to be 18.9 in Turkey, 15.5 in Syria, and 14.6 in Iran. (https://www.cia.gov/the-world-factbook/field/infant-mortality-rate/country-comparison/).

Many children are hospitalized to pediatric critical care each year for treatment. While acute injuries account for the majority of these hospitalizations, children with chronic conditions that necessitate recurrent hospitalization are also on the increase. Both the patient and family experience severe stress when a kid is hospitalized. In the past, critical care units had limited visiting hours and forbade the visitation of several family members or siblings. When at the bedside, parents and family members were not urged to assist with care. Many hospitals are increasingly modifying their visiting policies to allow more active family engagement in patient care as the move toward family-centered care continues. The participation of parents in child care is now encouraged. Intensive care facilities are changing their floor plans to accommodate visitors and, where possible, provide parents a place to sleep (Frazier *et al.* 2010).

Research has shown that acute and acute on chronic critical illness have a noteworthy impact on Health-Related Quality of Life It is recommended that forthcoming interventional trials in pediatric critical care incorporate assessments of both mortality and health-related quality of life over an extended period of time. This approach is necessary to gain a comprehensive understanding of the complete effects of critical illness in children (Aspesberro *et al.* 2015).

Due to recent advancements in pediatric critical care medicine, a greater number of children are now able to survive critical illnesses (Abela *et al.* 2020) .

Improved survival rates in patients needing intensive care for the treatment of life-threatening disease or injury have been followed with higher morbidity in both paediatric and adult patient groups.As a result, the Post Intensive Care Syndrome (PICS) concept describes how the current focus of the international critical care community has shifted from mortality reduction alone to the optimization of survivor outcomes (Stremler *et al.* 2017).

2.1. Pediatric intensive care unit

The PICU experience is distressing for parents since the admission is unexpected, the prognosis for hospitalization and treatment in the PICU is frequently unpredictable, and the setting is unpleasant overall. As a result, once their children are discharged from the PICU, parents of critically ill children are at risk of developing long-term mental health problems such PTSD, anxiety, and depression. After their kid is released from the PICU, between 23 and 31% of parents experience anxiety and between 10% and 42% have PTSD. Studies on early parental psychological stress during PICU hospitalization, however, have lagged behind the severity of the issue (Suttle *et al.* 2022). Parents who are admitted to a PICU may experience PTSD, anxiety, and depression after being released from the hospital. Parents often have PTSD in the range of 10% to 42% and anxiety in the range of 23% to 31% upon PICU discharge (Yagiela *et al.* 2019).

Over the past three decades, significant progress has been made in the field of PİCU, resulting in a considerable decrease in mortality rates. The current mortality rates range from 2.5% to 12%, depending on the geographical region under consideration (in Brazilian) (Sousa *et al.* 2023, Furtado *et al.* 2021).

The past two decades have witnessed scientific advancements that have resulted in enhanced survival rates following critical illness during childhood.It has been reported that more than 97% of children admitted to intensive care in the USA are discharged. They were observed recovering and participating in their own homes, schools, and communities. Studies conducted on small cohorts of specific populations have revealed that a significant percentage of survivors of PICU experience long-term neurological, developmental, and multisystem medical complications. In certain instances, medical and psychological issues persist for an extended duration following the patient's release from the hospital. Age at the time of application and the severity of the disease may affect these situations (Hartman *et al.* 2017, De Oliveira *et al.* 2008). İn Iraq Fifteen care givers (57.7%) show depression and anxiety in the range of (11-21) compared to only 2 (12.5%) of the control group<0.05. All care givers think their patients are in pain and all complained of noise in the PICU as causes of their distress. Twenty four patients were under ventilator, fourteen care givers (93.3%) fall in the (11-21) range according to study in Hilla, Iraq (Mehdi and Sebty 2011).

Parental presence at the bedside (PPB) is a source of comfort for children who are severely sick and admitted to the PICU as well as a recognized human right. In the past, PPB was constrained by visitation hours and a lack of privacy. Pediatric critical care teams supporting parental participation and involvement in care have addressed some of these difficulties in today's shifting healthcare environment using a more family-centered approach. As has become clear in the wake of the coronavirus disease/ COVID-19 pandemic, unrestricted parental and family involvement may still be viewed as an optional component of care and may encounter substantial obstacles (Miller *et al.* 2022; Lee *et al.* 2022).

Neonatals, children, and young adults who need close monitoring and care are often hospitalized in a critical care facility, despite the fact that PICUs can vary in size and breadth. Visitors who aren't familiar with the PICU clinical setting might not like the encounter. Depending on the severity of the condition, the family may offer the youngster varying levels of assistance. Depending on their disease and the sort of treatment they are receiving, a child's look may also be substantially changed. The physical structure of the PICU may make it easy for visitors to see upsetting events (Abela *et al.* 2020).

Children and families can suffer long-lasting, detrimental effects from pediatric critical illness in a number of different functioning areas. A multidisciplinary team of healthcare professionals must work together to prevent, diagnose, and treat PICS-p, and deliberate rules and procedures must be developed to ensure that evidence-based care is applied fairly both during and after the PICU hospitalization. Clinicians and researchers should assess their regional requirements and obstacles (Sinha *et al.* 2023).

2.2. Stress

Stress can be defined as a psychological and physiological response to challenging circumstances that can result in mental tension and anxiety. Stress is a physiological and psychological reaction that occurs in response to perceived challenges or threats in an individual's life. Stress is a universal experience that affects individuals to varying degrees. The manner in which we react to stress significantly impacts our overall state of well-being (WHO 2023).

Stress is a common physiological response experienced by individuals. The human body is naturally equipped to encounter stress and respond to it. When an individual encounters changes or challenges, commonly referred to as stressors, their body initiates physical and mental responses.The physiological and psychological responses to stress aid in the body's adaptation to novel circumstances. Stress can have a positive impact by enhancing our alertness, motivation, and preparedness to avoid potential hazards. In the event of an impending important examination, a stress response may facilitate heightened bodily exertion and prolonged wakefulness. However, stress can become problematic when stressors persist without any relief or opportunities for relaxation (Clinic 2022).

The phenomenon of stress involves the activation of fundamental physiological mechanisms that enable individuals to cope with challenging situations and restore internal balance. However, when these mechanisms are excessively or persistently engaged beyond their capacity, it can lead to detectable pathological abnormalities in various systems of the body (Patchev and Patchev 2022; De Kloet *et al.* 2005).

Stress mediators work in synergy to facilitate effective coping with a persistent stressor by enabling an initial "fight-or-flight" response that enables the individual to respond appropriately to the current situation, followed by a subsequent phase aimed at rationalizing and retaining the information associated with its context. Therefore, alterations in memory processes due to stress are a fundamental component of the behavioral response to stressors. The aforementioned modifications result in the prioritization of attentional and appraisal processing of emotionally significant occurrences, an augmented dependence on established habits and routines, a decrease in distraction caused by stressor-irrelevant information, and ultimately, the retention of information most pertinent to the stressful encounter to facilitate coping with comparable future events (Schwabe *et al.* 2022; Atucha *et al.* 2017).

It is important for parents to be involved and present in their child's health care (Salmela *et al.* 2011; Karlsson *et al*. 2019). Thus, it is easier for the child to stay in an unknown environment, because they have by their side a familiar face, someone whom they trust, and parents feel safer, knowing at all times what is happening with their child. Parental comfort, tenderness, and parent-child closeness are extremely important to the parents (Salmela *et al.* 2011). Also, many benefits of parental presence during invasive procedures in the PICU have also been reported for both the child and parents, including presence during resuscitation, regardless of the outcome (Mark 2021). If children are separated from their parents, everyday social ties are disturbed, and naturally, children and parents can feel lonely and alienated (Karlsson *et al.* 2019).

2.3. Sources of stress in PICU

Several authoritative organizations have emphasized the significance of implementing Family-Centered Care (FCC) as a policy within the pediatric hospital setting. These organizations include The Institute of Medicine, American Academy of Pediatrics, American Nurses Association and Society of Pediatric Nurses, and American Nurses Association, National Association of Pediatric Nurse Practitioners, and Society of Pediatric Nurses. Nevertheless, the degree to which FCC, as defined by the IPFCC, is put into practice in PICU remains largely obscure (Hill *et al.* 2018).

Parental worry and emotions of uncertainty might arise as a result of having a kid admitted to the PICU, which is a difficult life event. A lot of the study on parents' reactions to their kid being admitted to the PICU has concentrated on figuring out what could be stressful. Hospital environments, sporadic contact, changes in a child's appearance and parental role, and uncertainty about a child's sickness and prognosis are all frequent sources of stress for parents (Stremler *et al.* 2017).

Globally, more than 1.35 million infants are born annually with varying types of congenital heart defects. Congenital heart disease (CHD) is a prevalent condition that results in a significant number of infant admissions to PICUs. It is also a leading cause of infant mortality and a major contributor to disease-related disability in children under the age of five. Newborns who have complex CHD often require cardiac surgery within the first few days, weeks, or months after birth. After the surgery, they may be transferred back to the intensive care unit with a mediastinal incision, artificial airway with mechanical ventilation, and peripheral, central, or intracardiac catheters. Following the surgical procedure, neonates are susceptible to hemodynamic instability, persistent hypoxemia, malignant arrhythmias, multiorgan dysfunction, seizures, thrombosis, and infection (Kasparian *et al.* 2019). The examination of data obtained from the 2009-2010 United States. National Survey of Children with Special Health Care Needs revealed that 89% of families with children who have CHD and special health care needs experienced at least one financial burden. These burdens included healthcare expenses exceeding $1000, which was reported by 30% of families, financial difficulties arising from their child's condition (35%), reduced or terminated employment (43%), and increased caregiving hours (23%). Furthermore, according to a study, families who reported experiencing at least one financial burden were nearly three times more inclined to utilize mental health services compared to those who did not encounter any financial burden (McClung e*t al.* 2018).

The experience of having a child admitted to a PICU can be a highly stressful and anxiety-inducing event for parents. Parents frequently experience fear and trauma, leading to a persistent state of apprehension. Additionally, the individuals encountered sensations of dissociation and susceptibility within the given circumstances. Certain parents may experience difficulty in identifying their offspring due to alterations in behavior, as well as the manifestation of an anesthetized state and edema. The parents provide an account of the atmosphere within the PICU as being predominantly jarring (Terp and Sjöström-Strand 2017).

The admission of a child to the PICU can be a challenging life experience for parents, eliciting a range of emotional responses characterized by significant stress and uncertainty. A significant portion of the research pertaining to parents' encounters with their child's admission to the PICU has been centered on the identification of potential stressors. Frequently cited sources of stress for parents include the hospital setting, inconsistent communication, changes in a child's physical appearance and parental responsibilities, as well as uncertainty regarding the child's medical condition and future prognosis. The admission of a child to the PICU necessitates continuous monitoring, as well as various diagnostic and invasive procedures to address an acute health condition (Rodríguez-Rey *et al.* 2018; Stremler *et al.* 2017).

In the first 13 months following the loss of their child in the PICU, grieving parents report a moderate amount of post-traumatic development, albeit variability is high. Parents' perceptions of post-traumatic growth may be influenced by their education level and their complicated mourning symptoms (Suttle *et al.* 2022).

For the kid, their parents, carers, and extended family, a child's critical illness is a life-altering experience. Children are being admitted to PICUs in greater numbers and are surviving critical illnesses like serious physical injury, cardiorespiratory disease, and sepsis thanks to medical advancements like the expanding availability and capacity of mechanical and artificial organ support systems (Curtis *et al.* 2016).

2.4 The role of nurses in the intensive care units of newborns

Nurses possess a strategic advantage in detecting parents who may be at an elevated risk for psychological morbidity. This is particularly true when a parent has experienced a stressful life event prior to admission, has a child with a cardiovascular diagnosis, or necessitates ventilatory assistance. Nurses have the ability to alleviate parental stress through various means, such as providing interpretation of the child's physical appearance, facilitating comprehension of medical procedures being performed on the child, interpreting the child's behavior, clarifying the actions of hospital staff, and aiding parents in defining their parental role during their child's hospital stay (Alzawad *et al.* 2021).

The rapid advancement of medical science and technology has resulted in significant transformations in the realm of paediatric intensive care, which have a direct impact on the favorable outcomes of a hospitalized child's life and death. Nevertheless, it is noteworthy that the distinctive encounter of hospitalization in the PICU for children and their parents or caregivers persists. The hospitalization of a child in the PICU can be a highly demanding, stressful, and potentially traumatic experience for both the child and their family (Debelić *et al*. 2022).

The primary sources of stress for parents in the PICU are identified as the sensory stimuli present in the environment, the severity of the child's condition, alterations to family dynamics and parental responsibilities, and the unpredictability of the child's prognosis. The main requirement that parents want is to have enough knowledge and knowledge. Parents experience psychological, physical, and social consequences as a result of hospitalization, ranging from the initial days following admission to long-term effects extending years after discharge. Spirituality is recognized as a coping mechanism (Abela *et al*. 2020).

Extreme stress, previously encountered stresses, parental trauma, and stress reactivity are all associated with unfavorable psychological consequences.The cultural origins of the families of the children admitted to the PICU frequently differ, which may have an impact on how they respond to unanticipated events and newly generated stressful situations.This variable reveals important distinctions between industrialized and developing nations.Additionally, parents' past traumas may affect how they interpret stresses in the PICU, the initial shock of the child's hospitalization and the ensuing sense of powerlessness cause the parents to become mentally exhausted, and their experiences are nevertheless traumatic despite the PICU's ever-improving medical treatment (Debelić *et al.* 2022).

Given the high survival rate of children who experience critical illness, it is estimated that more than one million children in the United States will be susceptible to post-PICU impairment over the next ten years, potentially impacting a larger number of family members. The available evidence substantiates a distinct framework for pediatric Post-Intensive Care Syndrome (PICS), which encompasses its impact on various aspects of physical, cognitive, emotional, and social well-being within a developmental and family-oriented milieu (Watson *et al.* 2018).

Over the years, there has been a shift in focus towards assessing pediatric critical care outcomes with regards to the development of new morbidities.Morbidity rates in the PICUs are twice as high as the mortality rates (Dannenberg *et al.* 2023; Jarvis *et al.* 2019).

The survival rates of children who have experienced critical illnesses and have been discharged with a functional status exhibit a range of variability between 68% and 85.1% (Choong *et al.,* 2018; Dannenberg *et al.,* 2021). The evaluation of functional status has gained significance in the measurement of health status and has been progressively acknowledged as a crucial outcome in PICUs.The functional status pertains to an individual's ability to perform routine tasks and activities. In contemporary times, the limitations in operational capacity, encompassing bodily, cognitive, societal, and affective functionality subsequent to a critical ailment, have been acknowledged as PICS within the pediatric domain (Dannenberg *et al.* 2023; Jarvis *et al.* 2019).

Targeted psychological treatment, such as psychological first aid and dealing with parental blame attribution, is required for parents of seriously wounded children in the acute hospital period. Implementing anticipatory guiding frameworks based on a family-centered social ecology approach would assist both parents and kids by preparing them for the trauma journey and for discharge. This strategy might influence how treatment is provided throughout the course of a child's rehabilitation. In paediatric trauma centers, the creation and deployment of a major trauma family support coordinator would significantly improve the treatment of seriously wounded children and their families (Foster *et al.* 2017). It is crucial to adopt a family-centered strategy where the person and the family are treated as a "care unit" since the hospitalization of a family member can be a disruptive event in the family dynamics. When considering the health of the family as a whole, it is also necessary to consider the family's ability to react or adapt to the many crisis situations that arise in the dynamics of life (González-Gil *et al.* 2021).

A family is a system of social relationships, mutual reliance, and patterns that exist among family members. Naturally, the family develops an emotional bond, and the parent serves as the family's emotional center for making decisions and working out problems. Therefore, it could negatively affect the family unit as well as the parent's ability to control their emotions and solve problems. Additionally, it may harm a parent's relationship to their child (Al Maghaireh *et al.* 2017). İn a study regardless of the disease categorization, duration of hospital stay, or severity, parents expressed high levels of satisfaction with the treatment they got in pediatric critical care. Greater satisfaction is seen in the areas of professional demeanor, treatment and care, knowledge, and parental involvement (Cintra *et al.* 2022).

Appropriate support from experienced personnel to parents of children in intensive care has been shown to have a positive effect on the emotional reactions of families (Grandjean *et al.* 2021). In one study, the PICU multidisciplinary team, especially nurses, were identified as key people who recognize the needs of families early and provide them with emotional support (Hagstrom 2017).

3. MATERIALS AND METHODS

3.1. Design of the Study

This study was conducted in the form of a cross-sectional descriptive design. A face-to-face interview with patients was conducted to fill out the questionnaire.

3.2. Aim of the study

This research was conducted to evaluate the stress and psychometric characteristic of parents of children treated in the pediatric intensive care unit.

3.3. Place of the study

This research was conducted in the PICU of the 100-bed Mohammed al-Moussavi Children's Hospital.

3.4. Time of the study

This research was conducted between January 5, 2023 and May 5, 2023.

3.5. Sample and setting

The total number of children and their parents admitted to the intensive care unit of Martyr Muhammad Al Mousavi Hospital in Ziqar Governorate/Nasiriya city of Iraq was 132.The sampling method was simple random sampling method.

In the sampling calculation n=N x t2 xpxq / d2 (N-1) + t2 xpxq formula is used (Sümbüloğlu and Sümbüloğlu, 2000). The symbols used in the formula are given below. The theoretical t-value of the research is 1.96, 95% confidence interval and 0.05 sampling error. Simple chance sampling with a 95% confidence interval and a margin of error of 0.05 (http://www.raosoft.com/samplesize.html). According to the formula; When the research data is placed in the formula, the calculation results according to (200) of the minimum number of samples that can represent the population of (132) it was concluded that it should be based on a 95% confidence interval and a 50% response.

3.6. The inclusion and exclusion criteria

• The parents whose children have been treated in the PICU and who have agreed to participate were included in the study.
• Parents with special needs such as mute, nonverbal, or mentally ill were excluded from the study.

3.7. Data tools

3.7.1 Socio-demographic form

A survey was prepared by the researcher by reviewing the literature for demographic data (Yacoub *et al*. 2013; Montoro-Pérez *et al*. 2023). Data was collected using a questionnaire to determine socio-demographic characteristics for children and their parents, including the (child age, gender of the child, the number of children in the family, economic status, parents job, parents age, and level of education) (Appendix 1)

3.7.2 The Arabic version of the parental stressor scale

Parental stress was measured using the translated Arabic version of PSS: PICU (Carter and Miles 1989) and developed in Jordan (Yacoub *et al.* 2013) to measure the stress of parents when treating their children in the intensive care unit.
This is a scale with seven subitems using a 0–5 Likert-type ranging:
0: Not experienced, 1: Not stressful, 2: Minimally stressful, 3: Moderately stressful, 4: Very stressful, and 5: Extremely stressful As the scores increase, the stress level also increases.

The questionnaire covered seven dimensions:

1- Child’s appearance (three items), which describes whether a child’s physical appearance may be a cause of stress in parents
2- Sights and sounds (four items), which describes the effect of environmental technology on parental stress;
3- Procedures (seven items), which includes invasive and non-invasive treatments and evaluation techniques thatcould affect parental level of stress;
4- Professional staff communication (five items), which describes the effect of nurse–parent verbal or non-verbal interaction on the level of stress in parents;
5- Child’s behavior and emotions (Ten items), which describes how a child’s behavioral changes could affect the level of stress in parents;
6- Behaviors of the professional staff (four items), which describes professional and not professional behaviors observed by parents;
7- Parental role (six items) which ask about changes in the parental role caused by a child being admitted to ICU, or illness itself (Appendix2).

Carter et al. (1989)’s in study was found alpha coefficient total instrument reliability was .95 with subscales ranging from .72 to .99 (Carter and Miles, 1989). Yacoub et al. (2013)’s in study was found to be correlated significantly in each of the subscales alpha .81 to .96 and Cronbach’s alpha coefficients total score .79 with the original PSS. In our study the Cronbach’s alpha for internal consistency reliability was .93, with subscales ranging from .70 to .88. Reliability refers to the extent to which a phenomena measurement offers a balanced and consistent result. Repeatability is also one of the reliability interests. For example, if repeated measurement made by the test under stable conditions will give the same finding, then a scale or test is called reliable.

3.8. Data analysis

Data were collected face to face using the questionnaire. The average data collection time was 15 minutes. Data were analyzed using SPSS 25 (Statistical Package for Social Sciences). Descriptive and correlational statistics were used. The normal distribution of the data was analyzed and the values of the two groups were compared with t-test or ANOVA tests according to normality. Significance value of $p<0.05$ was taken into account.Pearson correlatıon was looked at.

3.9. The ethical dimension

Ethics committee permission was obtained from Iraq on December 21, 2022, with a detailed explanation including the purpose and methodology of the research. In addition, permission was obtained from the Zikar Health Directorate (Appendix 2). For admission to Martyr Muhammad Al-Musawi Hospital, participants were verbally informed of the study objectives and asked to participate voluntarily, and were assured of non-disclosure. To ensure participant confidentiality, no names were written down during data collection and reporting. They were also told that they could refuse to answer a particular question or withdraw from the study at any time without any penalty.

4. RESULTS

In this section, data analysis is presented in the form of tables. Evaluation was made according to the tables.

Table 4.1 Parent and Child Characteristics(n=132)

CHARACTERISTIC		**n**	**PERCENT (%)**
Child age X ± S.D: 2.67 ± 2.96 years	Less than 1 year	57	43.2
	1 to 5 years	41	31.1
	More than 5 years	34	25.8
Gender	Girl	47	35.6
	Boy	85	64.4
Number of child	One child	21	15.9
	Two children	38	28.8
	Three children	33	25.0
	Four children	22	16.7
	Five children	10	7.6
	Six and above children	8	6.1
Economic Status	Poor	1	0.8
	Enough	54	40.9
	Moderate	46	34.8
	Good	23	17.4
	Very good	8	6.1
Form Filling	Father	27	20.5
	Mother	105	79.5
Parents Job	Employed	110	83.3
	Unemployed	22	16.7
Parent age M ± S.D: 29.52 ± 6.81 years	Less than 30 years	96	72.7
	30 to 40 years	24	18.2
	more than 40 years	12	9.1
Parent education level	Illiterate	12	9.1
	Read and write (literate)	46	34.8
	Primary school	35	26.5
	Secondary school	10	7.6
	Middle school	17	12.9
	Diploma	6	4.5
	Bachelor	5	3.8
	Master	1	0.8

M: Mean , S.D: Standard Deviation

The result showed majority of child gender was boy (64.4%), mean of age was 2.67 years, child family have two children (28.8%), economic status was acceptable (40.9%), mother form filling was (79.5%), parent job was employed(83.3%), mean of parent child age was 29.52 years old, parent level of education was literate(34.8%) (Table 4.1).

Table 4.2 Distribution of the stressful items parents of children treated

STRESSFUL GROUP	ITEMS	NOT STRESSFUL	MİNİMALLY STRESSFUL	MODERATELY STRESSFUL	VERY STRESSFUL	EXTREMELY STRESSFUL	M	S.D
Child's appearance (n/%)	Puffiness	35/26.5	46/34.8	32/24.2	15/11.36	4/3.0	2.30	1.08
	Color change	10/7.6	12/9.1	22/16.7	50/37.9	38/28.8	3.71	1.19
	Appearing cold	32/24.2	42/31.8	49/37.1	9/6.8	-	2.27	0.91
Sights and sounds (n/%)	Seeing/ monitors	8/6.1	61/46.2	42/31.8	21/15.9	-	3.58	0.83
	Sound/monitors–equipment's	8/6.1	58/43.9	49/37.1	17/12.9	-	3.57	0.79
	Other sick children	2/1.5	4/3.0	66/50.0	42/31.8	18/13.6	3.53	0.82
	Sudden alarms	3/2.3	3/2.3	46/34.8	45/34.1	35/26.5	3.80	0.94
Procedures (n/%)	Tubes	-	2/1.5	38/28.8	92/69.7	-	3.52	0.34
	Suctioning	4/3.0	10/7.6	70/53.0	36/27.3	12/9.1	3.32	0.86
	Needles	-	9/6.8	67/50.8	40/30.3	16/12.1	3.48	0.80
	Cough/deep breath-Clapping chest	-	3/2.3	50/37.9	41/31.1	38/28.8	3.86	0.86
	Injections/shots	3/2.3	14/10.6	69/52.3	35/26.5	11/8.3	3.28	0.85
	Bruises/cuts	3/2.3	13/9.8	71/53.8	33/25.0	12/9.1	3.29	0.85
Professional staff communication (n/%)	Too fast explanation	2/1.5	14/10.6	73/55.3	37/28.0	6/4.5	3.23	0.76
	Understood words	2/1.5	8/6.1	76/57.6	29/22.0	17/12.9	3.39	0.84
	Telling conflicting things	5/3.8	18/13.6	67/50.8	35/26.5	7/5.3	3.16	0.86
	Not telling definitely	4/3.0	7/5.3	72/54.5	42/31.8	7/5.3	3.31	0.78
	Not talking enough	-	3/2.3	68/51.5	51/38.6	10/7.6	3.52	0.67
Behaviors and emotions (child) (n/%)	Confusion	2/1.5	10/7.6	86/65.2	32/24.2	2/1.5	3.17	0.64
	Rebellious or uncooperative	-	10/7.6	80/60.6	37/28.0	5/3.8	3.28	0.66
	Crying or whining	2/1.5	6/4.5	85/64.4	36/27.3	3/2.3	3.24	0.64
	Demanding	-	3/2.3	85/64.4	42/31.8	2/1.5	3.33	0.55
	Pain	-	11/8.3	81/61.4	37/28.0	3/2.3	3.24	0.63
	Restlessness	-	8/6.1	82/62.1	38/28.8	4/3.0	3.29	0.62
	Inability to cry	-	8/6.1	84/63.6	36/27.3	4/3.0	3.27	0.62
	Fright	-	9/6.8	86/65.2	34/25.8	3/2.3	3.23	0.60
	Anger	-	17/12.9	95/72.0	18/13.6	2/1.5	3.04	0.57
	Sadness/depression	-	10/7.6	97/73.5	22/16.7	3/2.3	3.14	0.56
Behaviors of the professional staff (n/%)	Joking/laughing	-	11/8.3	92/69.7	29/22.0	-	3.14	0.54
	No enough talking	-	11/8.3	82/62.1	36/27.3	3/2.3	3.23	0.63
	Too many different people	1/0.8	9/6.8	96/72.7	19/14.4	7/5.3	3.17	0.66
	Not telling names	-	11/8.3	93/70.5	26/19.7	2/1.5	3.14	0.57
Parental roles (n/%)	Cannot provide care	-	-	83/62.9	49/37.1	-	3.31	0.33
	Separation	-	4/3.0	94/71.2	25/18.9	9/6.8	3.30	0.64
	Helpless crying child	-	4/3.0	80/60.6	37/28.0	11/8.3	3.42	0.69
	Cannot hold	3/2.3	7/5.3	80/60.6	34/25.8	8/6.1	3.28	0.75

The distribution of stressful items of parents of children treated in the PICU is shown in table 4.2.

Depending on the child's appearance, the rate of those who experienced minimal stress due to puffiness was 34.8%, the rate of those who were very stressed in case of color change was 37.9%, and the rate of those who were moderately stressed when it was cold was 37.1% (Table 4.2).

Depending sights and sounds was determined that the rate of parents who experienced minimal stress due to seeing/monitor was 46.2%,the rate of those who experienced minimal stress due to sound/monitor equipment was 43.9%, the rate of moderately stressed when there were other sick children was 50%, and the rate of those who were moderately stressed in case of sudden alarm was 34.8% (Table 4.2).

According to the situation regarding the procedures, the rate of parents who are very stressed about the tubes is 69.7%, the rate of those who are moderately stressed about suctioning is 53%, the rate of those who are moderately stressed about the needle is 50.8%, the rate of those who are moderately stressed about coughing/deep breathing is 37.9%. It was determined that the proportion of those who experienced moderate stress due to the injection was 52.3%, and the proportion of those who experienced moderate stress due to bruises/cuts was 53.8% (Table 4.2).

According to the situation regarding Professional staff communication, the rate of parents who experience moderately stress when explanations are given too fast is 55.3%, when words they do not understand are spoken, the rate of those who experience moderately stress is 57.6%, when conflicting things is telling, the rate of those who experience moderately stress is 50.8%, and when no explanation is given, the rate of those who experience moderately stress is 54.5%. It was determined that the rate of those who experienced moderately stress when not talked about enough was 51.5% (Table 4.2).

According to the situation regarding the child's behavior and emotions, the rate of those who experience moderate stress from parents when the child is confused is 65.2%, the rate of those who experience moderate stress when the child is unruly or uncooperative is 60.6%, and the rate of those who experience moderate stress when the child cries or whines is 64.4%, the proportion of those who experience moderate stress when the child is demanding is 64.4%, the proportion of those who experience moderate stress when the child is in pain is 61.4%, the proportion of those who experience moderate stress when the child is restless is 62.1%, the proportion of those who experience moderate stress when the child cannot cry is 63.6%, the proportion of those who experience moderate stress when the child is afraid is 63.6%. It was determined that 65.2% experienced moderate stress when angry, 72.0% experienced moderate stress when sad/depressed, and 73.5% experienced moderate stress when sad/depressed (Table 4.2).

According to the situation related to the behavior of professional personnel, the rate of joking/laughing in parents was 69.7%, the rate of not enough talking was 62.1% of those who experienced moderate stress in parents, 72.7% of those who experienced moderate stress in parents of having too many different people, and 70.5% of those who experienced moderate stress in parents of not saying names (Table 4.2).

According to the situation related to parental roles, the rate of parents experiencing moderate stress regarding inability to care was found to be 62.9%, and the rate of parents experiencing moderate stress regarding separation was 71.2%. It was found that 60.6% of parents experienced moderate stress regarding helplessness, and 60.6% of parents experienced moderate stress regarding incontinence (Table 4.2).

Table 4.3 Summary of the psychological stress of parents.

DIMENSION	MEAN	STD. DEVIATION	MINIMUM	MAXIMUM
Overall	3.29	0.13	2.92	3.61
Child’s appearance	3.41	1.17	1.67	4.00
Sights and sounds	3.62	0.38	2.25	4.75
Procedures	3.48	0.37	2.17	4.17
Professional staff communication	3.32	0.35	2.40	4.20
Behaviors and emotions child	3.22	0.20	2.80	3.70
Behaviors of the professional staff	3.17	0.30	2.50	4.00
Parental roles	3.34	0.38	2.50	4.50

Mean range: Not stressful: 1-1.8, minimally stressful: 1.8- 2.6, moderately stressful: 2.6-3.4, very stressful: 3.4- 4.2, extremely stressful: 4.2-5.

The result showed the level of stress was moderate for overall, and subgroup were Child's appearance had very stressful, Sights and sounds had very stressful, Procedures had very stressful, Professional staff communication had moderately stressful, Behaviors and emotions child had moderately stressful, Behaviors of the professional staff had moderately stressful, Parental roles had moderately stressful (Table 4.3).

Table 4.4 The relationship between psychological stress and parental age.

DIMENSION		**n**	**MEAN**	**STD. DEV.**	**F**	**P**
Overall parent stressful	Less than 30 years	39	3.32	0.14	1.380	0.255
	30 to 40 years	68	3.28	0.14		
	More than 40 years	25	3.28	0.12		
Child's appearance	Less than 30 years	96	3.99	0.76	134.758	0.001
	30 to 40 years	24	2.13	0.29		
	More than 40 years	12	1.39	0.28		
Sights and sounds	Less than 30 years	39	3.64	0.31	0.138	0.872
	30 to 40 years	68	3.62	0.43		
	More than 40 years	25	3.59	0.33		
Procedures	Less than 30 years	39	3.55	0.31	0.797	0.453
	30 to 40 years	68	3.46	0.39		
	More than 40 years	25	3.46	0.38		
Professional staff communication	Less than 30 years	39	3.35	0.43	0.296	0.744
	30 to 40 years	68	3.32	0.29		
	More than 40 years	25	3.28	0.35		
Behaviors and emotions child	Less than 30 years	39	3.20	0.19	0.492	0.613
	30 to 40 years	68	3.23	0.21		
	More than 40 years	25	3.24	0.16		
Behaviors of the professional staff	Less than 30 years	39	3.22	0.34	0.727	0.485
	30 to 40 years	68	3.15	0.29		
	More than 40 years	25	3.14	0.25		
Parental roles	Less than 30 years	39	3.37	0.40	1.273	0.284
	30 to 40 years	68	3.29	0.38		
	More than 40 years	25	3.43	0.36		

$p<0.05$ ANOVA analysis

Shows the relationship between psychological stress and the parental age The table showed that there is a positive statistically significant relationship between the parental age and the child's appearance. The result was significant (p<0.05), which is meaning that the appearance of the child has a significant effect on the psychological stress of the parents (Table 4.4).

But others (Sights and sounds, Procedures, Professional staff communication, Behaviors and emotions child, Behaviors of the professional staff and Parental roles) has no effect parents have psychological stress (p>0.05) (Table 4.4).

Table 4.5 Relationship between demographic data and overall stress identified

CHARACTERISTIC		**n**	**MEAN**	**STD. DEV.**	**F**	**p**
Child age	Less than 1 year	57	3.29	0.15	0.122	0.885
	1 to 5 years	41	3.29	0.14		
	More than 5 years	34	3.28	0.12		
Gender child	Girl	47	3.29	0.16	0.096	0.757
	Boy	85	3.30	0.12		
Number of child	One child	21	3.34	0.13	1.045	0.394
	Two children	38	3.29	0.13		
	Three children	33	3.28	0.16		
	Four children	22	3.29	0.12		
	Five children	10	3.23	0.14		
	Six and above children	8	3.32	0.10		
Economic Status	Poor	1	3.06	-	3.212	0.015
	Acceptable	54	3.33	0.13		
	Moderate	46	3.29	0.13		
	Good	23	3.26	0.12		
	Very good	8	3.21	0.14		
Form Filling	Father	27	3.29	0.14	0.001	0.982
	Mother	105	3.29	0.13		
Parents Job	Employed	110	3.30	0.13	1.950	0.165
	Unemployed	22	3.26	0.16		
Parent age	Less than 30 years	96	3.99	0.76	134.758	0.001
	30 to 40 years	24	2.13	0.29		
	More than 40 years	12	1.39	0.28		
Parent education level	Illiterate	12	4.31	0.72	13.614	0.001
	Read and write (literate)	46	3.95	0.79		
	Primary school	35	3.59	1.02		
	Secondary school	10	3.00	1.18		
	Middle school	17	2.37	0.96		
	Diploma	6	1.61	0.39		
	Bachelor	5	1.87	0.87		
	Master	1	2.00			

The result showed no relationship between demographic data and overall stress identified in the PICU (p>0.05) but there was a relationship between economic status and general stress in the PICU (p<0.05). There was a relationship between the age of the parents and general stress. There was also a relationship between the level of parent education ($p<0.05$). The result showed no relationship between demographic data and overall stress identified ($p>0.05$) but there is a relationship between economic status and general stress ($p<0.05$). There is a relationship between the age of the parents and general stress ($p<0.05$).There is a relationship between the level of parent education ($p<0.05$).

5. DISCUSSION

This study was conducted to evaluate the stress and psychometric properties of parents of children treated in the pediatric intensive care unit. Results show that the vast majority of the entire sample consists of children, aged < 1 year. The average age of the children was 2.67 ± 2.96 years.In terms of gender, the majority of children (64.4%) in the sample were boys. As for the number of children, the majority of parents have two children (28.8%), their economic situation is acceptable (40.9%), the parents' work is employees (83.3%) , the age of the parents is less than 30 years (72.7%), the mean age of parents was 29.52 ± 6.81 years, majority of parents level of education was literate (34.8%), parentswas employed (83.3%) (Table 4.1). In a study, the majority of parents are between the ages of 27-39 and 35% are university graduates. In the same study, the rate of boys was found to be 57%, and the average age of the children was 3 years old (Colwell *et al.* 2019). In another study, the average age of the parents was 34.6 and 37.8% were university graduates. In the same study, the rate of boys was 53.2% and the average age of the child was 3 years old. Most parents (78.4%) were found to be in paid employment (Ramírez *et al.* 2018).

The results of this study also indicated a negative correlation between the parent's level of education and their level of experienced stress.Parents with primary school education expressed a significantly higher level of stress compared to more highly educated parents (Table 4.5). It can be assumed that parents with primary education do not understand the seriousness of the situation in which their child is and also the information that is provided to them about the disease and the treatment, which in turn leads to an increase in their stress level. Additionally, given the rapid pace of work in the PICU, parents may not have the time, knowledge, or courage to ask for additional clarification, while healthcare professionals may overlook the need for additional information. Some results deviate notably from the results of related studies in which highly educated parents experience a higher level of stress. (Colwell *et al.* 2019, Ramírez *et al.* 2018). A study conducted in India found no correlation between education level and general stress level (Pooni *et al.* 2013).

Detailed analysis of mean values of parents' perceived stress for individual PICU stressors showed that among the first 10 most stressful factors there were five from the ''Parental roles'' dimension: Not knowing how best to help (helpless) my child during this crisis (0.69 ± 3.42) (Table 4.2). PICU subscale aspect, the most stressful one for parents was the subscale 'Parental role alteration' which is in line with a study conducted in India (Upadhyay and Parashar 2022). Similar studies also highlight this dimesion as extremely stressful for parents (Rodríguez-Rey 2018; Yacoub *et al.* 2013) while parents in some studies have not found changes in their parental role more stressful than other PSS (Aamir *et al.* 2014). Parents indicate that not being able to visit, see and hold their own child are the most stressful PICU stressors from this dimension, as well as not being present in moments when the child cries, which is in accordance with the results of a study conducted in India (Aamir *et al.* 2014).

The least stressful PSS: PICU subscale according to the parents in this study was 'Behavior of professional staff' (mean=3.17, Table 4.3), which is in accordance with the results of a study conducted in Jordan, in which the parents specifically mentioned the behavior and communication of the professional staff as the least stressful (Yacoub *et al*. 2013).There are a large number of studies in which parents perceive this subscale as significantly more stressful (Rodríguez-Rey and Alonso-Tapia, 2016, Upadhyay & Parashar, 2022). These results can be attributed to cultural differences related to social norms and professional behavior of the staff towards patients and their relatives and the work organization of individual PICUs (Pooni P A *et al.* 2013). The stress factors from this subscale have a relatively short-lived effect since their impact ends after the child is released from hospital (Rodríguez-Rey *et al.* 2018).

Parents from our study also found 'Child's behavior and emotional responses' as the least stressful PICU subscale, in which the least stressful items were demanding, rebellious or uncooperative behaviour, restlessness, and anger (Table 4.2). The reason can be that this type of behaviour is relatively common, even expected in healthy children, especially younger ones. 'Protest' is one of the most expected child's reactions to hospitalization and separation from parents (Jones-Mason *et al.* 2021).

Due to the disease itself and the need for invasive and painful procedures, the experience of pain in the PICU is inevitable and represents an important problem. In seriously ill children, the assessment and treatment of pain are a challenging part of health care, but their adequate implementation has a positive effect on the child and the parents (Grunauer 2021). Changes in the child's behaviour and appearance can be dramatic and stressful for the parents, especially when they notice that the child is in pain. In such moments they need to be with their child and actively participate in pain relief procedures (Grandjean *et al.* 2021).

6. CONCLUSION

6.1. Conclusion

In the research,

- The mean age of the children was 2.67± 2.96.
- The mean age of the parents was 29.52 ± 6.81.
- In the research, it was determined that the gender of the children of the parents was 64.4% male, the rate of parents with two children was 28.8%, the rate of those with sufficient economic status was 40.9%, the parents were 83.3% working, 34.8% of the parents' educational status was literate, and 79.5% of the forms were filled in by the mother.

Our study confirms the stressful experiences of the parents whose children were hospitalized in the PICU.

The parents were exposed to numerous PICU stressors, and the highest level of experienced stress was expressed in the subscale 'Sights and sounds', while the lowest level of expressed stress was in the 'Behaviors of professional staff' dimension.

The results of this study clearly point out the fact that the PICU is extremely stressful for parents and the whole family.

Therefore, there is a global need to design measures and strategies for neutralization of individual PICU stressors, prevention of parental exposure to specific stressors, mitigating stressful experiences of parents in the PICU, providing professional psychological assistance to parents and the whole family.

6.2. Recommendations

The study recommended that:

- Health professionals, especially nurses, should believe in the necessity of integrating child-centered care and family-centered care.
- The stress experienced by the family during the treatment of their child should be reduced by providing accurate, regular and timely information.
- Effective communication and counseling skills of healthcare team members, especially nurses, working in intensive care should be improved.
- There should be physical environments around the pediatric intensive care unit where the family can spend time.
- Parents must calm down and control their feelings to make it easier for the health staff to do their work properly.
- In order to create a spirit of cooperation between the two parties, parents are advised not to behave emotionally and not to cause problems with the healthcare personnel.
- It is recommended that health personnel be honest and cooperative with parents.
- The health staff must reassure the parents of the normal condition.
- Determining parental needs or the sources of stress may contribute to both the short- and long-term improvement of parents' mental health. Understanding stressors is the best way to understand and protect parents.
- Parents should be able to visit their babies in neonatal critical care units.

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APPENDICES

APPENDIX 1. Questionnaire

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APPENDIX 2 Ethics committee approval in Iraq

APPENDIX 3. Approval of hospital in Iraq

APPENDIX 4. Permission to use scale

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