

A Systematic Review of Nursing Theories in Pediatrics Settings

Emine Geçkil¹ , Raheleh Sabetsarvestani^{2*} , Zahra Hadianshirazi³ 

¹Professor of Nursing, Department of Pediatric Nursing, Necmettin Erbakan University, Konya, Turkey

²Assistant Professor of Nursing, Department of Pediatric Nursing, Necmettin Erbakan University, Konya, Turkey

³Assistant Professor, Community-Based Psychiatric Care Research Center, Department of Nursing, School of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran

Abstract

Background: The only way to present nursing as a profession, in its own right, is to develop its theories. The pursuit of further clarity may enable pediatric nurses to plan for further studies and use appropriate theories in practice. This needs an inquiry to start with a review of existing literature from various research fields to clarify key knowledge and gaps. Therefore, this study aimed to review studies on nursing theories in pediatric settings.

Methods: The study design was a systematic review with a qualitative synthesis approach. The inclusion criteria were articles written in English published from 2000 to 2020, focusing on developing a new theory or using previous nursing theories in pediatric settings, in PubMed, Scopus, Ovid, and EBSCO databases. The exclusion criteria were the articles written in languages other than English, settings other than pediatric, and not finding the full text. The qualitative synthesis was used to integrate the data using MAXQDA10.

Results: The results of data analysis showed 24 new theories were developed by the grounded theory approach regarding parenting, nurse-family interaction, and improving nursing care. Moreover, the theories of some nursing scholars, such as Orem and Watson, were mostly used as a framework in studies on cancer (18.96%) and critically-ill children, especially adolescents (21.81%).

Conclusion: This study clarified the trend of nursing theories in pediatric settings and highlighted the gaps in the literature, over the last two decades. The study provides implications for future studies regarding nursing theories in pediatric settings and, encourages nurses to strive in the journey of professionalization by utilizing and developing more nursing theories. Future studies can focus on other aspects, such as primary and tertiary prevention in different age groups or the most prevalent diseases in children.

Keywords: Nursing theory, Children, Pediatrics, Pediatric nursing

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Introduction

In the past, the nursing profession has been based on assimilation and execution of medical knowledge and theory (1). However, during the 1950s, there was a consensus among nursing scholars that the discipline needed to validate itself as a scientific discipline through the production of its own body of knowledge and theories (2). At the beginning of the twentieth century, nurses recognized the necessity of establishing nursing as a profession and began to change it from a vocation to a profession. At first, the theories from other disciplines were deemed essential in nursing. For example, nurses used psychological theories of attachment and separation for children and their families during hospitalization, as well as other theories of learning for improving health knowledge. However, they gradually found that using

these borrowed theories in the nursing context had some significant limitations. For instance, they could not adequately clarify the process for individuals facing illness, or did not deal with certain ethical issues nurses might have confronted in discussing sensitive information with a patient. Therefore, nursing scholars started to develop their own specific theories. As a result of this trend, many nursing theories were developed (3).

Based on the nature of the data in nursing, theories are developed by an inductive or deductive approach. The objectives of a nursing theory are to describe, predict, and explain the phenomenon under study (3). Moreover, they strive to provide the foundations for practice, generate further knowledge, and guide future nursing directions. The use of theory is essential considering it assists nurses in distinguishing what they know from what they need



to know. The benefits of having a theory in nursing include providing better care, enhancing professional status, improving communication, and guiding research and education (4). The only way to present nursing as a profession, in its own right, is to develop its theories (5). To achieve the goal of professionalism, the nursing discipline started a journey. It began from developing curriculum, using research, and establishing graduate programs, and finally the theory-development era led to the theory-utilization era (1). Recently, the number of middle-range theories has increased. These theories are practice-based and are more user-friendly than primitive abstract theories (6).

The Symposium of Nursing Theories in 2005 showed nursing theories significantly affected the quality of nursing care, patient safety, and patient and nurse satisfaction. Nurses in different specialties felt a sense of pride in choosing nursing as a profession and having a unique framework that confirms nursing as a discipline which was previously not embedded in the medical model. Furthermore, patients and healthcare professionals acknowledged that nurses do offer something different to healthcare (7).

Pediatric nurses take care of infants, toddlers, children, adolescents, and their families to promote their health in different stages of growth and development (8). Due to various developmental changes in children, pediatric nurses require advanced knowledge to meet the specific needs of their patients. In addition to acquiring medical knowledge and skills, pediatric nurses must be able to communicate with children and their parents. Therefore, they need to become familiar with nursing theories about children to reduce the gap between theory and practice (9, 10). As a pediatric nurse, if a person wants to apply a theory in practice or plan a new study in pediatric settings based on the theories, he/she must be knowledgeable of what has been done previously and become familiar with the current priorities and gaps of the literature. The pursuit of further clarity may enable pediatric nurses to plan for further studies and use appropriate theories in practice. This needs an inquiry to start with a review of existing literature from various research fields to clarify key knowledge and gaps. In this regard, some reviews have been carried out in previous years (before 2012) but they did not specifically cover nursing theories related to pediatrics (11,12). As Bond et al stated, "evolution of theories and research to improve practice requires a concerted effort to determine what we have accomplished, what we are now doing and what we still need to accomplish in the future to continue to support the discipline of nursing as a profession" (11). These efforts can determine gaps in the literature, areas where the existing knowledge is good, and areas that need further knowledge before conclusions can be drawn. Furthermore, by knowing the strengths and gaps,

future research directions can be identified. As a result, this study aimed to present a comprehensive review of nursing theories in pediatric settings over the past two decades.

Methods

Aim and study design

This study was conducted in 2020 and aimed to synthesize the literature pertaining to pediatric nursing theories over the past two decades. The study design was a systematic review with a qualitative synthesis approach. Qualitative synthesis is usually used in systematic reviews in the studies in the field of health profession (13). The following questions were used to guide this review: What studies have been carried out on nursing theories in pediatric settings since 2000? What areas need more research? A PICO (Patient, Intervention, Comparison, and Outcome) question was developed to focus on the systematic review. Eligible articles met the following criteria:

Patient: The target population included studies on children aged 0-18 years.

Intervention: The studies that developed a new theory based on grounded theory approach or used previous nursing theories as a framework for their studies were included. Articles that used other qualitative methods for theory development or used the theories for other purposes, such as data analysis or instrument development, were excluded.

Comparison and outcome: The outcomes of the included studies were twofold: first, they developed a new conceptual framework; and second, they tested other nursing theories in nursing practices.

Search strategy

The articles written in English published from January 2000 to January 2020 were reviewed. These articles were identified from the electronic databases of PubMed, Scopus, Ovid, and EBSCO. The search was done using the following keywords: "nursing theory", "children", and "pediatrics". Using the search strategy, a total of 784 articles were detected and based on the inclusion criteria, 58 articles were included in this systematic review. The screening process resulted in a mixture of randomized controlled trials, descriptive studies, and mixed-methods qualitative studies. EndNote software was used to manage the data. All articles were exported to a single EndNote software file to identify duplicate entries and remove them. A reviewer did the search but another review was conducted by authors to detect any possible similar studies.

Quality appraisal

To include a wide range of studies in the literature, the selection process was based on articles' contributions to nursing theory rather than their quality. The researchers did not control biasing since this study did not consider

the findings of the sample under study. In other words, the authors wanted to determine whether the included studies have used or developed a new theory or not. Articles that contributed to nursing theory in pediatric settings were reviewed using purposive sampling (14).

Data extraction

First, the titles and abstracts of all articles were reviewed and those articles that did not meet the inclusion criteria were excluded. Then, the full texts of all relevant articles were read and assessed. Data were categorized using a form specifically developed for this review. This form included information on research setting, the characteristics of the participants, the theories used as a framework, and the diseases. In this step, the authors checked the categorized data for consistency and resolved any possible discrepancies through discussion.

Data synthesis

The qualitative synthesis was used to integrate the data. A qualitative synthesis is a systematic search on a topic to aggregate the findings from separate studies (15). To this end, a coding process, known as qualitative content analysis, was used. Findings from multiple articles were broken into their conceptual components, summarized,

and subsequently re-grouped according to their thematic relationships using MaxQDA10 software. For other results, the classic content analysis (counting words and phrases) was utilized to clarify some characteristics, such as the number of articles in different age groups, diseases, and participants (16). Data synthesis was performed by two reviewers who assessed the articles independently, identified common components from the data extraction forms, and reflected on them before discussing findings and achieving a consensus. After that, the authors assessed the results and provided feedback again.

Results

In the reviewing process; first, 784 articles were detected from four databases. Then, 15 duplicate articles were removed. After that, 769 articles were screened based on the titles and abstracts, and as a result, 459 articles were excluded. In the end, a total of 310 full-text articles were reviewed manually. Some full-text articles were excluded due to ineligible population ($n=20$), ineligible setting ($n=30$), ineligible method ($n=100$), and ineligible theory ($n=102$). Finally, 58 articles with different quantitative and qualitative designs met the inclusion criteria. The PRISMA diagram illustrates the screening process and the number of studies at each stage (Figure 1).

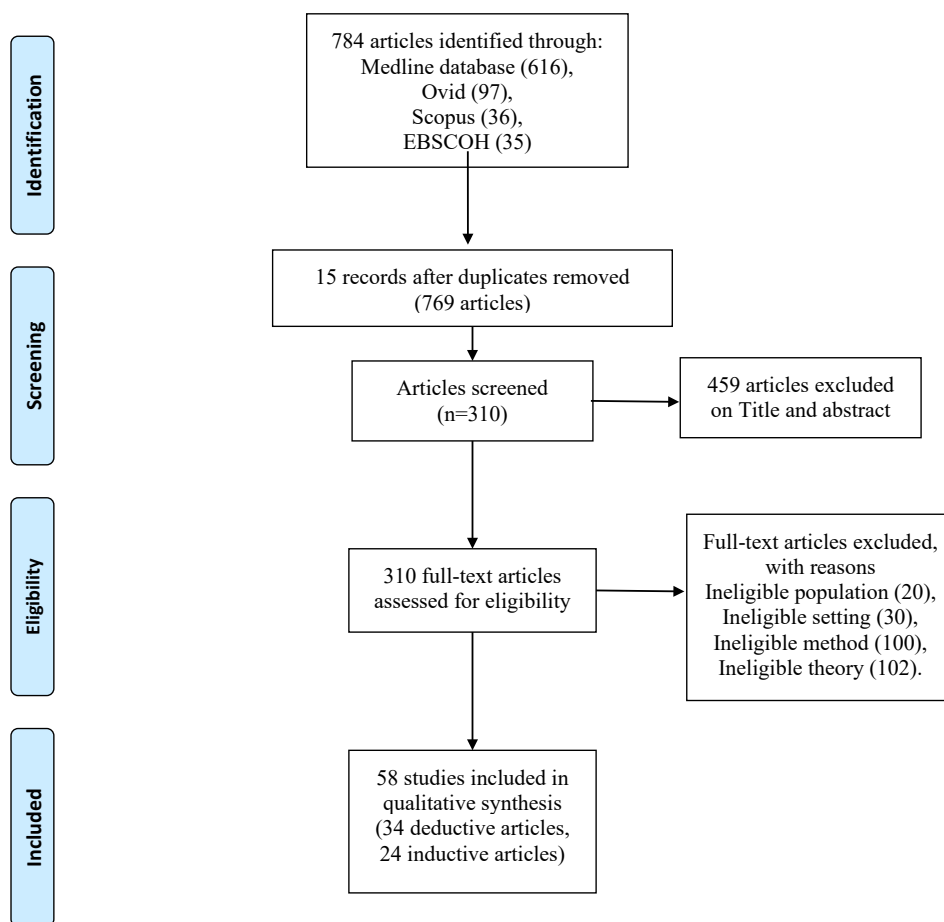


Figure 1. PRISMA diagram

Characteristics of the articles

The characteristics of the study participants and their age group are summarized in Table 1. Besides, this review study showed that the majority of the studies were conducted in the field of oncology and on critically-ill children. Other fields are detailed in Table 2 and are categorized into primary, secondary, and tertiary prevention.

Nursing theories

Regarding nursing theories, the results of classic content analysis showed that the theories of Orem, Watson, Kolcaba, and Paterson and Zderad were mostly used in these articles as the framework of the study (Table 2). To identify the domain of newly developed middle-range theories with an inductive design, a qualitative content analysis was used to categorize the theories based on their similarities. Analysis of the data resulted in 115 primary codes, 9 subcategories, and 3 main themes. The main themes included “parenting”, “nurse-family interaction”, and “improving nursing care”. It means that during these two decades, the newly developed nursing theories were mostly related to the process of parenting, the interaction of nurses with families, and improving nursing care which can guide practitioners. Table 3 shows the domain of middle-range theories developed in the last two decades.

Characteristics of study design

The results of this study showed 18.18% of the investigated studies used systematic review, 43.63% utilized grounded theory, 5.45% used a clinical trial design, 7.27% applied a descriptive design, 5.45% used phenomenology, and 18.18% of them utilized content analysis approach.

Table 1. Characteristics of participants in reviewed articles

Characteristics	Number	Percent
Total	58	100
Participants	58	100
Parents	17	29.31
Nurses	12	20.69
Mothers	5	8.62
Children	16	27.59
Fathers	2	3.45
Other health care professionals	6	10.34
Age group	58	100
Neonate	3	5.17
Infant	4	6.90
Toddler	0	0
Preschool age	4	6.90
School age	9	15.51
Adolescent	13	22.41
Children (All ages)	25	43.11

Table 2. Characteristics of nursing theory reviewed articles

Characteristics	Number	Percent
Total	58	100
Primary prevention	7	12.06
Infant journey	2	3.44
TB prevention	1	1.72
Self-care	1	1.72
Health promotion	1	1.72
Peer pressure	1	1.72
Immunization	1	1.72
Secondary prevention	49	84.48
Cancer	11	18.96
Seriously-ill children	3	5.17
Diabetes	1	1.72
Chronic illness	2	3.44
Asthma	1	1.72
Pain	3	5.17
Congenital abnormality	2	3.44
HIV	2	3.44
Heart disease	2	3.44
Autism	2	3.44
PICU	3	5.17
Prematurity	2	3.44
Sickle cell	2	3.44
Burn	1	1.72
Epilepsy	1	1.72
Technology dependence	1	1.72
Special health care need	1	1.72
Cataract	1	1.72
Intellectual disability	1	1.72
Pediatric setting	7	12.06
Tertiary	2	3.44
Substance abuse	1	1.72
Rehabilitation	1	1.72
Theories	34	100
Orem's Theory	7	20.58
Roy's Adaptation Model	2	5.88
Leininger's Theory	3	8.82
Paterson and Zderad's Theory	4	11.76
Watson's Theory	4	11.76
Nightingale's Theory	1	2.94
Newman's Theory	1	2.94
Swanson's Caring Theory	1	2.94
Chronic Sorrow Theory	2	5.88
Parse's Theory	3	8.82
Transition Theory of Meleis	2	5.88
Family Systems Nursing Theory	1	2.94
Kolcaba's Comfort Theory	4	11.76

TB: tuberculosis; PICU: pediatric intensive care unit.

Table 3. Domain of newly-developed theories in pediatric setting

Themes	Description
Interaction	Nurse-parent communication Nurse-child interaction Family participation
Parenting	Parental functioning Parental experience Parental adaptation
Improving nursing care	Developing evidenced-based care Care management Ethical and cultural care

The reviewed articles were divided into inductive and deductive approaches based on the study design. In inductive approach, a middle-range theory was developed using the grounded theory while in deductive approach, previous theories were used as the framework of the study. A total of 34 deductive articles (systematic review, clinical trial, qualitative research, descriptive study) and 24 inductive articles (grounded theory approaches) were identified as depicted in [Table 4](#).

Table 4. Details of inductive (1-24) and deductive (25-58) articles in the last two decades

Author and year	Methods	Diagnosis	Participants	Aims	Developing a theory / Based on an existing theory
Aein et al (2011) (17)	Grounded theory	Chronically-ill children 5 years old	Registered Nurses (n=17) and mothers of chronically-ill children (n=14)	To develop a theory of nurse-parent interaction within the child care	To provide a substantive grounded theory of nurse-mother interaction
De Andrade et al (2015) (18)	Grounded theory	Normal adolescents	Nine adolescents	To understand the meaning of childcare for the underage adolescent mothers	To construct a theoretical model, facing a difficult experience even with support
Atkins, et al (19)	Grounded theory	Children in PICU (Pediatric intensive care unit) 5-16 years old	Children who had been in PICU and their parents	To develop a model to understand the recovery journey for families	Producing a biopsychosocial model of recovery
Bally et al (2014) (20)	Grounded theory	Children with cancer	16 parents	Understanding the experience of hope for parents who care for their child in treating cancer	To develop a substantive grounded theory
Bousso and Angelo (2001) (21)	Grounded theory	Children admitted to PICU	Family	Understanding the dynamic functioning of the family with a child admitted to PICU	To construct a theoretical model about the living experience of a family with a child admitted to PICU
Buford (22)	Grounded theory	School-age children with asthma between 8 and 13 years old	11 mothers, 2 fathers, 1 grandmother, and 14 children	To explore the process of transfer of responsibility for asthma management from parents to their children	Provide a theoretical model for parent-child transfer of asthma responsibility
Carlsson et al (2018) (23)	Grounded theory	In a pediatric care context	Fifteen healthcare professionals	To explore healthcare professionals' perceptions of what patient participation means	To provide a theoretical conceptualization
Coyne and Cowley (2007) (24)	Grounded theory	Children aged 9-15 years	11 children, 10 parents, and 12 nurses	To explore children's, parents' and nurses' views on participation in care in the healthcare setting	To provide a reliable framework for participation
Erikson and Davies (2017) (25)	Grounded theory	Seriously-ill children and their families	18 registered nurses	To explore how nurses manage personal and professional boundaries in caring for these patients	To provide a theoretical conceptualization
Giambra et al (2017) (26)	Grounded theory	Technology-dependent children hospitalized 4-15 years old	Five parents and nine nurses	To expand understanding of the process of communication between parents of hospitalized technology-dependent children and their nurses	To provide a theory of Shared Communication
Gyllén et al (2019) (27)	Grounded theory	Children with cataract Infants	23 parents	To investigate the main concerns associated with being a parent of a child with cataract	To provide a comprehensive model for understanding parental self-management
Landier et al (2011) (28)	Grounded theory	Children and adolescents with Acute Lymphoblastic Leukemia (ALL)	38 patients/ parents/caregivers	To explain the process of adherence to oral chemotherapy	To develop and validate a model
McBride et al (2017) (29)	Grounded theory	Simulated cardiac arrest in children	Physicians and nurses	Developing a simulation for cardiac arrest	To give a theoretical Framework
Northington (2000) (30)	Grounded theory	School age children with sickle cell disease (SCD)	Caregivers	To examine the process of chronic sorrow in caregivers of school age children with SCD	To generate a substantive Chronic Sorrow Theory
Olinder et al (2011) (31)	Grounded theory	Diabetes 12-19 years old	12 adolescents, 4 parents, and 1 nurse	To gain insight about the processes involved in insulin pump treatment for adolescents	To generate theoretical knowledge for self-management of diabetes in adolescents

Table 4. Continued

Author and year	Methods	Diagnosis	Participants	Aims	Developing a theory / Based on an existing theory
Phoenix et al (2019) (32)	Grounded theory	Children's rehabilitation 0-6 years old	Parents (n=20) and clinicians (n=4)	To develop a substantive theory of parents' attendance, participation, and engagement in children's rehabilitation services	To develop a substantive theory of parents
Pinto et al (2005) (33)	Grounded theory	Hospitalized due to acute diseases 0-5 years old	Five families	To understand the meaning of the interactions experienced by the family during child's hospitalization	To construct a theoretical model
Rakhmawati et al (2019) (34)	Grounded theory	Tuberculosis prevention in children 0-5 years old	14 family caregivers	To analyze the details of theory of family engagement in tuberculosis prevention in children	To provide a model for how a family moves from fear to realization of tuberculosis transmission risks
Ravindran et al (2013) (35)	Grounded theory	20% burn-injury 15 years old	12 families	To discover the process of parenting in burn-injured children in India	Developing a parenting theory
Rosenthal et al (36)	Grounded theory	Children with special health care needs 0-25 years old	8 referring physicians, 9 accepting physicians, and 8 family caregivers	To explore family-physician interactions during interfamilial transfers	To develop a conceptual model
Silva-Rodrigues et al (2019) (37)	Grounded theory	Children with chronic cancer pain	21 health professionals	To understand the intervening conditions of care management for the hospitalized children with chronic cancer pain	To provide a theory
Silva-Rodrigues et al (2019) (38)	Grounded theory	Children and adolescents with leukemia	9 mothers, 2 fathers	To describe the experiences of parents of children and adolescents with leukemia in regards to transition from hospital care to home	To provide a framework
Steele and Davies (2006) (39)	Grounded theory	Neurodegenerative, life-threatening illness (NLT)	29 families	Description of the experiences of families living with a child with NLT	To build a contextually-grounded theory
Ko et al (2018) (40)	Grounded theory	-----	Pediatric personnel	To reconstruct a model of moral distress using the grounded theory	To reconstruct a model of moral stress
Baumann and Braddick (1999) (41)	Descriptive study	Children with congenital anomalies Neonates	Fathers	To ascertain the meaning of fathering for fathers of children with congenital anomalies.	Guided by human becoming theory
Carson (2019) (42)	Review study	Substance abuse with adolescents	Health care providers	To reviews the resistance of some health care providers to discuss the realities of substance abuse with adolescent patients and their families	Guided by Parse's theory of human becoming
de Paula and da Graça Oliveira Crossetti (2005) (43)	Phenomenological study	Children with AIDS	Children	Understanding the meaning of care of children with AIDS	Guided by Humanistic Nursing Theory of Paterson and Zderad
Decker et al (2016) (44)	Correlation study	Epilepsy 9-12 years old	Mothers	To identify psychosocial care needs of parents of children with epilepsy	Guided by Family Systems Nursing theory
Fan (2008) (45)	Cross-Sectional study	School-age children with heart disease	82 school-age children (6-12 years old)	To identify the level of self-care behaviors of school-age children with heart disease	Guided by Orem's self-care theory
de Sá França et al (2013) (46)	Phenomenological study	Pediatric oncology	10 Nurses	To investigate and analyze communication in palliative care contexts from the perspective of nurses	Guided by Humanistic Nursing Theory
Gaskin (2017) (47)	Inductive thematic analysis	-----	Parents	To explore parents' experiences of one specific time point in their infant's journey	Guided by theory of Meleis, Sawyer, Im, Hilfinger Messias, & Schumacher
Hamilton (2000) (48)	A case history	Systemic necrotising vasculitis (SNV) 10 years old	A case history of a 10-year-old girl with SNV	To describe a case based on Parse theory	Guided by Parse's Human Becoming Theory
McCaleb and Cull (49)	Descriptive study	Normal children	old adolescents (n=425)	To describe general self-care practices of adolescents	Guided by Orem's self-care theory
Medeiros and da Motta Mda (2008) (50)	Phenomenological study	HIV/AIDS children	3 children with HIV	To interpret the obtained information centered in two meaning units	Guided by Humanistic Nursing Theory

Table 4. Continued

Author and year	Methods	Diagnosis	Participants	Aims	Developing a theory / Based on an existing theory
Molina and Marcon (2009) (51)	convergent research approach	Infants in PICU	6 mothers	To identify, according to the mothers' perspective, the benefits related to her permanence and participation in the care for her child hospitalized in PICU	Guided by Cross-Cultural Nursing Theory,
Moore and Beckwitt (2004) (52)	Content analysis	Children with cancer 1-21 years old	9 children and 18 parents	To examine the self-care practices of children with cancer and the dependent-care practices of their parents	Guided by Orem's theory of self-care
Ramini et al (2008) (53)	Descriptive study	Adolescents with cancer	Adolescents	To examine adaptive strategies of adolescents with cancer	Guided by Roy Adaptation Model (RAM)
Rehfeldt et al (2016) (54)	Content analysis	Prematurity	6 neonatologists	To determine the needs of parents after the perinatal loss of their child from the perspective of health care professionals	Guided by Theory of Swanson
Dos Santos et al (2014) (55)	Descriptive study qualitative approach	-	12 nurses	To know the facilities and the difficulties of nurses in caring practice of hospitalized children's families in the light of Jean Watson's Theory of Human Caring	Guided by Jean Watson's Theory of Human Caring
Scornaienchi (2003) (56)	Explanatory study	Chronic illness	A family burdened with the unrelenting stress of caring for 2 children with lissencephaly	To describe the reaction of parents to the ongoing losses associated with caring for a child with chronic illness or disability	Guided by Chronic Sorrow Theory
Sessanna (2003) (57)	Explanatory study	A group of preadolescent children	Preadolescent children	To teach health promotion to a group of preadolescent children	Guided by Watson's human science and human care theory
Sessanna (2004) (58)	Explanatory study	Preadolescent children	Preadolescents	To teach a group of preadolescent children about negative peer pressure	Guided by Nightingale's theory
Vitale and Falco (2014) (59)	Case scenario	Neonatal intensive care unit	A neonate	To provide a guidance in the care of families dealing with an ongoing disparity	Guided by Chronic Sorrow Theory
Watson and Foster (2003) (60)	Model	Children's pain	Nurses	To offer a program for renewing the profession and its professional practices of caring, healing arts, and science	Guided by Watson's Theory of Human Caring
Wilson et al (2008) (61)	Mixed –method	-	15 mothers with one child and 15 mothers with more than one child	To assess the relationship between maternal health literacy and mother's ability to comprehend and communicate information about childhood immunizations	Guided by Orem's Self-care Deficit Nursing theory
Wood et al (2019) (62)	Model and case study	Autism spectrum disorder	Nurses	To create a sensory-friendly emergency department	Guided by Watson's Theory of Caring
Yeh, (2002) (63)	Test a model	Children with cancer 7-18 years old	102 cancer children	To test the Roy Adaptation Model based on theory of health-related quality of life in Taiwanese children with cancer	Guided by Roy Adaptation Model
Yildirim Sari et al (2013) (64)	Qualitative study	Cancer children 0-18 years old	Parents	To describe the experiences of parents in the home care of children who had been recently diagnosed with cancer	Guided by Orem's Self-care Deficit Theory
Oliver (2003) (65)	Case management	Autistic spectrum disorder School-age children	School-age children	To design and implement a case management framework for the benefit of children diagnosed with an autistic spectrum disorder	Guided by Orem's Nursing Theories
Quinn (2016) (66)	Explanatory study	School children with intellectual and developmental disabilities	Children	To examine pain assessment	Guided by Neuman's Systems Model
Luffy and Grove (2003) (67)	Tool development	Sick cell disease 3-18 years old	African-American children between 3 and 18 years of age	To compare the validity, reliability, and preference of pain intensity measurement tools	Guided by Leininger's theory
Altay and Çavuşoğlu (2013) (68)	Experimental study	Asthma	Adolescents with asthma (N=80)	To determine the effect of Orem's self-care model on the self-care of adolescents with asthma	Guided by Orem's self-care

Table 4. Continued

Author and year	Methods	Diagnosis	Participants	Aims	Developing a theory / Based on an existing theory
Festini et al (2009) (69)	Exploratory Study	Pediatric setting	201 ward nurses	To investigate attitudes and problems encountered by Italian nurses in a pediatric setting with regard to nursing care of children and their families from other countries	Guided by Transcultural Nursing Theory
Ekim and Ocakci (2016) (70)	Quasi-experimental design	Asthma	120 children with asthma and their parents	To test the efficacy of a nurse-led discharge planning program for childhood asthma management	Guided by Transition Theory
Kolcaba and DiMarco (2005) (71)	Explanatory study	Pain	Pediatric setting	To strength and satisfy pediatric patients/families and nurses	Guided by the framework of Comfort Theory
Ludington-Hoe (2015) (72)	Review	Skin-to-skin contact	Birth and the newborn environment	To provide comfort based on Kolcaba's Comfort Theory	Guided by the framework of Comfort Theory
Nilsson et al (2011) (73)	Content analysis	Procedural pain	39 participants aged 5-10	To explore the experiences of children of procedural pain	Guided by the framework of Comfort Theory
Lafond et al (2019) (74)	Cohort study	Palliative care	Clinicians	To improve knowledge, skills, and attitudes of direct care clinicians	Guided by the framework of Comfort Theory

Discussion

The present study aimed to review the literature on nursing theories in pediatric settings in the last two decades. The results of the study confirmed the scarcity of using and developing nursing theories across the investigated time period. The results revealed that approximately 15 articles are published in this domain annually. Therefore, much more attention should be given to this domain. Similarly, Bond et al. showed from 2002 to 2006, only 38% of nursing authors used theories in their studies (55% of them used nursing theories and 45% used other theories) (11). Furthermore, Moody et al found out from 1977 to 1986, approximately 50% of nursing authors did not address a theory at all, 10% used it sparsely, and only 3% of them tested a theory (75). Thus, it is important to encourage nurses to consider nursing theories more, which in turn would help to accelerate our speed in the journey of professionalization of the nursing discipline.

The results of this study also demonstrated that most studies in the past two decades were on cancer, critically-ill children, and children hospitalized in the pediatric intensive care units, respectively. In this regard, studies on the reasons for mortality and morbidity in children showed the same trend. For example, Bucholz et al conducted a study to determine the trend of hospitalization in children and found that chronic diseases are the most prevalent reason for hospitalization in children (76). Kyu et al also conducted a study to determine the main causes of death in children aged 5-14 years in 51 countries of Europe from 1990 to 2016. They indicated that the leading causes of death were road injuries, neoplasm, drowning, and lower respiratory infections (77). However, by looking closely at the results of the present study, it can be concluded that most studies were in secondary prevention, and little attention has been paid to primary and tertiary prevention. Furthermore, studies confirmed that inquiries and costs in this population were

limited (78). Thus, it is highly recommended that future investigations fill this gap and pay much more attention to the domain of health promotion and rehabilitation as well as the most prevalent diseases that could lead to the increase of mortality and morbidity rates in children.

The review of articles in the present study showed that most study participants were parents, especially mothers, and few studies investigated the role of children, especially toddlers and preschool-age ones. The children's voice may be forgotten and neglected because of their limited ability for effective verbal communication. Hence, researchers often select mothers as children's voices. Spyrou stated children are shy and do not feel comfortable to talk in an interview and offered some effective methods for obtaining children's voices. These methods involved scenarios, vignettes, sentence completion tasks, computing games, role-play and drama, virtual space, audio discussions, visual diaries, photo-voice, participatory photography, scrapbooks, and media journals (79, 80). In addition, a study conducted by Hill showed children are passive in research. Thus, researchers should consider factors such as time limit, the comfort of children with data collection tools, providing rewards, and maintaining privacy while conducting inquiries with children (81). Therefore, researchers who want to work with children can use the aforementioned methods of interaction. Furthermore, the participation of other members of the family, such as the father, siblings, and grandparents, is highly recommended. For example, Hadian et al conducted a phenomenological study on grandparents as caregivers to explore the meaning of family-centered care in the neonatal intensive care units (82,83). Gursky also highlighted the importance of considering siblings in pediatric settings (84).

Synthesis of grounded theories conducted in the last two decades in pediatric settings showed that these theories were about interaction, parenting, and improving

nursing care. According to the classification of theory by Meleis, these developed theories are interaction and outcome theories (2,85). In this regard, Im and Chang carried out an integrated literature review to explore current trends in nursing theories. They concluded that recent theoretical works focused on the development of specific concepts, development of middle-range theories, development of instruments, and efforts to connect theories to practice (12). One of the main criticisms of nursing theories is that they are too generalized and abstract and related to humans. It is impossible to apply these generalized theories to all individuals. However, many scholars support developing and using middle-range theories. These theories are general enough to be used in different settings and for different populations and are specific enough to guide nursing practice and become validated through research. They assist nursing practices by suggesting interventions, simplifying the understanding of patients' behavior, and explaining the effectiveness of care (6).

This review study also indicated that the investigated studies were performed based on different research paradigms. This finding was consistent with the results of the study by Weaver and Olson who explained no single paradigm is superior to another in nursing research. Rather, knowledge resulting from different paradigms is necessary for describing, interpreting, explaining, and predicting the human experiences and disease responses. Besides, they emphasized that the discipline's task of developing knowledge may be enhanced through the use of integrative strategies (86). However, it has been criticized that although the number of nurses, who are involved in research, is growing, their research methods are based on approaches used by other disciplines, such as medicine. It is evident that if future nurses want to be able to use and develop nursing theories, the current nursing research and education need to be changed (87). Thus, health administrators and nursing educators should encourage nurses to use integrative research paradigms and approaches.

The findings of this review revealed that the theories of Orem, Watson, Kolcaba, and Paterson and Zderad were used mostly in the last two decades in pediatric settings. These results are consistent with those of other studies focused on current trends in nursing theories. These studies confirmed that the theories of Roy, Orem, Newman, and Rogers were used commonly. Moreover, in the UK, the theories of Orem, Roy, Roper, Logan and Tierney, and Henderson were most commonly used in practice. In fact, these theories explained the 'what' of practice rather than the 'how' or 'why' of practice (87,88).

Nowadays, nursing is in the pre-paradigm stage and has yet to reach the paradigm stage in which one theory is deemed absolute. Consequently, nurses must appreciate different philosophies, critique them, and attempt to

have a contribution to the development of the nursing discipline (89). Currently, we are witnessing a paradox in the health care system as medicine moves toward a more multidisciplinary approach, while nursing strives for an autonomous body of knowledge. Nevertheless, since these boundaries are continually altering, maybe it is more necessary than ever that nurses define their position and role. By providing a situation to give nurses a sense of identity, nursing theory can assist patients, managers, and other professionals to recognize the unique functions of nurses in healthcare services (90,91).

To the best of the researchers' knowledge, this study was the first one that reviewed nursing theories in pediatric settings in the past two decades. One of the limitations of this review was that the authors only included articles that were written in the English language, over the past two decades. A multilingual analysis of the literature would aid in broadening the scope of the literature. Another limitation was that the authors did not consider other materials such as theses and printed items in their review. Furthermore, the accessibility to all databases and articles was limited. Therefore, future review studies are recommended to find ways to mitigate these specific limitations in order to do a more comprehensive review of the literature.

Conclusion

According to the results of the present study, valuable studies have been performed to develop some new middle-range theories about parenting, nurse-family interaction, and improving nursing care. These newly developed theories can help nurses in practice. Moreover, the theories of some nursing scholars, such as Orem and Watson, were mostly used as a framework in studies done on cancer and critically-ill children, especially adolescents. Therefore, they can be used as a good guideline for pediatric nurse practitioners to improve the quality of care. Furthermore, some important gaps in the literature were identified. Thus, it is recommended that future studies focus on other aspects in different age groups (toddlers and preschool-age children) or the most prevalent diseases in children. Finally, as the nursing profession is in the era of theory development and application, nurses must continue their effort to develop more novel theories or use other theories as a framework in their practice and accordingly research to accelerate the process of professionalization in the nursing discipline. The results of this review can serve as a guide for pediatric nurse practitioners to improve parenting, nurse-family interaction, and nursing care. Moreover, the conducted studies have been clarified while highlighting important gaps in the literature. Thus, the results of this study can help nurse researchers, administrators, and policymakers to focus on future priorities. The most important implication of this review is that it encourages all nurses

to strive in the journey of professionalization of nursing by using or developing nursing theories.

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Conflict of Interests

Not to declared

Ethical Issues

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