Theory Development Strategies for Middle-Range Theories

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The purpose of this article is to present an analysis on the theory development strategies that have been used to develop middle-range theories through an integrated literature review and to provide directions for future theoretical development in nursing. First, theory development strategies that have been suggested and used in nursing are briefly discussed. Second, the methods used for the analysis are described. Then, 4 themes reflecting the theory development strategies that have been used to develop middle-range theories are discussed. Finally, suggestions for future theoretical development in nursing are made on the basis of the findings. **Key words:** *approach*, *middle-range theory*, *nursing*, *situation-specific theory*, *theory development*

THROUGHOUT nursing history, diverse types of theories have been proposed and developed.[1] At the beginning, as a young discipline, nursing scholars wanted to establish the theoretical basis of nursing by clarifying what nursing is.[1] Thus, nursing scholars brought new perspectives from other disciplines such as medicine, psychology, education, sociology, natural science, and anthropology and tried to develop grand theories in order to come up with an answer on what nursing is.[2] Then, nursing scholars began to criticize that most grand theories lacked propositions, specificity, and empirical testing, and they could not be easily applied to nursing practice as well as research.[1,3] In the 1980s, with advances in nursing research, nursing scholars began to propose and use various concept analysis and development methods to search for substantive and/or essential concepts in nursing.[4,5]

From the mid-1980s, nursing scholars began to discuss 2 new types of nursing theories that could directly guide nursing research and practice—middle-range theories and situation-specific theories.[1] Then, a number of middle-range theories that aimed at hypothesis generation and testing were proposed.[6] Also, situation-specific theories began to emerge to address the increasing needs for theories that could be directly used to guide nursing research and practice while incorporating both quantitative and qualitative paradigms.[1,7,8] In recent years, middle-range theories and situation-specific theories became significant theoretical bases for nursing research and practice across the globe.[9]

To develop situation-specific theories, a clear method of theory development—called "integrative approaches"—was proposed and has widely been used.[10] Also, most of the situation-specific theories have been developed through theory derivations from grand or middle-range theories.[11-13] In a few cases, they have been developed only through induction without a mother theory.[14-16] On the contrary, most middle-range theories have been developed using theoretical induction and deduction based on literature reviews or research studies.[17] Yet, the approaches used to develop middle-range theories in nursing have rarely been discussed or analyzed on the basis of an actual integrated literature review.

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Statement of Significance

What is known, or assumed to be true, about this topic:

- From the mid-1980s, advances in nursing research and practice began to make nursing scholars/theorists to think of new types of nursing theories that could directly guide nursing research and practice.
- A number of middle-range theories that aimed at hypothesis generation and testing were proposed.
- The approaches used to develop middle-range theories in nursing have rarely been discussed or analyzed on the basis of an actual integrated literature review.

What this article adds:

- Middle-range theories were proposed in various but focused areas of research and practice.
- Middle-range theories had clear implications for future research and/or practices, and many of them suggested directions for future development of interventions.
- Some of the middle-range theories that were identified as middle-range theories by the theorists would actually be situation-specific theories.
- Various sources for theorizing, including existing theories, literature reviews, findings and experiences from research, education, and practice, and collaborative efforts, were simultaneously used in the development of middle-range theories.

The purpose of this article is to present an analysis on the theory development strategies that have been used to develop middle-range theories through an integrated literature review and to provide directions for future theoretical development in nursing. First, theory development strategies that have been suggested and used in nursing are briefly discussed. Second, the methods used for the analysis are described. Then, 4 themes reflecting the theory development strategies that have been used to develop middle-range theories are discussed. Finally, suggestions for future theoretical development in nursing are made on the basis of the findings.

THEORY DEVELOPMENT STRATEGIES USED IN NURSING

Currently, various strategies for theory development are used in the development of nursing theories in general.[1,4] Many theorists proposed different categories of theory development strategies depending on their perspectives.[1,4,6,12,18] For instance, Walker and Avant[4] categorized the theory development strategies that had been used in nursing into 3 major categories: theory analysis, theory synthesis, and theory derivation. Theory analysis aims to examine the strengths and weaknesses of a theory. Theory synthesis aims to describe a nursing phenomenon by using a set of interrelated concepts and statements (eg, preceding or influencing factors of a particular event and effects of the event). It allows to integrate scientific information into a more organized form of theoretical thoughts on a phenomenon. Theory derivation aims to explain or predict a phenomenon in one area by using analogies from explanations or predictions in another area. This categorization helped understand different theory development strategies by their goals. Yet, there was no differentiation among the strategies that had been used to develop grand, middle-range, and situation-specific theories.

Meleis[19] also classified the theory development strategies that had been used in nursing into 5 categories: (*a*) theory-practice-theory strategy; (*b*) practice-theory strategy; (*c*) research-theory strategy; (*d*) theory-research-theory strategy; and (*e*) practice-theory-research-theory strategy. The first

category of theory-practice-theory strategy refers to the theory development strategy that a theorist starts his or her theorizing from an existing theory as a mother theory (deduction), applies the theory in nursing practice, and modifies the theory on the basis of the evidence from the practice (induction). The practice-theory strategy refers to the theorizing process that a theorist starts his or her theorizing from practice and develops a theory using induction from his or her practice experience. The research-theory strategy is the theorizing process through which a theorist starts his or her theorizing from research findings and develops a theory using induction from the findings. The theory-research-theory strategy is the theorizing process through which a theorist starts his or her theorizing from an existing theory, conducts research using the theory as the theoretical basis, and further develops the theory using induction from the research findings. Finally, the practice-theory-research-theory refers to the theorizing process that a theorist starts his or her theorizing from practice, develops a theory on the basis of his or her practice experience, conducts research using the theory as the basis, and further develops the theory on the basis of the research findings. This classification helped understand theory development strategies by process. However, again, there was no clear differentiation among the strategies that had been used to develop grand, middle-range, and situation-specific theories. Likewise, many meta-theorists have proposed different categories of theory development strategies, but only few considered the differences among different types of theories in their categories.[1,4,6,12,18]

Relatively recently, Liehr and Smith[17(p53)] proposed theory-generating approaches that are specific for middle-range theories, which included (1) "induction from practice"; (2) "induction from research"; (3) "concept building followed by testing in research and practice"; (4) "deduction from theories at a higher level of abstraction, including grand theories"; and (5) "derivation from theories of other disciplines that have foundations consis-tent with nursing's disciplinary perspective." Yet, the actual usages of these approaches in the development of middle-range theories have rarely been examined through an actual integrated literature review. Indeed, in a PubMed search of the literature during the past 10 years, there was no article that actually presented an integrated literature review on the theory development strategies that had been used to develop middle-range theories. With an increasing number of middle-range theories in recent years, there is a great need for an integrated literature review to examine the theory development strategies that have been used to develop middle-range theories in order to provide directions for future development of theoretical bases in nursing.

METHODS

Only the literature during the past 10 years was searched through the PubMed, PsyInfo, and CINAHL. The reason for choosing only the past 10 years was to identify the current trends in the development of middle-range theories. Subsequently, the middle-range theories that were developed before the time period and that had been well known and widely used in nursing were possibly excluded in this review. Also, textbooks were excluded in this review because most chapters in textbooks rarely provided information on theory development approaches; rather, they provided a detailed description on major concepts and subconcepts and their applications to research and practice. Key words utilized in the initial search were "middle-range theory," "mid-range theory," "middle-range theories," or "mid-range theories," and "nursing." When the databases were searched using key words of "middle-range theory" and "nursing," 175 articles were retrieved after eliminating overlapped articles across the databases. When they were searched using key words of "middle-range theories" and "nursing," 32 articles were retrieved after eliminating overlapped articles across the databases. When they were searched using

key words of "mid-range theory" and "nursing," 22 articles were retrieved after eliminating overlapped articles across the databases. When they were searched using "mid-range theories" and "nursing," 6 articles were retrieved after eliminating overlapped articles across the databases. Only those in English were included. Then, overlapped articles across the searches using different key words were again eliminated, and nonnursing articles were eliminated (authored by nonnurses and/or published in nonnursing journals). Articles describing only research findings were excluded as well. Also, articles that used a middle-range theory to guide research process and those that only tested and/or evaluated a middle-range theory in research were excluded. The rationale for this exclusion was as follows: the main emphasis of this analysis was on the actual theory development strategies that had been used to develop middle-range theories rather than theory evaluation. The abstracts of all the identified articles were reviewed first to determine whether they really presented the approaches that were used to develop middle-range theories. Subsequently, one without an abstract was excluded. In addition, 2 articles that were published in potential predatory journals (not-indexed journals) were excluded. Finally, a total of 23 middle-range theories met the inclusion and exclusion criteria for this review. The retrieval process is illustrated in Figure 1.

The retrieved theories were reviewed in the areas of goal, methods, and sources of theorizing, and links to research and practice.
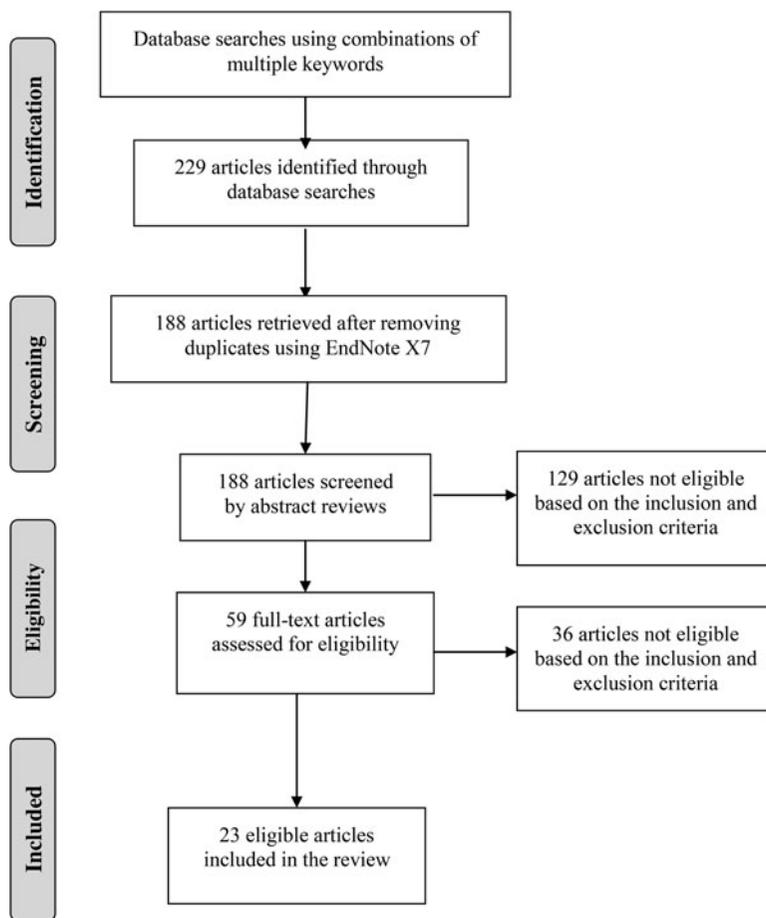

Figure 1. The literature search and retrieval process.

The areas of review were from the components of theory development strategies that were suggested by Meleis,[1] which might limit the interpretation of the findings reported in this article. The findings from the analysis are summarized in the Table. Then, themes reflecting the theory development strategies that had been used to develop middle-range theories were extracted. The analysis was also conducted through reading and rereading the articles on the theories in the Table. The interpretation of the findings reported in this article needs to be carefully made though because this analysis included only the middle-range theories that were published in refereed journal articles during the past 10 years.

FOUR THEMES ON THEORY DEVELOPMENT STRATEGIES

During the review and analysis process, 4 themes reflecting the theory development strategies that had been used to develop middle-range theories emerged: (*a*) direct links to specific areas of research and practice; (*b*) confusion on middle-range theories and situation-specific theories; (*c*) prevalent usages of both induction and deduction; and (*d*) using various sources for theorizing. Each theme is described in detail as follows.

Direct links to specific areas of research and practice

The theme of "direct links to specific areas of research and practice" is consistent with the original purpose of middle-range theories.[1,17] Indeed, middle-range theories were originally suggested as an answer to the need for theory-based research.[1] Subsequently, all the middle-range theories are supposed to reflect specific areas of research so that they could be easily applicable to research.[17] The findings of this analysis are consistent with this assertion by meta-theorists on specific areas of focus in middle-range theories.

Doubtlessly, the purpose of theorizing in all the theories was to present a middle-range theory that could be easily adopted to nursing research or practice in various but specific areas of focus. The specific areas of focus included maternal care (prenatal and postpartum),[20,21,25] intensive care unit care,[22] family nursing,[20,22-24] community health nursing,[26-34] mental health,[35] nursing education,[36] and nursing system and administration.[28,37,38] Interestingly, 6 theories were related to self-management/care of chronic illness.[23,29,31,33,39,40]

Because of inherent characteristics of middle-range theories (that address specific phenomena or concepts), middle-range theories could easily provide directions for nursing research and practice.[17] In all 23 middle-range theories, links to nursing research or practice were directly or implicitly made. In the development of 8 theories (32%),[20,24,26,27,30,33,34,41,42] the findings of empirical studies directly provided the basis for theorizing, subsequently linking the research findings to the theories explicitly. For instance, Forsberg et al[42] proposed their middle-range theory of the Perceived Threat of the Risk of Graft Rejection directly based on research findings of multiple studies and a systematic literature review on graft rejection associated with solid organ transplantation. Also, Christie et al[20] proposed their middle-range theory of postpartum parent development directly based on the findings of a qualitative exploratory study using focus groups and in-depth interviews.

In all the theories, the theorists made suggestions/implications for future research and practice as well. Sometimes, they made very specific guidelines for future research and practice. For example, Covell[37] suggested that researchers and clinicians should decide whether environmental components could affect the utilization of practice guidelines, protocols, and care maps so that nurse administrators could adequately examine the cost-benefit of supporting persistent professional growth of nurses. In addition, Dobratz[41] proposed that further research would need to focus on the impact of social support on death and dying process and on the relationship between pain and spirituality during the process.

Table. A Summary of the Middle-Range Theories (23 Theories)

Authors (Years)/ Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Adams (2015)/United States	To present a mid-range theory on postpartum mood disorders.	Theory derivation (deduction) by Walker and Avant using a literature review and an existing theory ("Self-Discrepancy: A Theory Relating Self and Affect" by Higgins) from psychology and tested through a literature review (induction).	Provided directions for future theory testing through both qualitative and quantitative research.
Carr (2014)/United States	To describe the development process of a middle-range theory on vigilance.	Inductive development using the data collected from 3 qualitative research studies.	Directly inspired by the study findings from 3 qualitative studies. Provided directions for future research testing specific relationships within the theory and extending the theory. Provided guidelines for nursing practice through developing interventions for family members who are staying with hospitalized relatives.
Christie et al (2008)/United Kingdom	To present a middle-range theory on postpartum parent development.	Inductive theory development based on research findings from a qualitative exploratory study on parental experiences to define family-centered care.	Directly based on a qualitative exploratory study using focus groups and in-depth interviews. Provided the basis for health care that considers parents' perceptions of postpartum family experiences.

(continues)

Table. A Summary of the Middle-Range Theories (23 Theories) *(Continued)*

Authors (Years)/ Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Covell (2008)/Canada	To present the development process of the middle-range theory on nursing intellectual capital.	Concept and theory derivation (induction and deduction) based on a literature review and the intellectual capital theory.	Directly based on a literature review of research findings on intellectual capital. Provided directions for research and practice to determine whether any environmental factors affect the use of practice guidelines, protocols, and care maps and to assist administrators in deciding the cost-benefit of supporting nurses' professional development.
Davidson (2010)/United States	To present a middle-range theory on supporting family members of ICU patients (facilitated sense-making theory).	Both inductive and deductive methods using Roy's theory, a literature review, and expertise and experience of consultants in various areas.	Based on research findings through a literature review on patients' family members in ICU. Provided guidance on how to involve family members at the bedside. Provided implications for research (eg, theory testing to see whether outcomes improve nursing care).
Dobratz (2011)/United States	To present a middle-range theory on psychological adaptation in death and dying.	Both induction and deduction using Roy's theory and research findings from 3 studies (both quantitative and qualitative) on end-of-life psychological adaptation.	Directly based on 3 empirical studies on end-of-life psychological adaptation. Suggested implications for nursing care of dying persons and their families. Suggested implications for further research (eg, further research on the impact of social support on both the role and interdependence mode, the relationships between pain and spirituality). *(continues)*

Table. A Summary of the Middle-Range Theories (23 Theories) (*Continued*)

Authors (Years)/ Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Dyess and Chase (2012)/ United States	To present the development process of a middle-range theory on faith community nursing practice.	Induction using a grounded theory method and tested the emerging concepts through a literature review on faith community nursing practice.	Directly based on research findings from a grounded theory study. Provided implications for research (eg, providing a framework to link power to processes that undergird the holism in faith community nursing practice). Provided implications for practice (eg, intentional development of innovative holistic approaches to address the substantial demand for caring services).
Fearon-Lynch and Stover (2015)/United States	To present a middle-range theory for diabetes self-management mastery.	Deduction from 2 existing theories—theory of mastery and organismic integration theory—and induction from a case study and a literature review (implicit).	Provided directions for research and practice (nursing strategies to encourage initiation and maintenance of mastery using extrinsically motivated approaches) related to diabetes self-management mastery and further development of the theory.
Forsberg et al (2015)/Sweden	To present a middle-range theory of Perceived Threat of the Risk of Graft Rejection.	The elements and strategies for theory building proposed by Walker and Avant (both induction and deduction).	Directly based on research findings from multiple studies and a systematic literature review of research findings on graft rejection within the context of solid organ transplantation. Provided directions for transplant nursing and further development of the theory.

(*continues*)

Table. A Summary of the Middle-Range Theories (23 Theories) (*Continued*)

Authors (Years)/ Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Jacelon et al (2011)/United States	To present the development and implementation process of a middle-range theory titled "the Jewish Geriatric Services–Chronic Care Model (JGS-CCM)."	Deduction using an existing theory, the Chronic Care Model and induction through a literature review.	Implicitly based on research findings from the literature. Implemented in actual practice with chronic disease management at JGS. Provided implicit implications for future research and practice at JGS.
Lopes et al (2017)/Brazil and United States	To present a middle-range theory on a process for validation and incorporation of nursing diagnoses in clinical practice.	Deduction from 5 clinical reasoning models and implicit induction from a literature review.	Implicitly based on a literature review of research findings related to nursing diagnosis. Provided implications for education on clinical reasoning process and practice (support the clinical reasoning process by integrating causal factors, clinical indicators, and outcomes sensitive to nursing intervention).
McMahon and Christopher (2011)/United States	To propose a mid-range theory of nursing presence.	Both inductive and deductive approaches using a literature review of research on professional nursing presence and of related theories (eg, Benner's, Kim's).	Directly based on a literature review of research findings on professional nursing presence. Provided directions for nursing education and practice (incorporating presence skills in undergraduate nursing curriculum).
Murrock and Higgins (2009)/United States	To present the development process of a middle-range nursing theory of the effects of music on physical activity and improved health outcomes.	Theory synthesis from the physical activity guidelines and music theory and from a literature review on the concepts of music, physical activity, and health outcomes (both induction and deduction).	Directly based on a literature review of research findings related to music intervention, physical activity, and health outcomes. Provided directions for future practice (for music interventions) and research (to determine the length of time, or "dose effect" of music interventions).

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Table. A Summary of the Middle-Range Theories (23 Theories) (*Continued*)

Authors (Years)/Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Payne (2015)/United States	To present a middle-range theory on intuitive decision making in nursing.	Theory synthesis using Patricia Benner's model of skill acquisition in nursing and Damasio's somatic marker hypothesis (deduction) and empirical evidence from the literature review and a pilot study (induction).	Provided directions for future research, education, practice, and theoretical development (for intuitive decision making in nursing).
Perry (2015)/United States	To present a middle-range theory of "transcendent pluralism," nonviolent social transformation through human and ecological dignity.	Both deductive and inductive processes including 4 research studies (1 mixed-methods and 3 qualitative studies), a literature review, and inputs from theorists.	Directly based on 4 empirical studies. Provided implicit directions for practice (eg, contribution to nursing knowledge that could impact changes in social problems).
Phillippi and Roman (2013)/United States	To present a middle-range theory, the motivation-facilitation theory of prenatal care access.	Theory synthesis using critical realism, Lewin's grand theory of human behavior, and a literature review (deduction and induction).	Implicitly based on research findings from a literature review. Provided implications for practice (eg, guiding interventions designed to increase access to prenatal care for vulnerable women).
Pickett et al (2014)/United States	To present a middle-range theory of weight management that focuses on cultural, environmental, and psychosocial factors that influence behaviors related to weight control.	Deduction using Orem's theory of self-care and induction using a literature review on research related to weight management.	Implicitly based on research findings from a literature review. Provided implications for research and theoretical development (eg, providing propositional statements for empirical testing).

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Table. A Summary of the Middle-Range Theories (23 Theories) (*Continued*)

Authors (Years)/ Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Reimer and Moore (2010)/United States	To present a middle-range theory on flight nursing expertise.	Theory synthesis using both induction and deduction through a literature review on studies related to the focal concepts in flight nursing and the first author's clinical experience.	Implicitly based on research findings from a literature review and directly based on the first author's clinical experience. Provided implications for future research, education, practice, and theoretical development related to flight nursing expertise.
Riegel et al (2012)/United States and Sweden	To present a middle-range theory on self-care related to management of a chronic illness.	Both induction and deduction using the authors' previous clinical experience, research (not clear but seemingly quantitative studies), and conceptual work.	Implicitly based on research findings from the authors' previous research and clinical experience. Provided implications for research (eg, the development of measures of self-care for various chronic diseases based) and practice (eg, self-care related to management of a chronic disease).
Ryan and Sawin (2009)/United States	To present a mid-range theory titled "Individual and Family Self-management Theory."	Induction and deduction using a literature review on research (especially intervention and program research) and conceptual/theoretical works related to individual and family self-management.	Implicitly based on research findings from a literature review. Implicitly provided implications for future research (eg, contextual factors in individuals and family process components from qualitative and quantitative perspectives).

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Table. A Summary of the Middle-Range Theories (23 Theories) (*Continued*)

Authors (Years)/Country	Purpose	Methods for Theorizing and Source of Theorizing	Linkages to Research or Practice
Shanley and Jubb-Shanley (2007)/Ireland	To present a mid-range theory of mental health nursing based on humanistic philosophy, the recovery alliance theory.	Induction and deduction using an existing theory, Peplau's theory, and clinical experience of users, mental health nurses, educationalists, and managers.	Directly applied to practice in describing a system of mental health nursing practice, Partnership in Coping (PinC). Implicitly provided implications for all practice areas of mental health nurses.
Siaki et al (2013)/United States	To present the development process of a mid-range theory on risk perception.	Theory synthesis using a literature review on perceived risks in vulnerable populations (implicit deduction from existing models), and both qualitative and quantitative data from a study among Samoan Pacific Islanders at high risk of cardiovascular diseases and diabetes (induction).	Directly based on the findings from both qualitative and quantitative studies among Samoan Pacific Islanders at high risk of cardiovascular disease and diabetes. Provided implications for research and practice (eg, guiding the interventions to improve behavior-related health inequalities in vulnerable populations, identifying specific cultural factors contributing to perceptions of risk that can be targeted for intervention.).
Walter (2017)/United States	To present a middle-range nursing theory of social justice, the Emancipatory Nursing Praxis.	Constructivist grounded theory methodology using induction based on the findings from a grounded theory study of the critical factors influencing nurses' perceptions of their role in social justice[20-24] and implicit deduction based on critical theory.	Directly based on the findings from a grounded theory study on the critical factors influencing nurses' perceptions of their roles in social justice. Provided implications for research and practice (eg, providing a framework that broadens nursing's role as a social change agent beyond the realm of health policy).

Abbreviation: ICU, intensive care unit.

Confusion on middle-range theories and situation-specific theories

The theme of "confusion on middle-range theories and situation-specific theories" was obvious in this analysis. According to Meleis,[1(p33)] middle-range theories are "theories with more limited scope and less abstraction, address specific phenomena or concepts, and reflect practice" and "the phenomena or concepts tend to cross different nursing fields and reflect a wide variety of nursing care situations." At the same time, Meleis[1(p33)] defined situation-specific theories as "theories that focus on specific nursing phenomena that reflect clinical practice and that are limited to specific populations or to a particular field of practice." According to these definitions, some of the middle-range theories that were identified as middle-range theories by the theorists themselves would actually be situation-specific theories. For example, Adam's[25] theory on self-discrepancy in postpartum women with mood disorders could be too specific to be a middle-range theory because its focus was on a particular field of practice (nursing care for postpartum women with mood disorders) rather than on an area crossing different nursing fields. Also, Davidson's[22] theory could be too specific to be a middle-range theory because its focus was on a particular field of practice (family nursing at intensive care unit) rather than on an area crossing different nursing fields.

The primary purpose of middle-range theories was originally to generate and test hypotheses, which was definitely based on quantitative paradigms.[1] Situation-specific theories were proposed to reflect both quantitative and qualitative paradigms in nursing.[1,7,8] However, this analysis indicated that qualitative paradigms were frequently used in the development of middle-range theories. Actually, more qualitative studies were used for the development of middle-range theories compared with quantitative studies. For instance, the theory by Christie et al[20] was directly based on the findings of a qualitative exploratory study using focus groups and in-depth interviews. Probably, with changes in nursing philosophical perspectives in general, the original intention and purpose of middle-range theories have been changed to reflect the changes in nursing perspectives during the past decade. Yet, further clarification on these 2 different types of theories is needed for future theoretical development in nursing.

Prevalent usages of both induction and deduction

The theme of "prevalent usages of both induction and deduction" is consistent with the theory development strategies that have been proposed in the literature on middle-range theories. This analysis supported that theoretical induction, deduction, and both induction and deduction had been used in the development of middle-range theories. The approaches that were used for the development of 4 sample theories are illustrated in Figure 2. Only induction was used in developing 3 theories (13%), and both induction and deduction were used in developing the remaining 20 theories (87%). No theory was developed only based on deduction.

The theory development strategies that were used to develop the 23 theories were not consistently labeled or categorized. Sometimes, theorists labeled their theory development strategies as concept and/or theory derivation,[25,37] theory construction,[34] or theory synthesis.[21,29,32,33,43] In 2 theories,[25,37] the theorists explicitly used the theory derivation method that was suggested by Walker and Avant.[4] In 5 theories, theorists were explicit on their approach being theory synthesis.[21,29,32,33,43]

In most cases, theory development process started from a literature review on theoretical and empirical knowledge in specific areas of focus. For example, Adams[25] started her theory development process through a literature review on potential parent theories that could be used for theory derivation. Covell[37] firstly conducted a literature review on the use of intellectual capital in nursing and health for
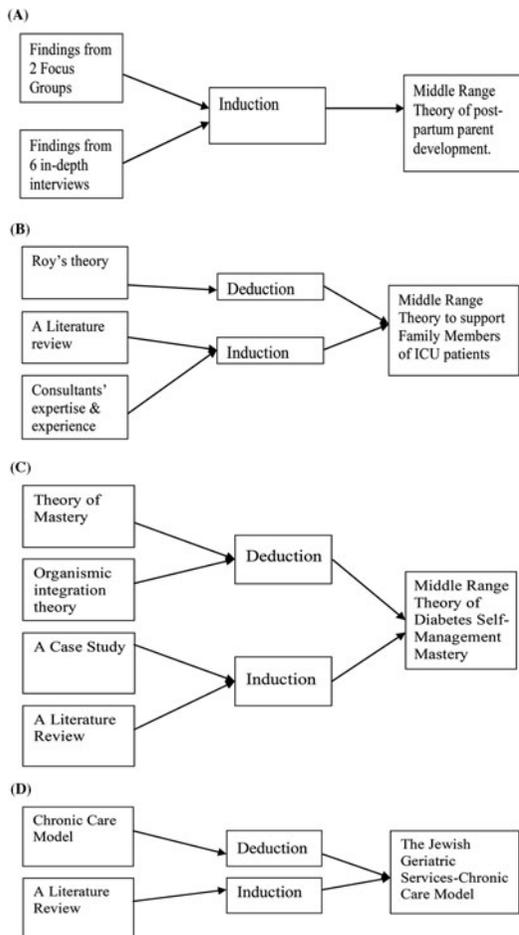
Figure 2. Theory development process of 4 sample middle-range theories. (A) Christie's theory of post-partum parent development.[20] (B) Davidson's theory to support family members of ICU patients.[22] (C) Fearon-Lynch and Stover's theory for diabetes self-management mastery.[39] (D) Theory of Jacelon et al, the Jewish Geriatric Services-Chronic Care Model.[28] ICU indicates intensive care unit.

her theory development. Pickett et al[31] also initiated their theorizing by conducting a literature review on existing conceptual models that were frequently used to explore weight control behaviors/obesity prevention.

In the development of 19 theories, an existing theory or multiple existing theories provided the starting point of their theory development using theory derivation or theory synthesis. Through a literature review, Pickett et al[31] found that Orem's theory was the most

appropriate theory for their phenomenon and started their theorizing by using Orem's theory. Davidson[22] also initiated her theorizing by examining Roy's adaptation model and Weick's theory on organizational sense-making as the starting point.

While using research findings or clinical experience as sources of theorizing, induction was frequently done to develop middle-range theories. Except the cases of using grounded theory methods, the adoption and modification/derivation of an existing theory were done first. Then, the concepts that were derived through the process were clarified/verified/tested against the findings of research studies and/or clinical experiences. For example, Dobratz[41] started her theorizing process from Roy's Adaptation theory and then used the findings of 3 research studies for theoretical abstraction of major concepts and propositions. Also, Fearon-Lynch and Stover[39] conducted a theory synthesis through deduction from 2 existing theories (theory of mastery and organismic integration theory). Then, they did induction from a case study and a literature review (implicit) to support the concepts and propositions that were included in their middle-range theory. An interesting finding was that in 2 theories (9%),[28,35] the developed theory was actually applied to nursing practice in order to confirm the proposed concepts.

As discussed previously, Liehr and Smith[17] proposed 5 specific theory-generating approaches for middle-range theories. This analysis supported that all the 5 approaches had actually been used in the development of middle-range theories in the literature. "Induction through practice" was used in developing 5 theories; "induction from research" was used in developing 9 theories; and "concept building followed by testing in research and practice" was noticeable in the approaches that were used to develop 7 theories. "Deduction from theories at a higher level of abstraction, including grand theories" and "derivation from theories of other disciplines that have foundations consistent with nursing's disciplinary perspective" were also

utilized in developing 20 theories. In many cases, multiple theories were used for deduction. When deduction was done from an existing theory, it is usually based on a grand theory. However, there was 1 exception; Riegel et al[40] took an opposite direction of theory development in their middle-range theory. Instead of deriving their middle-range theory from a theory at a higher level of abstraction (eg, a grand theory), they used an existing situation-specific theory (a theory from a lower level of abstraction) as the parent theory of their middle-range theory.

Using various sources for theorizing

Im[7] proposed the use of various sources for theorizing in the development of nursing theories: (*a*) "currently existing nursing and non-nursing theories related to the phenomenon of interest"; (*b*) "literature reviews"; (*c*) "findings and experiences from research, education, and practice," and (*d*) "collaborative efforts." These various sources could be simultaneously used for theorizing. All the theories analyzed in this article used various sources for theorizing (see Figure 3), which included existing theories (60%), literature reviews (61%), findings from theorists' own research studies (32%), and theorists' own clinical experience (20%). One of the most frequently used sources of theorizing was existing theories; 15 theories (65%) were developed on the basis of existing theories, concepts, and/or models. Ten theories (43%) were developed

on the basis of 1 existing theory or model, and 5 (22%) were based on multiple theories, conceptual frameworks, and/or models. The existing theories that were used in the development of middle-range theories included Roy's theory,[22,41] Lewin's theory of human behavior,[21] Orem's theory of self-care,[31] Patricia Benner's model of skill acquisition in nursing,[43] and Peplau's theory.[35]

Another frequently used source of theorizing was a literature review; a literature review was used as a source of theorizing in the development of 14 theories (61%). The remaining 9 theories might be developed in part on the basis of a literature review although the theorists were not explicit on a literature review as a source of theorizing. For example, Christie et al[20] developed an Integrated Mid-Range Theory of Postpartum Parent Development on the basis of research findings of a qualitative exploratory study on parental experiences of family-centered care. Yet, to conduct a study, a literature review is usually a basic step to take. Thus, it would be difficult to say that the remaining 9 theories were not based on a literature review.

Theorists' own research findings were also used in the development of 8 theories (35%).[20,24,30,33,34,39-41] Five were developed on the basis of qualitative findings.[20,24,26,34,39] Three of them used the findings of both quantitative and qualitative studies.[27,30,33,41] In some cases, they included the findings of multiple studies in the development of 1 theory. For example, Carr[24] developed the
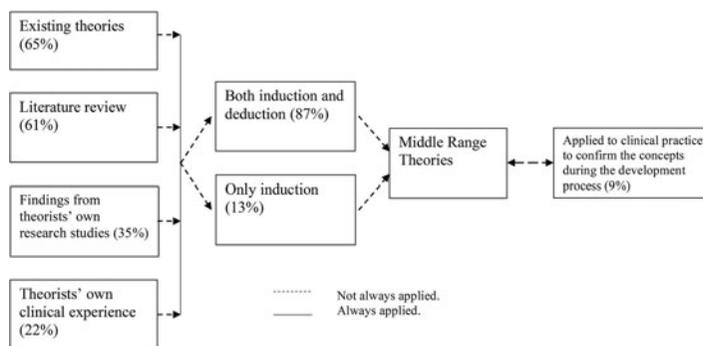

Figure 3. Theory development process of middle-range theories.

middle-range theory of vigilance on the basis of 3 qualitative studies (ethnographic studies) among family members who were staying with hospitalized relatives. The findings provided supporting evidence for major concepts of their proposed theory. Also, Dobratz[41] proposed a middle-range theory of psychological coping in death and dying process based on 3 studies on end-of-life psychological adaptation. The studies included (*a*) a causal model study (quantitative) among 97 home hospice subjects; (*b*) a grounded theory study (qualitative); and (*c*) another quantitative study using statistical triangulation through which both numerical and textual data of 47 dying persons were merged.

Theorists' clinical experience and their team's collaborative experience in clinical and community settings were also used in the development of 5 (22%) middle-range theories.[22,30,32,35,40] In one case,[32] only the first author's clinical experience was used. In 4 theories,[22,30,35,40] research and/or clinical teams' experience was used. Yet, evidence from nursing practice (eg, case studies, clinical examples) was used in the development of only 1 theory.[39]

Interestingly, except 8 theories (34%) that were proposed by single authors, all remaining 15 theories (66%) were proposed by multiple authors. Multiple authors usually came from the same institutes. However, in 2 theories (8%),[38,40] multiple authors came from 2 different countries (Brazil and the United States; Sweden and the United States). Maybe, theory development was conducted while one of the authors was visiting an institute in the United States; the senior authors of both theories were from the United States. In addition, in single-authored theories, most theorists came from the United States except 2; 1 theorist from Ireland[35] and the other from Sweden.[42]

SUGGESTIONS FOR FUTURE THEORETICAL DEVELOPMENT

Based on these findings, the following suggestions are made for future theoretical development in nursing. First of all, as this analysis indicated, all the middle-range theories aimed to provide a theoretical basis that could be directly linked to nursing research and practice. Subsequently, the theories were developed with a focus on specific areas of research and practice and using various sources for theorizing to reflect different domains of nursing phenomenon. However, again, there was confusion on the differences between middle-range theories and situation-specific theories. Thus, through future endeavors in theoretical development in nursing, this confusion needs to be fixed. At the same time, efforts need to be made for further development of philosophical and methodological bases for middle-range theories (eg, quantitative and/or qualitative paradigms), through which the links among theory, research, and practice could be further strengthened.

Second, the links between nursing practice and theory in the development of middle-range theories need to be further strengthened through future efforts. Although all the middle-range theories that were reviewed in this analysis clearly proposed suggestions for future nursing practice, the links of the middle-range theories to nursing practice were weaker than those to nursing research. Only in 1 theory, evidence from practice (eg, a case study) was used in its development.

Third, the research bases for middle-range theories tended to be theorists' own studies. Through future theory development efforts using multiple studies other than just theorists' own studies, middle-range theories need to be further developed and strengthened to lead nursing research and practice. Through adopting multiple studies as the basis for theorizing, the concepts and subconcepts of middle-range theories could be refined enough to reflect variances in research projects and practice fields.

Finally, as noted, few national and international collaborative middle-range theories have been proposed in the literature during the past decade. Thus, for future development of middle-range theories, collaborative efforts across disciplines, regions, and countries

would be essential to make the theories more strongly linked to nursing research and practice. Especially, further national or international collaborative efforts to develop and validate middle-range theories could facilitate the actual applications of middle-range theories to nursing research and practice across the nation and across the globe.

CONCLUSIONS

This article discussed several themes reflecting the theory development strategies that had been used to develop middle-range theories. Obviously, middle-range theories became an essential part of theoretical bases in nursing, and their steady and continuous development during the past decade was evident with an increasing number of middle-range theories in the literature. Yet, as this analysis indicated, there existed several aspects in the theorizing process of middle-range theories that would need further development. Through future development endeavors, middle-range theories could be further grounded with strong and consistent philosophical and methodological bases.

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