ORIGINAL

Caring in physical therapy practice:Exploring Locsin's 'Technological Competency as Caring in Nursing'

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Abstract:Caring demonstrates compassionate care for others through the process of "knowing person as caring" from the theoretical lens of Technological Competency as Caring in Nursing (TCCN). Physical therapists respect the individual needs and values of patients and builds deep relationships with patients and their families. In this process, it is essential to respect the dignity and humanity of the other person. This discussion paper aims to 1) extract the necessary elements of Locsin's TCCN theory from a physical therapy practice perspective;2) consider the usefulness of Locsin's TCCN theory in physical therapy practice using a narrative review process;3) examine knowing patients as caring in physical therapy using Carper's fundamental ways of knowing through the fictional vignette;and 4) evaluate Donabedian's structure, process, and outcome to assess the quality of healthcare as well as consider knowing patients and quality of caring regarding the mentioned fictional vignette. TCCN theory-based practice is essential for incorporating a caring attitude and the appropriate use of technology into the practice of physical therapy. Caring in physical therapy is the practice of patient-centered care through attentive learning and engagement with the patient. J. Med. Invest. 72 : 60-65 February, 2025

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INTRODUCTION

Physical therapy is a discipline and profession grounded in the value of human caring. Much of the current science of caring relevant to physical therapy practice has emerged within the discipline of Nursing (1-3). To understand caring in nursing, it is necessary to look back in history. One idea is nursing as an expression of a person's attitude of kindness and care, or caring. The other is the idea of caring provided through beneficial technology (4). This was followed by Ray's "Technological caring:a new model in critical care (5)" in 1987, Boykin and Schoenhofer's "Nursing as Caring:A Model for Transforming Practice" in 1993, and Sandelowski's "Toward a Theory of Technology Dependency (6)" in 1993. In 1995, through "Machine Technologies and Caring in Nursing (7)" Locsin published his thoughts on machine technologies and caring in nursing.

The next definition of caring in nursing is that to care is to be there for others (8). Caring in nursing is also referred to as the sharing of experiences between nurse and person being cared for (patient or family member) in the fight against illness (9). The concept of humanness is often reflected in healthcare and is an essential ingredient in the practice of nursing grounded in caring. As human healthcare technologies facilitate the realization of efficient and quality nursing, it befits nurses to practice their nursing care, which is rooted and grounded in an explicit theory of nursing (10).

In physical therapy, caring is defined as a virtue and moral orientation, a fundamental approach to compassionate patient care, and a core value of physical therapists' professional behavior (11). Caring for physical therapists is also about sharing lived experiences of the relationship between the person receiving rehabilitation services and the physical therapist providing the service during the course of therapy. Previous research (12) has indicated that the qualities of a "good" physical therapist identified in this review emphasize importance of the human interaction between physical therapists and patients and highlight the need to balance technical competence with a relational approach. These qualities include being responsive, ethical, communicative, caring, competent, and collaborative.

Healthcare providers are increasingly being challenged to maintain their caring practice while responding to the complex technological demands of modern healthcare (13). Physical therapists employ equipment to assist with the rehabilitation of their patients. This equipment includes physical therapy assessments, such as goniometers and the Barthel Index. The effectiveness of these tools depends on the therapists' understanding of their use and the benefits they can provide for the patient. Advancements in rehabilitative technology have occurred to improve the monitoring and treatment of patients (14), and physical therapists are in a position to provide the best possible care with the support of these technologies.

Caring demonstrates compassionate care for others through the process of "knowing person as caring" from the theoretical lens of Technological Competency as Caring in Nursing (10). The practice of nursing and physical therapy respects the individual needs and values of the patient, as well as building deep relationships with patients and their families. Locsin's Technological

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Competency as Caring in Nursing (TCCN) theory includes the reflective use of beneficial technology as an empirical body of knowledge.

The following beliefs about caring, technology, nursing, and the health sciences support the unique and dynamic situation of the Rozzano Locsin Institute for the advancement of Technological Competency as Caring in Nursing and Health Sciences (15):1) Caring is a substantive focus of the discipline and practice of nursing;2) Caring is not unique to nursing but is unique in nursing;3) The nursing encounter, as a co-created momentary situation, is understood as the relationship of the nurse and nursed in which all nursing occurs;and 4) To be human is to be caring, i.e., all persons are caring as they are human. Locsin emphasized enhancing healthcare disciplinary practices and caring perspectives of healthcare professionals, nurses, and healthcare scientists. His theory advance theory-based practice in Nursing and the Health Sciences guided by the practice process of "knowing persons as caring" grounded within the theoretical concepts of the theory of TCCN. Nonetheless, considering that caring is not only involved and needed in nursing but also in other healthcare disciplines, exploring caring in the practice of physical therapy is essential.

TCCN is that caring and technology aren't separate things, but in any healthcare situation, when technology is introduced. Technology is introduced as one of the ways of caring, and as such, should be employed competently. Caring is the "end" that is sought;technological competency is a means to that end. Understanding caring in physical therapy practice will inform patient interaction during rehabilitation. More fully knowing patients using the technology enables physical therapists to care for and rehabilitate them, improve their motor function, and maintain their activities of daily living and other functions according to individual needs.

Most initiatives to evaluate quality of care follow the model proposed by Donabedian, who believed that evaluation using process, outcome, and structure indicators can provide a unified picture of quality of care (16). He postulated relationships between the three constructs of process, outcome, and structure, based on the idea that good structure should promote good process and that good process should promote good outcomes in a virtuous circle. "Process" is defined as the things done to and for the patient (e.g. practice referrals, clinical reasoning and decision making);"outcome" is the desired result of the care provided by the health professional (e.g. patient functioning and satisfaction with the quality of care);and "structure" is the professional and organizational resources associated with the provision of health care (e.g. availability of physical therapy, equipment and staff training) (17).

This study aims to explore caring in physical therapy practice based on Locsin's TCCN theory.

METHOD

The aims of this discussion paper are to 1) extract the necessary elements of Locsin's TCCN theory (4, 10) from a physical therapy practice perspective;2) consider the usefulness of Locsin's TCCN theory (4, 10) in physical therapy practice using a narrative review process;3) examine knowing patients as caring in physical therapy using Carper's fundamental ways of knowing (18) through the fictional vignette;and 4) evaluate Donabedian's structure, process, and outcome (19) to assess the quality of healthcare as well as consider knowing patients and the quality of caring regarding the mentioned fictional vignette.

RESULTS AND DISCUSSION

1) Extracting the necessary elements from Locsin's TCCN theory from a physical therapy practice perspective

To understand and practice caring in physical therapy, reviewing the related concepts of the TCCN theory is necessary. These concepts include technology, technological competency, the universal technological domain (UTD) (10), and caring practices related to physical therapy.

For example, regarding the concept of technology, Locsin explains the role of technology as follows:"the evolution of technology and changes in people's lives (e.g. internet, mobile phones, self-driving technology, navigation, etc.)," "people living with technological devices (such as artificial legs, arms, intraocular lenses, pacemakers, ventilators, etc.)," "what it means to care for people living with technology (various medical devices)," "what it means to understand such people (with support from Carper's ideas)," "what it means to care for patients in an environment where technology is used for medical treatment," "what it means to be able to care for patients in a technology-enabled environment," and "economic disparities also affect the environment in which people have access to technology."

Technology includes knowledge and skills related to the use, repair of breakdowns, design, and evaluation of technology (20). Technology is used to know the wholeness of a person from moment to moment (4). In this context, technology refers to anything useful for medical care, for example, thermometers, blood pressure meters, and oxygen saturation meters used by nurses, as well as goniometers and the Barthel Index used by physical therapists. The competency of healthcare providers in using technology in their practice reflects their technological competency.

Technological competency (10) defined as deliberate, planned, reliable, and advanced practice performed by nurses with practical experience in settings requiring technical expertise;the harmonious coexistence of technology and caring in nursing. As nursing practice is the act of the nursing profession working directly with the subject, the technological competency of a nurse reflects the ability to understand technology, caring in nursing, how to know the patient, the ability to understand the phenomenon of nursing, and comprehend the philosophical understanding of nursing. Meanwhile, technological competence in physical therapy, in the context of the TCCN theory, refers to the use of medical technology to constantly and in the moment understand the patient as integrated or complete. This applies to assessments using goniometers and the Barthel index score, performing physical therapy as appropriate, as well as being attentive to the patient and sharing experiences with them to help them realize their dreams and hopes for therapy. Some machines perform passive joint mobilization exercises, while others are computer-controlled;for example, goniometers and grip strength meters, crutches for fractured limbs, and prosthetic legs (from simple to computer-controlled) for amputated limbs. Understanding how to integrate these technologies into physiotherapy is essential for delivering high-quality, patient-centered rehabilitation.

In the further development of the TCCN, Locsin and Purnell (10) described the universal domain of technology. The UTD is the domain where the processes of knowing persons through technological knowing, designing, and participative engagement occur. Understanding "technology," "knowing the patient," "mutual understanding and engagement between patient and nurse," "the difference between the nursing process and the Process of Nursing," and "caring in nursing" preserves the humanity and humanness of the patient. While the increase in life-saving technology has extended both the length and quality of life of patients, critics have argued that healthcare profes-

sionals often read the technology rather than the patient. In the UTD, mutual engagement is important for maintaining the humanity of the person while caring.

Harmonizing technology and caring is essential. The model on which Locsin's theory of practice is based is Boykin and Schoenhofer's Nursing as Caring theory (21), which aims to transform practice through nursing as caring. Locsin included four ways of knowing (empirical, personal, ethical, and aesthetic), which he summarized after the work of theorist Carper (18), and added that technologies in nursing require technological knowing. The focus of nursing on knowing the person holistically is the foundation of technical skills as caring in nursing. In other words, knowing persons is preserved by supporting and properly acknowledging the hopes, dreams, and aspirations of the person as a human being and using technology to understand the person as a whole person.

To comprehend and practice caring in physical therapy, understanding how care is provided in this field is crucial. This involves preserving humanity, preventing dehumanization, including family in plan of care, working with patient to achieve goals, and using technology in physical therapy. For example, as patients with stroke move from the acute stage to the subacute stage and gradually regain physical function, it is important to "celebrate" with them as they share the joy of being able to do things they were previously unable to do. Another example is sharing the lived experiences of growing little by little with parents whose children with cerebral palsy develop more slowly than typically developing children.

Another valuable aspect of caring is empathy. Empathy is a valued trait in healthcare because it is critical to patient-centered care (22). Empathy involves two key abilities:understanding and recognizing a patient's emotions. It is defined as the ability to recognize another person's position, feelings, and problems (23). Empathy has the potential to help build trust between patients and healthcare professionals and improve the quality of healthcare. Physical therapists and patients need to develop good communication skills to show empathy (8). Humor is also an essential skill for physical therapists to enhance verbal communication and relationships with patients. Next, empathic communication may be facilitated by the cooperative practice of healthcare professionals, allowing for an effective interdisciplinary approach. In terms of creating an environment and atmosphere, a positive environment is considered an important element of empathy. Moreover, professionalism significantly influences how healthcare professionals present themselves and adhere to workplace policies and regulations. Additionally, medical professionals must always prioritize the needs of their patients and demonstrate a genuine passion for their work.

Empathy can be challenging for various reasons, including the negative emotions experienced by both patients and healthcare providers. Contributing factors include tight schedules, high-pressure environments, and demanding working conditions. Burnout among clinicians is also believed to have a negative impact on empathy. Also, inadequate training in communication skills and a lack of professionalism are frequently mentioned as contributing factors.

In recent years, it has been proposed that patient-centered care be introduced as one of the attributes of quality healthcare. Both patient-centered care and person-focused care require adequate recognition of health problems. Patient-centered care has been proposed as providing care that respects and responds to the preferences, needs, and values of the individual patient and ensures that the patient's values guide all clinical decisions (24).

2) Considering the usefulness of TCCN theory in physical therapy practice

Carper's fundamental ways of knowing (18) is a typology that attempts to classify the different sources from which knowledge and beliefs are derived in professional practice. The typology identifies four fundamental "patterns of knowing" in nursing. These four patterns were identified as essential for knowing in nursing, and that they are essential in physical therapy as well.

Regarding empirical knowing, it describes a real-world example from physical therapy. Clinical reasoning involves the collection and analysis of clinical information for diagnosis and treatment (25). However, clinical reasoning conducted by physical therapists can be described as a process of life function assessment and physical therapy intervention to improve life function. This is accomplished through processes of assessment, analysis and interpretation, problem identification, goal setting, treatment programs, intervention and evaluation of effectiveness, and reassessment. Through this clinical reasoning, the physical therapist obtains a complete picture of the patient, and it can be concluded that clinical reasoning is scientifically applicable.

Considering personal knowing, rapport indicates that the physical therapist has a good relationship with the patient. Rapport builds a foundation of communication and trust and is an important factor that facilitates cooperative treatment with the patient. Additionally, during the interview, the patient's expressed desires and wants (demands) were identified alongside their actual needs, including future considerations. In this process, the physical therapist and patient collaborate to align rehabilitation priorities, ensuring a personalized approach.

The ethical perspective is exemplified below. In clinical reasoning, there is a post-intervention effectiveness assessment and reassessment process (26). The physical therapist can reflect on the rehabilitation intervention. This reevaluation allows adjustments to be made to the pre-planned content, ensuring that the process remains ethical. It becomes unethical for the physical therapist is unmotivated to make these necessary changes.

The following are examples of what can be understood aesthetically. During the interview and information gathering process, information about family relationships, pre-injury life, occupations, hobbies was collected. The relationship is developed during the rehabilitation process. In this process, we have the opportunity to witness the real relationship between the patient and his or her family. Such a process is a virtue.

Technology and healthcare will continuously coexist, and technological competency is crucial when training healthcare professionals, especially physical therapists (27, 28). Advancements in rehabilitative technology continually aid in improving physical function and bridge the gaps (29, 30) in treatment in more refined ways (31, 32). The TCCN theory, with its technological knowing (4) informs physical therapists on how caring is implemented for patients who require physical therapy and rehabilitation. The TCCN theory can be used to guide physical therapists to use technologies beyond their common functions, not merely for fixing illnesses and injuries but also for knowing persons as a whole.

3) Examining knowing patient as caring in physical therapy using Carper's fundamental ways of knowing.

This vignette is a fictional case example of Ms. A, illustrating the role of caring in physical therapy as reflected through Carper's fundamental ways of knowing (18), which include empirical, aesthetic, ethical, and personal knowledge.

Ms. A is a woman in her 70s with a right capsular hemorrhage that caused left hemiparesis.

Empirical knowing means that one must think in terms of em-

pirically verifiable, structural, and other non-structural aspects of human beings. The structural aspects of human being are biological, physiological, anatomical, neurological, etc. Rather than understanding human being in parts, it is important to understand human being as a whole.

Ms. A had a Computed Tomography (CT) scan that showing a hemorrhage focus from the right parabolic corona to the capsular and endoprosthetic posterior leg. Confirming this CT scan finding, the physical therapist utilized their knowledge of anatomy and other concepts. It was confirmed that the prognosis for motor paralysis of the lower extremities was good for injuries at the level of the radio corneal crown and that corticospinal tract injuries caused voluntary motor deficits. Since the patient had hemiplegia, evaluation charts such as the Brunnstrom Stage, Functional Independence Measure, and Mini-Mental State Examination were used to obtain details of the patient's physical, cognitive, and life functions.

Personal knowing is knowledge and attitude derived from personal self-understanding and empathy, for example by imagining oneself in the patient's shoes. Similar to the patient, the physical therapists offer their own experience, and a good relationship can be established through human interaction between the physical therapist and patient. In such a relationship, an alignment of physical therapy intervention priorities emerges between the physical therapist and patient. Ms. A's demand was that, at the beginning of the intervention, she hoped to be able to do everything around her by herself and go home, and she was very anxious about her future. During the course of physical therapy, the relationship with Ms. A deepened, and it became clear when she verbalized that the underlying reasons for her anxiety were "I don't want to be a burden to my husband" and "I can't imagine my life after leaving the hospital with paralysis." The physical therapist also shared with Ms. A about her experience of supporting similar patients from hospitalization to discharge. The physical therapist and Ms. A gradually agreed on the priorities for rehabilitation.

Ethical knowing is an attitude or knowledge derived from an ethical framework, including awareness of moral issues and choices. It is a judgment about whether a process or action in physical therapy is correct or incorrect.

The physical therapist was given an opportunity to reflect on the content of the rehabilitation he had provided, including the effectiveness of the interventions and their compatibility with Ms. A's needs. The physical therapist reflected ethically on whether her interventions were effective and matched Ms. A's needs.

Lastly, aesthetic knowing is used to grasp deep meanings and to perceive, feel, and sense. Aesthetic knowing includes recognizing the patient and their personal situation, as well as the totality of the situation. This knowing involves imagining what it would be like if the physical therapist themselves had left-sided hemiplegia. In other words, it is the ability to put oneself in the place of the person concerned and to experience their thoughts and emotions as if they were in their situation. It is necessary to appreciate the beauty of the relationship that has been created and the meaning of the relationship.

Through the above caring, the physical therapist gained a deeper understanding of the patient's background and forged a stronger relationship by putting himself in the position of the patient and her family. By demonstrating positive treatment outcomes during rehabilitation, the negative self-image that Ms. A had was modified. This led to Ms. A's increased motivation, acceptance of her disability, and positive goal-setting.

4) Considering knowing patient and quality of caring from the perspective of Donabedian's structure, process, and outcome

Donabedian (19) proposed using the triad of *structure*, *process*, and *outcome* to evaluate the healthcare quality. He argued that quality in healthcare can be measured to monitor and "assure" it. and explained that "Structure influences process and process influences outcome" (33, 34). Clinical reasoning has been defined as "a process by which the physical therapist, in interaction with the patient and significant others, structures meaning, goals and health management strategies based on scientific evidence, clinical data, client choices and professional judgment and knowledge (35). This process corresponds to Donabedian's process and is a quality indicator.

In this section, the quality of caring for patients undergoing physical therapy was evaluated through Ms. A's clinical experiences.

Structure

The vignette highlights several structural elements essential for caring for patients like Ms. A. Physical resources include CT scan facilities and evaluation charts such as the Brunnstrom Stage, Functional Independence Measure, and Mini-Mental State Examination. The physical therapy department itself is also a crucial component of the care setting. In terms of human resources, the physical therapist's demonstrated knowledge of anatomy, physiology, and rehabilitation techniques is evident, as is their ability to form a therapeutic relationship with Ms. A. While not explicitly mentioned, it can be inferred that organizational factors, such as systems for patient referrals, documentation, and discharge planning, are in place to support the overall care process.

Process

The process of care for Ms. A demonstrates a focus on both technical and interpersonal aspects. The use of standardized assessment tools and evidence-based interventions, as evidenced by the therapist's knowledge of corticospinal tract injuries, highlights the technical competence involved. Equally important are the interpersonal skills demonstrated by the physical therapist, including the development of a therapeutic relationship with Ms. A, active listening, and empathy. Moreover, the therapist's engagement in patient education and collaborative goal-setting with Ms. A emphasizes the importance of patient involvement in the care process.

Outcome

The vignette highlights positive patient-centered outcomes for Ms. A, including improvements in self-image, motivation, and goal setting, which are indicative of an enhanced quality of life. While not explicitly stated, it can be inferred that functional outcomes, as measured by the Brunnstrom Stage and Functional Independence Measure, were also achieved. To gain a more comprehensive understanding of the care provided, additional health service outcomes such as patient satisfaction, readmission rates, and length of stay should be considered in future evaluations.

Evaluation of the Quality of Caring in Physical Therapy

The care provided to Ms. A demonstrated several key strengths. The physical therapist's understanding and application of relevant research and evidence demonstrated a strong foundation in empirical knowledge. One of the major ways in which caring was communicated in this situation was through technological competency, a way of communicating respect for the person cared for as well as a way of caring for the discipline of physical therapy by being knowledgeable.

There are other "ingredients" of caring that could have been

described as alternating rhythms, where the physical therapist's thoughts shifted back and forth between empirical knowing, personal knowing, and ethical knowing.

According to Mayeroff (36), caring entails devotion, trust, patience, humility, honesty, knowing the other, respecting the primacy of the process, hope, and courage. Knowledge, for example, means being able to sense "from inside" what the other person or the self-experiences and requires to grow. Caring does not entail "being with" the other constantly:that is a phase within the rhythm of caring, followed by a phase of relative detachment (36). Caring involves trusting the other to grow in his or her own time and way. There is a lack of trust when guarantees are required regarding the outcome of our caring, or when one cares "too much." One who "cares" too much is not showing excessive care for the other so much as deficient trust in the other's process of growing (36).

Over the course of physical therapy, Ms. A's feelings became clear as Ms. A verbalized the underlying reasons for her anxiety. The physical therapist and Ms. A shared their experiences and built trust during the physical therapy.

Another is honesty, where the physical therapist shared his knowledge of the trajectory of other patients with similar challenges. Patience, another caring ingredient, was demonstrated here by both the physical therapist and patient. Hope is another ingredient that exemplifies caring as another way that caring can be exemplified by both the physical therapist and patient.

The physical therapist's focus on Ms. A's needs, goals, and preferences demonstrated the emphasis on patient-centered care. Building a therapeutic relationship fostered trust and open communication, enhancing the overall care experience. The physical therapist's engagement in ethical reflection on practice ensured a commitment to providing high-quality, morally sound care.

The ethical dimension governs the moral rationality from which caring actions are chosen and carried out in physical therapy practice, based on holistic understanding, truthfulness, and compassion as a normative basis that addresses the physical therapist's obligations to service, the vulnerability of people, and the population of the world (37). It is then through ethical standards that one understands what is good, what is desirable, what is right, and what must be done to preserve life, alleviate suffering, and promote health, based on the personal, institutional, and humanistic values of the profession.

In the same way, it is necessary to promote inter-subjective relations focused on practical-reflective work, so that moral responsibility and the values that guide professional action promote the well-being of the population through indicators that measure, contribute to, and guarantee the quality and warmth of humanized care (38, 39). The conviction that life has meaning corresponds to the feeling of being uniquely needed by something or someone and being understood and cared for. Mayeroff (36) concluded that the more deeply we understand the central role of caring in our own life, the more we realize it is central to the human condition.

To further enhance the quality of care provided to patients like Ms. A, several areas for potential improvement can be identified. More explicit data on functional outcomes would provide concrete evidence of the impact of interventions. Additionally, assessing patient satisfaction is crucial for understanding the patient's overall experience. Finally, exploring the impact of care on the patient's family can offer valuable insights into the broader effects of treatment. By addressing these areas, the overall quality of care can be significantly improved.

CONCLUSIONS

Caring in physical therapy is the practice of patient-centered care through deep engagement and emotional touch with the patient. Competency to use appropriate technology in the practice of patient-centered care is also required. Most importantly, during the physical therapy process, the patient should be understood empathically, and the treatment goals that fulfill the patient's dreams and hopes should be treated compassionately from the patient's and family's point of view.

The application of Dr Locsin's TCCN theory to physiotherapy allows for more practical, patient-centered care, and this theory provides caring-based undergraduate and in-service physical therapy education.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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AUTHORSHIP

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