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ORIGINAL ARTICLE

Thai nurses' experience of caring for persons with life-sustaining technologies in intensive care settings: A phenomenological study

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Summary Technological competency as caring in nursing is grounded in the viewpoint that health care technologies are used to know persons. This study described the experiences of eight Thai nurses caring for persons with life-sustaining technologies in adult intensive care settings. Using individual semi-structured interviews, Van Manen's hermeneutic phenomenological approach was used to analyse the data. Nine thematic categories formed the description of the experience of caring for. The experience of caring for is described as valuing competency to care despite differing insecurities in the use of technology. Influenced by relationships and compassion, the risk that technology prevented an appreciation of persons as wholes is embodied in the encouraging collaboration of fostering time to care regardless of being in a restricted space surrounded with technology. Locsin's theory of Technological Competency as Caring in Nursing serves as theoretical lens through which findings are discussed. These findings should assist nurses achieve quality human care in intensive care settings.

Introduction

Technologies are being increasingly developed and used in healthcare worldwide, especially in intensive care settings (Locsin, 2005). Since the early 1960s, nurses practising in intensive care settings have dramatically employed technologies in their nursing process of caring for critically ill persons to secure and sustain patient live (Barnard, 1997). Technologies are tools used to know persons as participants in their care (Locsin, 2005). Critically ill persons dependent on technologies are often seen as objects of care. Thus the vital challenge for nursing in intensive care settings is to use technologies competently and harmonise technology, nursing and human care (Locsin, 2005). Current literature suggests that few studies have directly addressed this challenge (Almerud et al., 2007; Almerud et al., 2008; Crocker and Timmons, 2008; Haghenbeck, 2005; McGrath, 2008; Wikstrom et al., 2007). Such studies provide opportunities to understand the meaning of human caring with technology and nurses' feelings, perspectives and techno-

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logical competence. These studies also show that different countries, with their varying systems of care and culture, may have different viewpoints regarding technology, caring and nursing.

In Thailand, demands for high-tech care have promoted the use of technologies in intensive care settings. Nonetheless, the literature contains few studies that explore the experience of technology and caring by family caregivers in medical units and of patients in respiratory care units. The experiences of Thai nurses' in critical care caring for patients with life-sustaining technologies are not well researched.

In the theory *Technological Competency as Caring in Nursing* (Locsin, 2005) two phenomena were identified as integral determinants for using theory in research and practice. These are: *being cared for* and *caring for*. The former is focused on the experiences of the one nursed, the latter on the nurse. The necessity of these phenomena is highlighted by the relationship existing between them as critical aspects in the appreciation and use of the theory. This study focuses on the nurses' experience of *caring for* persons with life-sustaining technologies in the intensive care settings in south Thailand. Understanding this experience fosters the development of innovative strategies and interventions to assist the nurses attain and maintain their competency of human care in high-technological settings.

Review of literature

Historically, most studies centred on exploring nurses' experiences in caring for persons using technologies in intensive care settings and undertaken in the United States of America (USA), South America and in Europe (Almerud et al., 2008; Crocker and Timmons, 2008; Haghenbeck, 2005; Lindberg, 2006; McGrath, 2008; Nascimento and Erdmann, 2009; Wikstrom et al., 2007).

Haghenbeck (2005) explored critical care nurses' experience when technology malfunctions in the USA. Seven nurses with at least three years of experience in adult Intensive Care Units (ICUs) participated. Using Colaizzi's phenomenological approach for analysis, the findings showed that nurses experienced anger, frustration, distrust, surprise and shock when technology malfunctioned. They questioned their own competence, thinking that malfunctioning technology would adversely affect their professional image.

A study carried out in Brazil described dimensions of human caring in intensive care units of a teaching hospital. The experiences of healthcare professionals, clients and their family members were studied by using a phenomenological approach. Dimensions of care that emerged included: self-care; care as an individual value; professional versus informal care; care as supportive relationships; care coupled to technology; loving care; interactive care; care as act/attitude; care practice; educative care; dialogical relationship; non-care; care ambience; the essence of life and profession; and the meaning/purpose of care (Nascimento and Erdmann, 2009).

Three Swedish studies were found. Almerud et al. (2008) studied the meaning of giving care in a technologically intense environment from the experience of eight nurses and two physicians. Three themes emerged from the interviews: mastery or servitude through technology; security and insecurity; and making the human technological and technology human. Wikstrom et al. (2007) drew out the meaning of technology in an intensive care unit using 12 intensive care staff members. These included registered nurses, enrolled nurses and anaesthetists. Qualitative analysis brought out three main themes and sub-themes. The main themes were: technology is decisive; technology is facilitating and technology is complex. Another Swedish study used a phenomenographic approach to describe the experiences of intensive care nurses to focus on competence in critical care in relation to technology. This entailed disregard the technology and not letting 'technology conceal the patient' and 'daring to let go of the protocol' (Lindberg, 2006, p. 79).

In Ireland, McGrath (2008) used Heidegerian phenomenology to explore 10 critical care nurses' experience of caring in technological environments. Nurses realised that they worked in depersonalising environments and attempted to create an environment for the patients and families that made them feel at home. The nurses understood sharing knowledge, expertise and support in technological competence was crucial. Nurses also stated that depending on technologies when caring brought them closer to the patients and their families. Thus, the nurses were linked emotionally with their patients and families. The emotions included uncertainty, suffering and acceptance.

In England, Crocker and Timmons (2008) used an ethnographic approach to explore the meaning and practice of technology for critical care nurses. Twelve nurses with varied grades and experience participated in the study. The findings pointed to definitions of medical technology, technology transfer, technology transformation and nursing technology. Whilst these studies in different countries explored the critical care nurses' experience involving technology and caring, the purpose and focus of each study was different. Furthermore, the meaning of nurses' experiences of *caring for* persons using life-sustaining technologies in intensive care settings requires more descriptions.

A few related masters' studies in Thailand are available. Drayon (2008) explored the experiences of patients being weaned from mechanical ventilation in a respiratory care unit. Netsawai (2004) and Preyawanich (2005) each focused on the experiences of family caregivers participating in caring for patients with mechanical ventilators in medical wards. It is clearly evident that further studies are needed to explore knowledge of caring for persons with life-sustaining technologies in Thailand.

The theory of Technological Competency as Caring in Nursing

Technological Competency as Caring in Nursing (Locsin, 2005) is a complex theory grounded in *Nursing as Caring* (Boykin and Schoenhofer, 2001). This theory views technology and caring as coexisting harmoniously in nursing practice. Four of the five assumptions in the theory provided perspectives influencing the understanding of the experience of Thai intensive nurses *caring for* persons with life

sustaining technologies in ICUs. The theory assumes the following:

- Persons are caring by virtue of their humanness. This assumption underscores the understanding that all human beings are caring. Consequently caring expressed in nursing is the substantive focus of the discipline rather than an act or emotion one may portray towards another person. In this assumption, 'persons are caring' is studied as integral to the practice of nursing.
- The ideal of person wholeness is a philosophical perspective, influencing the recognition of human beings as persons, complete beings, regardless of composite parts. This ideal allows the nurse to focus nursing as shared lived experiences between the nurse and the person being nursed, rather than on 'fixing' the person or making good the person's deficiencies or missing 'parts.'
- Knowing persons is a continuous process in which the nurse and nursed focus on appreciating, celebrating, supporting and affirming each other. Mutually knowing each other mutually recognises persons as participants in care, instead of as aspects and objects of our care.
- Technologies of health and nursing are aspects of care that enable nurses to know human beings more fully as persons who participate in their care, rather than simply recipients of our care.

Purpose of the study

The purpose of the study was to describe the meaning of the experience of Thai nurses *caring for* persons with life-sustaining technologies in intensive care settings.

Methodology

Design and setting of the study

A qualitative research design was used for the study, informed by a hermeneutic phenomenological approach. It took place in Hat Yai, Songkhla, in southern Thailand in 2009. The settings of the study were the adult medical and surgical ICUs in a university hospital. Nurses were recruited as participants. In these units, invasive and non-invasive medically advanced technologies were used to monitor and sustain patients' lives. Portable hemodialysis machines were used often at the patients' bedside and monitored by intensive care nurses. Each nurse is normally assigned to provide bedside nursing care for two patients.

Ethical considerations

Institutional Review Board, Human Subjects Committee approval was secured. Prior to participation, a detailed description of the study and the associated procedures were explained to participants. Each participant signed an informed consent form and received a copy. The participants' real identities were not used in data storage and reports.

Descriptions of participants

Eight professional nurses with experience of ICUs participated. All met the inclusion criteria. These specified: experience in critical care nursing for at least one year; experience of caring for persons dependent on technologies when in intensive care; ability to describe the experience of caring in ICUs and willingness be interviewed. The participants were aged 27—43 years (mean 36 years). All were women and Buddhists. Five participants had a baccalaureate degree, whilst three had master degrees. Working experience in ICUs ranged from 5 to 22 years (mean 14 years). Five participants were working in medical ICUs and three in surgical ICUs.

Data collection

Purposeful selection method was used and participants identified by personal contact and word-of-mouth. The researcher's ICU experience proved useful in recruiting participants who were contacted and invited to participate in the interviews. Data collection was discontinued after eight participants as no new information was added.

Interviews were arranged by mutual agreement and conducted in suitable, congenial locations such as in private homes, hospital areas outside the ICUs or the researcher's office. Individual interviews were conducted in Thai using the following interview questions:

- Please tell me about your experience(s) of caring for persons who depended on technologies whilst they were in intensive care.
- What is it like to be a person who has cared for patients who depended on technologies whilst in intensive care?
- Tell me what you felt when you were caring for persons who depended on technologies whilst they were in intensive care?

Each interview was from 60 to 90 minutes and was recorded on audiotape, and each given a code number. To analyse the data, audiotapes were transcribed verbatim in Thai and later translated into English. All translations were done by the researchers and validated by two bi-lingual nursing professors proficient in both Thai and English.

Data analysis

Van Manen's (1990) hermeneutic phenomenological approach was used to analyse the data. Narratives were translated and analysed. Words, phrases and statements that described the experiences of nurses *caring for* persons with life-sustaining technologies in intensive care settings were highlighted and identified. These were isolated thus forming themes reflecting nurses' experiences. All essential themes were reflective of Van Manen's (1990) four lived worlds: *spatiality* or lived space; *corporeality* or lived body; *temporality* or lived time and *relationality* or lived relations:

- Corporeality provides descriptions of the body relative to the phenomenon.

- Relationality is the relatedness expressed between the nurse and nursed.
- Temporality is lived time that fosters the appreciation of the movement of time concerning the experience of the phenomenon.
- Spatiality describes the experience relative to the phenomenon, expressed as distance/space between the nursed and the one nursed.

Rigour of the study

Lincoln and Guba's (1985) criteria used to establish the rigour of this study included, credibility, transferability, dependability and confirmability. Credibility was sought by recruiting and interviewing participants able to describe their experience of caring for persons using technologies. Transferability or ''fittingness'' was established by providing rich in-depth descriptions depicting the nurses' lived experiences. Dependability or auditability was demonstrated by another researcher following the process of the study without contradicting the findings. Confirmability was accomplished through the researcher using audit trails to demonstrate thought processes adhering to the descriptions.

Findings

Nine thematic categories reflecting the four lived worlds provided the structure for describing the experience of nurses *caring for* persons with life-sustaining technologies in ICUs in Thailand. Each of these lived worlds has one to three thematic categories within their themes (Fig. 1).

Corporeality (Lived Body)

Thematic category: insecurity over competency with technologies

The thematic category of *insecurity over competency with technologies* refers to descriptions of the experiences of nurses. These included 'doubting one's technological competence' and 'fear and stress over incompetence' as they cared for persons using life-sustaining technologies. Insecurity usually concerned not knowing a technology and increasing responsibility for knowing the technologies in order to care for the critically ill person. Not knowing the technologies of care refocuses the nurses' prime attention from the patient to the technologies. Because participants are not confident in their use of technologies this affects patients. Nurses trust their own technological competence less, thus enhancing the participants' fear, stress and insecurity over technologies' use.

Such a situation usually occurs when participants use new or unknown technology. In this study, the participants felt fear and stress about using unfamiliar technology as it might cause harm by complicating and endangering patient's lives.

> Working in the ICU for the first time we felt fear — afraid since we didn't know the machine technologies. Even now, if we have to use a new technology, we still feel worried to use it. If we don't know the technology, we couldn't use it well. When the machine has some problems, we don't know and then it might be harmful to the patient and might make the patient get worse and might die. [Participant 2]

Thematic category: differing appreciation over use of technologies

Contradictory feelings are frequently experienced regarding using technologies to sustain persons' lives who are medically without hope. The participants thought using such technologies for hopeless medical situations caused more suffering. However, participants realised that it was not their responsibility to direct family members to withdraw technologies prolonging a dying person's life.

> A terminally ill patient who was a post arrest case used ventilators for 72 hours, even when the patient's brain activities were considered flat. But the doctor and family were hopeful and continued to provide full treatments using technologies. Why don't we advise the family to let go, when the patient's life is only dependent on technologies, when in the end, the patient will eventually die? [Participant 5]

Another participant pointed out:

> High technology was used to prolong a patient's life although his condition was hopeless. His heart was not functioning as it should. We inserted IABP [Intra Aortic Balloon Pump] to extend the patient's life and wait for the family. We don't know whether or not extending the patient's life was making him/her suffer more. [Participant 7]

Thematic category: valuing technological competency as caring

Participants perceived intensive care competency as most significant in their care for the patients using life-sustaining technologies. Competency was identified as having the skills, knowledge and experiences needed for effectively using technologies for care. Participants are expected to set up and control the technologies to sustain the patients' lives. They must be able to prevent and detect patient problems and complications when using technologies, and deal with associated problems:

> When the patients need life-sustaining technology, we must care for them as best we can. We have to monitor the [patient] changes all the time. We have to know the mode of ventilatory care the patient receives — does the patient depend on it 100% or not? We have to care for the technology by checking the parts. [Participant 3]

Participants were expected to be competent in the use of technologies of care and to be competent ICU nurses. Proficiency with technologies was seen as an expression of caring in their practice.

> We are expected to manage technologies for monitoring. Therefore, we must be able to provide better care to those who don't have technologies. Sometimes, we are expected to know the machine technologies simply because we are senior nurses, but sometimes, we are just like the new nurses — we may not know the new technologies either! [Participant 8]

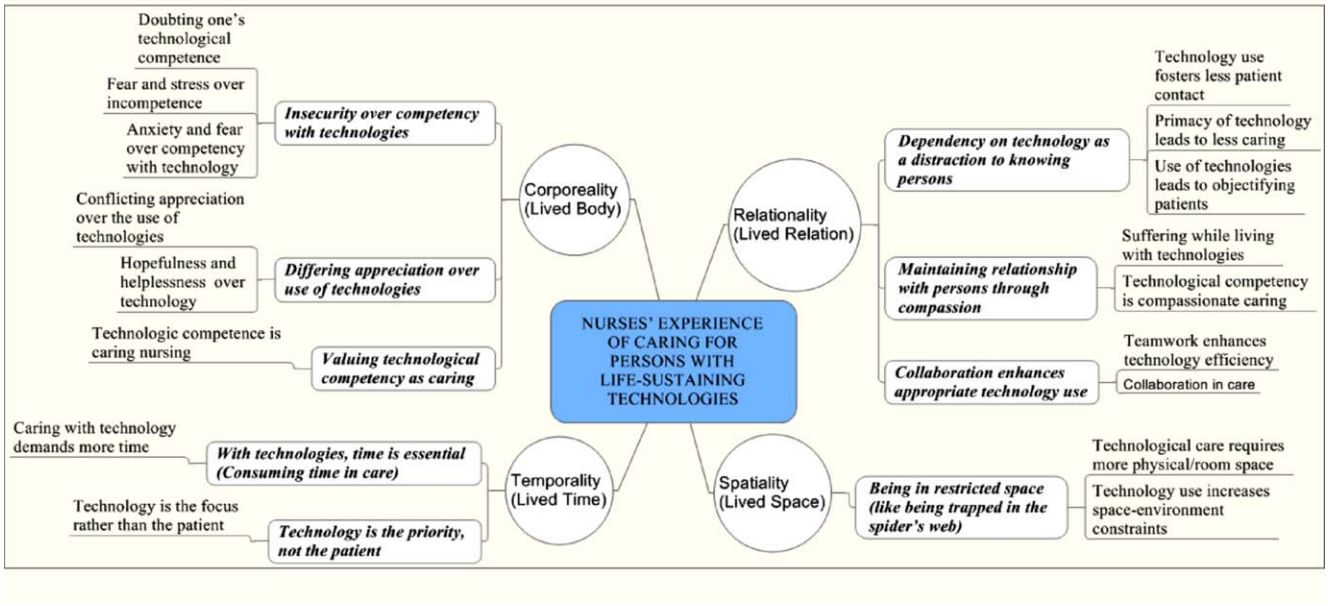

Figure 1 Thematic categories and themes in the lived worlds of Thai nurses caring for persons with life-sustaining technologies in ICUs.

Furthermore, technological competency included getting patients to accept technologies and be partners in their care. A participant stated: ''Competency is making the patient collaborate with us to use the ventilators or the technologies.''

Relationality (Lived Relation)

Thematic category: dependency on technology as a distraction to knowing a person

Participants thought using technology distracted their ability to connect with or relate to their patients. Three statements support this thematic category of *dependency on technology as distraction to knowing persons*. These are: 'using technology fosters less patient contact'; 'primacy of technology leads to less caring;' and 'knowing patients through technological competency.'

> When there are many technologies used for the care of the patient, we touch the patients less. We touch their heart and their body less. If we have fewer technologies, we will care less for the technologies and care more for the patients. We will have time to talk to the patients and know them — about their happiness and suffering. [Participant 1]

Another participant regretted focusing on technologies rather than establishing quality nurse-patient relationships.

> Technology assists us to know the patient more and be with the patient more but we may not be more interested in really knowing the patient. We stand at the patient's bed most of the time but we may talk less. Sometimes, we come to record the [data about the patients from the] machines and then leave. Sometimes the patient is waiting for our eyes but our eyes don't look at the patient. [Participant 8]

Worrying about complex life-sustaining technologies led to neglecting knowing the person as whole person. The patient was seen as an object.

> It makes us worried about machine technologies. Sometimes, we forget the patients. Instead of seeing the patient, we worry about why the machine alarm is on. Maybe it is the hose, clogged lines or disconnected lines. It is like there is no patient — the patient is an object. Sometimes, we can't have time to turn our faces to talk to the family. We have to excuse ourselves because we have many machine technologies to focus on which could affect the patient's life. When some things go wrong, we worry more about the machines. [Participant 6]

Thematic category: maintaining relationship with persons through compassion

Compassion is vital to maintain relationships with persons who are dependent on technologies. Technological competency involves compassionate caring. The participants realized and focused their desires to be with and practice nursing of persons with life-sustaining technologies: ''Most patients in ICU depend on ventilators and are difficult to wean. We must use our compassionate understanding, empathy and kindness in order to care for them.'' [Participant 5]

In addition:

> We empathise when the patients are dependent on machine technologies. These machines make the patients suffer. For example, with intubations — the endotracheal tube in the patient's throat is painful. We understand the patients' situation. We feel their pain. [Participant 2]

Thematic category: collaboration enhances appropriate use of technology

Collaboration is valued by the participants. It is crucial when caring for persons with life-sustaining technologies in ICUs. The participants enter and maintain relationships with the patients (the nursed) and their families in order to help the patients live with technologies safely and comfortably. Collaboration in care involves inter-relationship between the patients, their families and the healthcare team. Patients' collaboration in their care occurs through acceptance of technologies as necessities and knowing their benefits.

> We want the patients to accept and understand the technology. We want them to collaborate with us, not to discontinue use of the technologies, like pulling off the double lumens for hemodialysis. If they don't know what it is, they will instinctively want to remove it from their body. However, if they know that the technologies are necessary to make them get better, they will take care of it instead. [Participant 2]

Families are expected to be involved in caring for loved ones. Family members can collaborate with caring for patients: ''If the families understand, they will talk to the patients. The patients will collaborate more.'' [Participant 6]

Teamwork counts in caring for persons with life-sustaining technologies in ICUs. Nurses must help each other to care for the technologies and care for the persons with the technologies: ''Caring for patients with technologies is teamwork. We can't adjust to technology solely by ourselves. We need and depend on a doctor.'' [Participant 7]

Temporality (Lived Time)

Thematic category: with technologies, time is essential (consuming time in care)

Involving technologies in care meant participants demanded more time for caring for persons. This was because participants had a responsibility to care for both persons and technologies. As a participant stated ''It is like we spend more time to care for the patients with technologies than for the other patients.'' [Participant 1]

Furthermore:

> It is like when we come to care for the persons with technologies, we need to have double the time needed to care for a patient without technology. But in reality, this can't happen because time is limited especially in intensive care settings with multiple high-tech machines. [Participant 7]

Thematic category: technology is the priority, not the patient

Participants asserted that technologies, not patients, became their focus. Technician's role was required especially when there were problems with machines. Frequently participants forgot to focus on nursing:

> When the machines give alarms, we come to see the machines. Some patients are fearful and look at us in order to know what is happening. But the alarm sound is common for us. The patients and their families may be fearful of the alarms. Sometimes we forget about the patients and don't concern ourselves to explain the reason for the alarms. [Participant 8]

It was not that the participants were not concerned about or able to care for patients. The participants communicated caring by being with, touching and talking to the patients. However, when preparing technologies for use in care, technological competency becomes the priority:

> We provide care with knowledge. We don't observe only the technologies. We observe the patient, hold the patient's hand, and talk to the patient. Often we worry about preparing the equipment and things and forget about the patient. [Participant 6]

Spatiality (Lived Space)

Thematic category: being in a restricted space

The participants described their experience of caring for persons with life-sustaining technologies in relation to space as 'being in a restricted space.' The area for providing care becomes cluttered with machines; with all the lines and tubes space becomes limited. At times participants feel trapped with insufficient room to provide care:

> The area is small. Many machines and technologies are at the patient's bed area often appearing as traps — like a spider's web. To adequately care for the patient, the environment needs to be neat especially before the family arrives when they come to visit. [Participant 1]

The multiple wires and tubes that connect a patient's body to the machines become like a spider's web covering the patient's body:

> High tech machines restrain the patients. Instead of caring for the patients, we are now caring for the [technological] environment. Many connections (technological) on the patient's body are like a spider's web. [Participant 7]

Discussion

Corporeality (Lived Body)

The thematic category 'insecurity about competency with technologies' confirms Haghenbeck's study (2005) in which nurses expressed distrust and doubt about their competency with technologies. The current study also found similar insecurity. This occurred when nurses used new technologies or lacked the knowledge and skills to use them. This concurs with Almerud et al.'s (2008) Swedish findings. However, Wikstrom et al. (2007) found that ICU nurses felt insecure when different types of technology showed varying measurement values. Nevertheless these nurses also described new technology as complicated and 'scary' (Wikstrom et al., 2007) as did nurses in this current study. Pang and Suen (2008) surveyed stressors in ICUs in Hong Kong using The Intensive Care Unit Stressor Questionnaire (ICU-CSQ). One stressor they found was using strange technologies. Fifty-four nurses rated this stressor highly. This supports that nurses experience fear and stress about their incompetence with new and unfamiliar technologies.

The second thematic category 'differing appreciation over use of technologies,' is related to feeling frustration (Haghenbeck, 2005). This experience occurred when nurses used technologies to prolong persons' lives in their final stages of life. Participants experienced moral distress when withholding or withdrawing life-sustaining technologies. Decisions about a patient's life in intensive care often fall on physicians and family members. The nurse participants could not exercise control over using technology to support or end life. Barnard (1997) asserted that when nurses understood technology as a source that could be used and controlled, technology was separated from social, political, cultural and moral aspects of care.

Another thematic category within the lived world of corporeality is 'valuing technological competency as caring.' This finding accords with Almerud et al. (2008) who found that valuing technological competency is the ability to master technologies effectively in caring. Lindberg's (2006), however, described competency in relation to the ability to disregard the technology.

The lived world of corporeality amongst nurses *caring for* persons with life-sustaining technologies is related to Locsin's theory about the concept of competency. Technological competence is the intentional and authentic presence of the nurse using technology as a caring person in order to know the nursed more fully. The thematic category of 'valuing technological competency as caring' revealed competency as focusing more on the nurses' practical expertise with technologies. Nurses also described competency with technologies as the ability to get patients to be *partners* in their care. This finding can also be explained through the lens of the theory of *Technological Competency as Caring in Nursing* (Locsin, 2005). Thus, the nurses' competency with technology is knowing persons, through life-sustaining technologies, as a whole. Therefore they become participants in their care rather than as objects of the nurse's care.

Relationality (Lived Relation)

In the lived world of relations are two thematic categories. These are 'maintaining relationship with persons through compassion' and 'collaboration enhances appropriate technological use.' These distinct descriptions are similar to those of McGrath (2008). These categories affirm that nurses connect closely with patients when they understand them well, and share their feelings of suffering. These findings identify the significance of sharing knowledge, expertise and support when using technologies in caring.

Another thematic category in the lived world of relationality is 'dependency on technology distracts from knowing persons.' Trusting technologies too much ran the risk of forgetting patients (Almerud et al., 2008). Performing distracting hurried activities may be termed non-care (Nascimento and Erdmann, 2009). In this current study participants had to give a part of their time to technologies that were vital to patients' lives. They had to protect the patients from complications or harm arising from their technological errors.

Participants used technologies to monitor changes in vital signs in patients. Nascimento and Erdmann (2009) also established that care featuring dialogical relationships was a dimension of human care in ICUs. Engaging in conversation with clients brought about understanding, affection, respect and perception of the clients' feelings. When providing care, caregivers not only gained technical-scientific advantages but further understanding of human beings. Concern for technologies along with the clients is recommended in caring (Nascimento and Erdmann, 2009). Communicating is significant in nurses' caring for critically ill patients. However, Alasad and Ahmad (2005) found in Jordan that intensive care nurses could disregard communicating with patients, especially those unconscious or unable to communicate. They observed that nurses felt frustrated and did not gain from one-way communication. They further explained that to be close to the patients in technologically intense environments is simply being there — touching them in a practical sense even if not reciprocating.

Within the theory of Technological Competency as Caring in Nursing (Locsin, 2005) there is one assumption that provides relevance to this lived world of relations. This deals with a knowing person 'a process of nursing in which technology is used to know persons as wholes, moment to moment.' Nurses thus used technologies as ways to know persons more fully as persons (Locsin, 2009; Locsin, 2010). Compassionate care provides unique opportunities to enable nurses to know the nursed more fully as persons. However, technological dependence can promote a harmonious coexistence between technology and caring in nursing (Locsin, 1995). This becomes mutual knowing in the moment between the nurse and the one nursed as whole persons.

Temporality (Lived Time)

In this study, the findings of lived time included two thematic categories. These are 'with technologies, time is essential (consuming time in care)' and 'technology is a priority, not the patient.' These findings suggest that time is critical in intensive care practice. *With technology, time is essential* can be seen as the crucial actions participants undertake to sustain patients' lives. An example is the use of a portable hemodialysis. Nursing time was used in recording frequency of vital signs and fluid output, including managing the intake of fluids. Participants used manual skills to control the technologies. However, if technologies are not complicated and are highly effective, little nurses' time is taken up. Nurses thus have more time to care for their patients. In Sweden a hospital had a well-programmed dialysis machine that required little time to use. Nurses in this ICU thought that technology decreased their work-load (Wikstrom et al., 2007).

An assumption in Locsin's theory (2005) seems to relate well to the time lived between the nurse and the one nursed. Locsin (2005) views time as in the moment, a viewpoint that is grounded in the theory of Nursing as Caring (Boykin and Schoenhofer, 2001). This perspective values time as in the present and perceives time as continuing. Locsin (2005) described human beings as unpredictable and responsive to momentary human changes. Locsin's theory clearly delineates a differing conception of 'technology is a priority, not the patient.' Technology enables knowing persons more fully

as caring persons from moment to moment (Locsin, 2005).

Technology may be used to know persons more fully. But the dilemma of technology as a priority rather than the patient makes it a priority in the aforementioned thematic category. Locsin and Purnell (2007) have addressed this dilemma. They described the role of technology in nursing practice, whilst at the same time identifying the contrast whereby nurses are forced to be dependent on technologies for care.

Spatiality (Lived Space)

One thematic category reflected within lived time is 'Being in a restricted space.' McGrath (2008) described the environment when using technologies in intensive care settings as 'an alien environment,' which is a depersonalising environment. This current study indicates that nurses find life-sustaining technologies limiting in the ICU space; this differs from McGrath's (2008) depersonalising environment. O'Keefe-McCarthy (2009) described space with technologies in ICUs as social space in which technology mediates nurse-patient encounters and impedes the nurses' moral agency. In this Thai study the intensive care nurses' descriptions of technology convey a sense of physical space. Almerud et al. (2008) described space in a technologically intense environment as a space with distance-closeness relationships between caregivers and patients. This is a non-reciprocal closeness. This is not personal closeness as technology is thus used to gain knowledge about patients. McGrath's (2008) study also described space in technological environment as reciprocal closeness. Intensive care nurses and patients and family members connect and share emotions in this space.

Conclusion and implications of the study

This study explored the lived worlds of intensive care nurses within the four lived worlds and through the lens of the *Theory of Technological Competency as Caring in Nursing* (Locsin, 2005). The findings provided descriptions of the lived experience of **caring for** persons with life-sustaining technologies in intensive care settings. This experience is described as *valuing competency to care despite differing insecurities in the use of technology. Influenced by relationships and compassion, the risk that technology prevented an appreciation of persons as wholes is embodied in the encouraging collaboration of fostering time to care regardless of being in a restricted space surrounded with technology*. To attain and maintain the quality of human caring amongst persons with life-sustaining technologies, it is necessary to provide support and assistance for nurses who practise in critical care settings. The following recommendations are offered.

Nursing practice

Senior personnel responsible for hospital policy should develop policies to support adequate ICU nursing staff and provide appropriate technological environments. Those at the management level need to provide opportunities for nursing staff to reflect on their practice in order to render appropriate care that is grounded in caring nursing. Such practice can be informed by the lived experiences of nurses who are caring for persons who are dependent on life-enhancing technologies.

Nursing education

Nursing organisations or schools responsible for nursing education should jointly implement continuing education classes to enhance nurses' technological competency. The focus should be appreciating persons as whole and complete in the moment. The framework for such critical care courses should be Locsin's (2005) theory of *Technological Competency as Caring in Nursing*.

Nursing research

Further research should be undertaken into the phenomenon of *being cared for,* focusing on the experiences of persons depending on life-sustaining technologies in intensive care settings. The findings of this study could be used to develop an instrument to measure *caring for* persons with technologies.

Limitations

The participants in this study had experience in ICUs of between five and 22 years, with a mean of 14 years. To understand such experience more fully, further study of nurses working in ICUs during their first five years of practice is strongly recommended.

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1. ชื่อเรื่อง Thai Nurses' Experience of Caring for Persons With Life-Sustaining Technologies in Intensive care Settings: A Phenomenological Study. ผู้เขียน Waraporn Kongsuwan and Rozzano Locsin โดยได้รับการตอบรับให้ตีพิมพ์ ในวารสาร Intensive & Critical Care Nursing เมื่อวันที่ 22 ธันวาคม 2553
2. ชื่อเรื่อง Knowing the Occasion of Peaceful Death in Intensive Care Units in Thailand ผู้เขียน Waraporn Kongsuwan, Rozzano Locsin, and Savina Schoenhofer โดยได้รับการตอบรับให้ตีพิมพ์ ในวารสาร Nursing and Health Science เมื่อวันที่ 4 มกราคม 2554

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