

RESEARCH ARTICLE

Evidenced-based practice of decision-making process in oncofertility care among registered nurses: A qualitative study

Ching-Ting Lien¹  | Sheng-Miauh Huang²  | Yi Hua Chen²  | Wen-Ting Cheng¹ 

¹Department of Nursing, MacKay Memorial Hospital, Taipei, Taiwan

²Department of Nursing, Mackay Medical College, New Taipei City, Taiwan

Correspondence

Sheng-Miauh Huang, Department of Nursing, Mackay Medical College, No. 46, Section 3, Zhongzheng Road, Sanzhi District, New Taipei City 252, Taiwan.
Email: r910862@yahoo.com.tw

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Abstract

Aim: The purpose of our study was to construct the context of the nursing action/role in oncofertility care.

Design: Qualitative research.

Methods: We applied grounded theory to guide the qualitative study. Data were collected through in-depth interviews with 12 nurses in Taipei. The data were collected from August 2018 to February 2019.

Results: The core theme that described the role of nurses' decision-making in oncofertility care focused on understanding oncofertility from the self to the other. Care roles or actions in oncofertility that involved the process of psychological cognition were divided into four dimensions: perceiving the patient's changes and needs, triggering the self's emotions, empathizing with patient's situations and introspective care roles. Nurses who had experienced the phase of empathizing with the patient's situations developed more diverse roles and had positive actions toward oncofertility care. Based on the psychological changes for oncofertility decision-making process, implementing contextual training in oncofertility could help nurses create more positive actions in oncofertility care.

KEYWORDS

cancer, decision-making, fertility preservation, nurses, nursing, oncofertility, pregnancy

1 | INTRODUCTION

Cancer-related treatments, such as high-dose chemotherapeutic agents, radiation to the abdomen and surgical resection of reproductive structures can decrease the likelihood of having biological children in cancer survivors (Levine et al., 2015). The possibility of infertility should be addressed as early as possible before treatment starts by healthcare providers caring for adult and young patients with cancer (Casey et al., 2014; Raphael et al., 2015). Goals and current guidelines for fertility preservation options for people with cancer are recommended by societies, such as the American

Society of Clinical Oncology and The Korean Society for Fertility Preservation (Kim et al., 2017; Oktay et al., 2018). Embryo or oocyte cryopreservation is a standard option for fertility preservation among women, whereas sperm cryopreservation is effective for men (Kim et al., 2017; Okta et al., 2018). Ovarian stimulation including double stimulation and freezing of oocytes is the best-established therapy for preserving the chances to have a live birth (von Wolff et al., 2018). Tissue freezing of both ovarian and testicular tissues is considered experimental (Kim et al., 2017; Oktay et al., 2018). However, the choice of technique needs to be based on the woman's age, time limitations, risk, efficacy and the individual preferences of

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the patient. This discussion should take place as soon as possible after cancer is diagnosed.

In 2013, the American Society of Clinical Oncology extended the duties of oncofertility care for reproductive-age patients with cancer (Loren et al., 2013). The multidisciplinary team approach in oncofertility care has been adopted in several subspecialties, such as reproductive medicine, oncology medicine and nursing. Healthcare professionals involved in oncofertility have gradually accepted and designed a model for prioritizing oncofertility service development in reproductive-age women with cancer (Anazodo et al., 2019; Wang et al., 2020). Nurses are expected to offer fertility preservation counselling and education for reproductive-age patients with cancer, but there were significant gaps in current practices and perceptions of roles about fertility preservation counselling among Registered Nurses (Hendershot et al., 2016; Keim-Malpass et al., 2018).

1.1 | Background

A previous study showed that 61% of childbearing-age women with cancer had ever accepted consultation on the risk of cancer treatment and fertility. However, only 4% pursued a fertility preservation option (Letourneau et al., 2012). Several barriers to fertility preservation remain, including professional, patient and institutional factors about the provision and receipt of fertility-related information (Fabi et al., 2019; Ronn & Holzer, 2015). A survey in Italy showed the health providers had low interest in their patients' infertility problems, which led to poor referral of patients to fertility preservation centres (Fabi et al., 2019). In the Netherlands, one-third of oncology nurses had sufficient knowledge of fertility preservation and more than one-fourth of oncology nurses never discussed it with patients (Krouwel et al., 2017). Although Dutch clinical nurses mentioned fertility preservation was important for young women with cancer, it was outside the scope of their practice to provide this education (Keim-Malpass et al., 2018). In addition to a lack of knowledge and training in fertility preservation, a poor prognosis and lack of time were the reasons for not discussing fertility preservation (Goossens et al., 2014; Krouwel et al., 2017). Significant gaps in nursing practices exist in oncofertility care.

The decision-making process in fertility preservation is often explored by patients at the initial time of cancer diagnosis (Huang et al., 2017; Komatsu et al., 2018), but there are different opinions on the amount of fertility information required at this diagnosis and what should be included of all before and after treatment fertility options between patient and provider participants (Speller, Sissons, et al., 2019). Decision-making is a crucial daily nursing activity (Tabak et al., 1996). When nurses are in a cure-directed treatment culture, they may be unable to persist the caring values (Jerpseth et al., 2017). Nursing roles could be determined by unit routines, physician practices and preferences and their self-confidence in supporting decision-making (Strachan et al., 2018). When nurses' decisions involving some level of uncertainty that require moral reasoning or values-based judgement, empathy and ethics are

connected and both play a vital role in the decision-making process (Adams, 2018; Barlow et al., 2018). Informed consent is the premise of the decision-making process. As options in oncofertility have become more selective, understanding the decision process in the care role leading to oncofertility decisions in the context of cancer and related treatments is imperative. Passive or active action about oncofertility care provided by nurses could depend on their psychological changes. Currently, there is no comprehensive theoretical understanding of the psychological changes for decision-making about fertility care among Registered Nurses. Therefore, the purpose of this research was to provide a theoretical model of the decision-making process for oncofertility care, whether passive or active action results among Registered Nurses in Taiwan.

2 | METHODS

2.1 | Aim

The purpose of this research was to explore how nurses experienced the decision-making process for providing oncofertility care.

2.2 | Design

This study was intended to provide an understanding the decision-making process about whether to provide the oncofertility care from the perspective of Registered Nurses in Taiwan. Grounded theory is useful in integrating the individual perspectives and generating substantive theory (Strauss & Corbin, 1998). It suggests that reality exists in the meaningful social actions of individuals, which are created through interpretational interactions (Corbin & Strauss, 2008). Oncofertility care exists the interaction between nurses and cancer patients. Hence, the grounded theory methodology was applied to explore how nurses described oncofertility care when approaching reproductive-age patients with cancer, how they reached the decision to provide oncofertility care or not and whether they provided positive action in oncofertility care. We applied theoretical sampling to identify and follow clues from the analysis, fill gaps, clarify uncertainties, check hunches and test interpretations as the study progresses (Chun Tie et al., 2019).

2.3 | Study participants

Nurses (minimum 20 years of age) who had ever cared for patients of reproductive age with cancer and worked in an oncology-related unit for at least 3 months and who made decisions to provide oncofertility care and who could communicate in Chinese were included in the study. New nurses who had worked less than 3 months were supervised by senior nurses. Therefore, we excluded the new nurses from the study to avoid the impact of the decision-making process of oncofertility care by others influencing the decisions of new nurses.

Based on grounded theory, the sampling strategy followed the principles of theoretical sampling (Strauss & Corbin, 1998). Open sampling was applied to recruit Registered Nurses who fit the inclusion criteria. Nurses who ever asked the fertility needs before the patient mentioned the fertility issue would be assigned to positive-action group. We interviewed those nurses to decide its initial attributes. Then, reverse cases were recruited (nurses who provided passive behaviour in oncofertility care) to distinguish the differences between Registered Nurses who decided to provide positive oncofertility action and those who provided conservative oncofertility care and to determine the theoretical domains, attributes and dimensions of the decision to provide oncofertility care or not. Nurses's decision-making is influenced by building trusting relationships with patients and medical colleagues (Nibbelink & Brewer, 2018), but those stakeholders were not recruited in the study because of data collection from the retrospective memory. Enrolling those stakeholders may increase the chilling effect and reduce trust of respondents.

All study participants were recruited from a medical hospital in Taipei, which had a nursing staff of more than 1,500 nurses. First, the Registered Nurses recruited worked in the oncology ward. Face-to-face interviews were conducted with the Registered Nurses after confirming consent and fit with the recruitment criteria. Since most of the nurses were recruited from the oncology ward, they likely had more experience with seriously ill patients. Then, we recruited nurses from the outpatient department and other wards to increase the heterogeneity of the sample. Finally, Registered Nurses who had never cared for patients with oncofertility needs served as the reverse cases for comparison.

2.4 | Data collection

An interview guide was developed to collect the data. Questions in the interview guide included, "Would you please talk about your thoughts on fertility among people in general and cancer survivors? What is your perception of oncofertility care and fertility preservation among cancer survivors? What is your experience with these patients? When and why did you choose an action role in oncofertility care? What are the considerations under which you would choose this role in oncofertility care?" The women followed a timeline starting with their work experience. In addition to participant's demographics data, we used open-ended questions in combination with other interviewing techniques to explore topics in depth, to understand processes and to identify potential causes of observed correlations (Weller et al., 2018). Two-item measurement assessing the degree of willingness to provide oncofertility care (0–100 scale) and the degree of perceiving barriers in clinical oncofertility (0–100 scale) were also collected. Both results were expected to provide more context to ask questions for the interviewer. Continuing questions included: "When and what is your perception of barriers/willingness in oncofertility care? How does the barrier/willingness affect your role during cancer care?" All interviews were recorded

using a voice recorder and were transcribed verbatim within 1 week of recording. The interviews took about one hour to complete. The researcher called the participants to clarify the contents of interviews if needed. All interviews were scheduled at a time and place convenient to each participant, in a mutually agreed private setting. We collected data until theoretical data saturation. The data were collected from August 2018–February 2019.

2.5 | Data analysis

Two female researchers in our study reviewed the verbatim transcriptions line by line and coded the meaningful words. Another female researcher experienced with grounded theory methodology independently verified the data coding. To reach a consensus on all data, the three researchers discussed and sought the opinion of the participants when the codes assigned by the researchers differed. We analysed the data using constant comparative analysis and open, axial and selective coding. Certain strategies were applied to achieve rigour of the study. We wrote memos on the verbatim transcriptions to trace participants' contexts, intentions, meanings and actions to obtain rich and thick descriptions. All participants were asked for feedback on the data and our analyses to verify the accuracy of our interpretations. For transferability in the study, a description of the context, selection and demographic data of the participants were provided for readers to determine the transferable possibility in other environments. The credibility of the analysis in the study was determined by searching for rival explanations, peer debriefing and member-checking strategies. An example from the analysis process is presented in Table 1.

2.6 | Ethics

The study was approved by the institutional review board of MacKay Memorial Hospital in Taiwan (18MMHIS095). We explained information on the study objectives in detail and provided contact information of the principal investigator to answer any questions of the participants. All participants provided written informed consent, with the guarantee of anonymity, privacy and confidentiality and assurance of the voluntary nature of their participation.

3 | RESULTS

3.1 | Sample characteristics

Twelve Registered Nurses were recruited, with nine participants ever providing oncofertility care and three nurses never taking action in oncofertility care (Table 2). The mean age of all participants was 36.91 years (range, 27–51 years). Only five nurses were married. Two participants had master's degrees. The average number of years of nursing work was 12.53 (*SD* 7.21). The degree of willingness

TABLE 1 Examples from the analysis process

Categories	Subcategories	Interview descriptions
Perceiving patient's changes and needs	Worried	<i>She looked worried that she lost the opportunity to get married or have a normal family</i>
	Loss of sexual activity	<i>My patient asked when her could resume sexual activity after starting cancer treatment</i>
	Infertility issue	<i>She asked if menopause caused by chemotherapy would cause infertility</i>
Empathizing with the patient's situation	Women role	<i>I am a woman, too; I know her feelings</i>
	Mother role	<i>I am already a mother, so I would understand the same feelings</i>
	Patient role	<i>If I was at her situation, but everybody tells me not do it – I know she will be very sad and lost</i>

TABLE 2 Characteristics of the participants

Characteristic	N (%)
Age, years	
20–35	4 (33.3)
36–51	8 (66.6)
Educational level	
College or university	10 (83.3)
Postgraduate	2 (16.7)
Marital status	
Single	7 (58.3)
Married	5 (41.7)
Children	
Yes	5 (41.7)
No	7 (58.3)
Religious	
Yes	4 (33.3)
No	8 (66.6)

was to provide oncofertility care was 83.3 (*SD* 17.14, range: 50–100), whereas the degree of perceiving barriers in clinical oncofertility was 67.3 (*SD* 26.54, range: 18.5–100).

3.2 | Model of decision-making process in oncofertility care

Figure 1 depicts the model of action/role of the decision-making process in oncofertility among Registered Nurses in Taiwan. The core category arising from the decision-making process was understanding oncofertility from the self to the other. Participants who considered helping patients preserve their fertility determined this pathway by crossing the self to the other. If the nursing staff has a full understanding of oncofertility, it is easier to change the passive actions to the active care role in oncofertility care. Four phases of psychological cognition were involved in the context of the decision-making process: (a) perceiving patient's the changes and needs; (b) triggering self-emotions; (c) empathizing with the patient's situation;

and (d) introspecting care roles. Not all nursing staff could abide in the third psychological state of empathizing with patient's situation. Nurses in the phases of perceiving patient's the changes and needs or triggering self-emotions had conservative attitudes and care roles in fertility preservation, whereas those in the phases of empathizing with the patient's situation and introspecting care roles had enthusiastic actions toward oncofertility care.

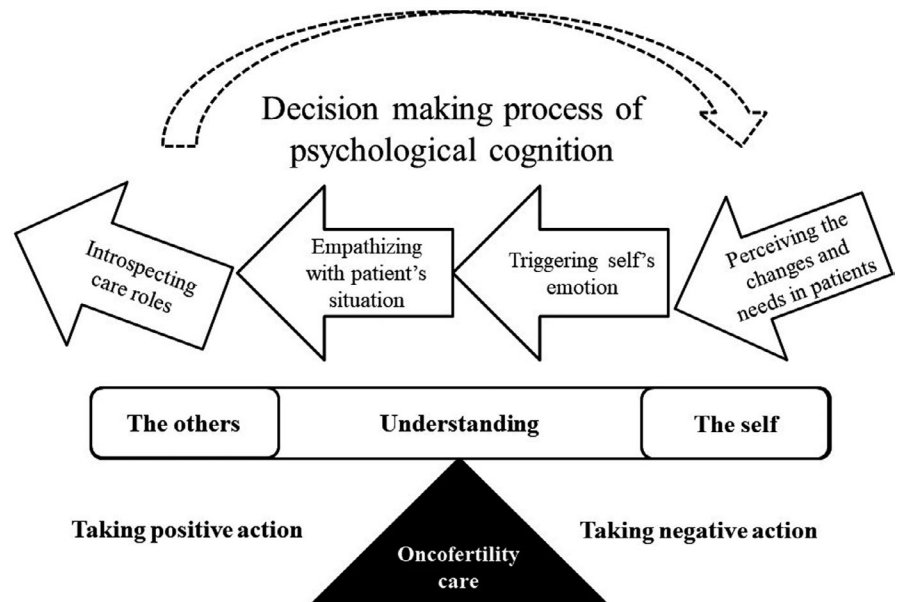
Nurses who adopted a passive care role toward oncofertility focused on the patient's life and treatment. However, each nurse took various amounts of time making this decision, depending on their condition. Experienced nurses intuitively spend time to discover patient's needs and preferences using the set of implicit communication tools to attune their professional care. If the nurses decided to take on the role of oncofertility care, they would recommend many types of resources to achieve fertility preservation. These nurses discussed types of fertility preservation or alternative and complementary medicine for fertility with patient's families and friends, attending physicians, case managers or reproduction and fertility professionals. Although the process of the oncofertility care might not have gone well or been accepted, the nurses thought they did their best in the oncofertility care role.

3.2.1 | Perceiving patient's changes and needs

Most of the nurses ($N = 11$, 91.7%) mentioned that more and more young adults get cancer. They also addressed the phenomenon of late marriage in the patients with cancer. Some patients might have no children during their illness and treatment. Negative emotions related fertility in those patients, such as worry or loss of sexual function and fertility issues, were observed. Two participants, Flora and Hedy, clarified:

Flora: He (patient) asked if the treatment would affect the relationship between a husband and wife. How long could he have sexual behavior? Some women asked if they could have children. How long could they get pregnant? In fact, there are more and more people asking questions like this after the initial diagnosis. Even if a woman's age was close to 40 years, they still were worried about this issue, or worried about whether they would be able to marry later.

FIGURE 1 The decision-making process about oncofertility care by nurses



Hedy: I found that she wanted a baby from the conversations with her and her friends and family. She really wants a child. She received information on reproductive therapy before the cancer, but her doctor told her the cancer treatment needed to go on. The time to get pregnant has not yet arrived. I know she felt lost and helpless.

3.2.2 | Triggering self-emotion

In the first phase regarding patient's changes and needs, the nurses recalled their past experiences while treating patients with cancer. Most of the nurses ($N = 10$, 83.3%) thought it was hard for cancer patients to accept cancer treatment and care for their children at the same time. Some patients with terminal cancer always worried about their children. Those experiences result in negative emotions for nurses. These nurses focused on the patients' bodies and energy level to help heal them in the course of the treatment. They worry that patients' body and energy are too weak to get pregnant, take care of, raise or accompany their children in the future. Diana and Betty explained:

Diana: When she was already pregnant and accepted those (cancer) treatments, it really looked very hard. She was swollen and had shortness of breath----she could only sit and sleep. Her situation is ----hard, but she still had to give birth to the child. We know that the situation is not good. ---We were worried her condition.

Betty: Most mothers with cancer worried that nobody would help her take care of her child. When they were not able to accompany their children, they always felt guilty or powerless. Repeated questions, such as who will help her take care of her children in the future if she died? This possibility always bothers patients. ---I am also worried her children.

3.2.3 | Empathizing with the patient's situation

Some participants ($N = 8$, 66.7%) tried to distance out of their emotions and place themselves in the position of cancer patients. Through the same view of women or mothers, those nurses can sympathetically be aware of cancer patients' feelings and understand the pressure of succession in Chinese families. The process was described as feeling as if they were personally on the scene. Those experiences helped nurses realize why those patients want to be mothers or form the desire to beget the next generation. Only one-third of the participants mentioned the experience of empathy. Both Alyssa and Grace shared their opinions:

Alyssa: Some people think the patient shouldn't get pregnant because of the life threat from cancer. We can't erase the idea that she wants to be a mother. She might want to have a child for her husband or her boyfriend, but maybe it is her dream. If I was at her situation, but everybody tells me not do it – I know she will be very sad and lost.

Grace: I am already a mother, so I would understand the same feelings. The feelings that I would like to have a baby or desire to do so should be understood, empathized and supported. Catching their ideas and feelings is a very important key point to help them.

3.2.4 | Introspecting care roles

Nearly all nurses ($N = 11$, 91.7%) believe that fertility issues are not the top priority when caring for cancer patients. Individual care for patients with fertility needs depends on the nurses' views and actions. All kinds of clinical roles in nursing, such as listeners, companions, consultants, information providers or referrers and others could be derived from the care process. The

participants ($N = 8$, 66.7%) who empathized with patient's situations had more diverse roles and positive actions toward oncofertility care. Erica stated that she felt the importance of being a father for the patient. She thought that providing information related reproductive protection may reduce patients' anxiety or increase their willingness to receive treatment as soon as possible. However, Iris only played the role of a listener, because she firmly believes that living is the most important thing for patients with cancer:

Erica: I might seek other resources for him, such as case managers or a cancer resource center. Do they have relevant information or support to provide to the patient? You know, sometimes our patients don't know how to say how they feel about fertility because they are afraid that the doctor may be not happy. When the doctor comes to see the patient, I would take the initiative to help the patient to ask questions about fertility.

Iris: I experience that most of them feel fear. So, I may guide them to say what and why they fear. And then, I help them to solve their problem. For the issue of fertility, I think it doesn't make sense if he can't live. I would advise him not to think too much. Surviving is the most important! What they need to do is accept treatment as soon as possible.

4 | DISCUSSION

4.1 | Role of nurses' decision-making in oncofertility care

The decision to provide positive oncofertility care among Registered Nurses in the hospital centred on the core theme of "understanding oncofertility from the self to the other." Nurses in Taiwan perceived fertility-related treatment as a therapy non-essential for prolonging life and did not have enough knowledge about oncofertility care. Hence, they tried to create roles to bring oncofertility care to patients based on their personal experience and psychological change. Experienced nurses with a broad range of previous patient interaction carried out in clinical practice influencing their intuitive, unconscious processes which facilitates decision-making. Those concepts were similar with the finding from an integrative literature review, which indicated nursing decision-making was associated with organization culture, understanding patient status, situation awareness, and autonomy (Nibbelink & Brewer, 2018). Furthermore, our study provided the specific process of psychological cognition among nurses when making decision toward oncofertility care. It might be helpful to guide practice with understanding how to better support novice nurses' decision-making for providing cancer care. Further studies on the effects of the support in different psychological process toward role choices of oncofertility care are recommended.

4.2 | Barriers and strategies to promote oncofertility care

Formal education was the most used source about fertility information among young women (Stevenson et al., 2019). Half felt that there was a social stigma surrounding fertility preservation or infertility, and most of them believed that the media gives the impression that motherhood is viable after 40 years of age (Sharma et al., 2018; Stevenson et al., 2019). Childbearing-age women with cancer who underestimated the severity of infertility due to cancer and related treatments could lose the chance to have their biological children. Among the factors about fertility decision-making, professionals' services accounted for one of the uncertainty factors (Komatsu et al., 2018). We also found that perceiving the patient's changes and needs is the first step to start the decision-making process about the oncofertility care among nurses. Lack of sensitivity to detect patient needs by nursing professionals and underestimating the possibility of infertility among young patients with cancer could cause irreversible regret. Nursing professionals should be attentive to the signs indicating loneliness about fertility concerns (Goossens et al., 2015). Understanding the risks that a cancer diagnosis and therapy pose on a patient's fertility and constructing initial assessments about fertility intention in nursing practice are recommended (Hendershot et al., 2016; Li et al., 2018).

Our participants mentioned that fertility needs of patients aroused their memories during patients' cancer treatments. The role of good mother/father involves the Chinese cultural belief that her/his body is strong enough to bear a child. Almost all cancer survivors are regarded as incompetent parents by Taiwanese society because of stigmatization of weak bodies and short lives. Negative care experiences of cancer survivors, such as worries of cancer recurrence or the psychological distress of raising children, could easily lead nurses to passive emotions and attitudes toward fertility preservation before cancer treatment. Lack of enough information on oncofertility resources also could lead to poor quality discussions of fertility issues. This result is consistent with previous studies, which indicate discomfort with recommending women to stop necessary cancer treatments to undergo fertility preservation therapy (Rosenberg et al., 2017; Wright et al., 2018). Other barriers to discussions that included concerns about exacerbating negative emotions and the decision-making capacity of young patients were also the factors that have an impact on nurses' attitudes toward oncofertility (Nobel Murray et al., 2016). To create or enhance resources to better meet the needs of patients in the future, nurse educators must highlight patient-centred care and focus on training nurses to communicate better about oncofertility care and the available resources for such care (Speller, Micic, et al., 2019; Speller, Sissons, et al., 2019).

According to a Gallup 2018 survey that assessed ethics and honesty, nursing is the most trusted profession in the United States (Brenan, 2018). Based on that trust, nurses play a pivotal role in addressing these topics and guiding patient decision-making about fertility. However, oncology providers and healthcare systems struggle to incorporate the technologies of fertility preservation into the clinical

care of patients with cancer (Taylor & Ott, 2016). Considering relationship, hierarchy, power, leadership, education, experience and responsibility, the complex roles nurses play should exist in the oncofertility process. Tariman and Szubski (2015) reported that the evolving roles of a nurse during the cancer treatment decision-making process include patient education, information giving, assessment, monitoring and treatment of side effects, advocacy, psychological support and outcome evaluation. Our finding that each nurse forms specific roles about oncofertility from their previous care experience is consistent with their findings. Furthermore, our results showed that nurses who experienced the phase of empathizing with patient's situations developed more diverse roles and had a positive action toward oncofertility care. Empathy was defined as an affective response that acknowledges and attempts to understand individuals' suffering through emotional resonance (Sinclair et al., 2017). Developing an understanding of patient status and situation awareness could lead to pattern identification in patient care (Nibbelink & Brewer, 2018). Previous studies have indicated that educational intervention holds potential for improving empathy in healthcare providers (Alhassan, 2019; Ward, 2016). Hence, nursing skill and training in empathy toward fertility needs in reproductive-age patients with cancer could be expected to improve the quality of oncofertility care.

Understanding patient's perspectives is important and can guide practice, policy reform and future research in oncofertility care. There are numerous resources available to support nursing providers with oncofertility information, counselling and decision-making. Nonetheless, improving nurses' awareness of these resources and access to them is required for more effective oncofertility care (Speller, Micic, et al., 2019). Advanced practice nurses are ideally positioned to develop and educate nurses on oncofertility and to conduct research on the effectiveness of their interventions (Hendershot et al., 2016). Bundled interventions, including development of quality indicators, resources and targeted education or shared decision-making, is one approach. In this scenario, clinicians and patients share the best available evidence when faced with the task of making decisions, which may be the best potential strategy to improve oncofertility care and the quality of life of young people with cancer (Bradford et al., 2018). The intervention of integrated oncofertility care merits more study in the future.

4.3 | Limitations

Based on the principles of theoretical saturation, the limited sample size in this study and the fact that most of our study participants were older (67%, $N = 8$ were more than 35 years old) and had higher educational levels (83%, $N = 10$ had a bachelor degree; 17%, $N = 2$ had master's degree) could limit our generalizability to the population at large. Nonetheless, we believed that applying in-depth interviews to collect complete data for a qualitative research design is more important than the generalizability to the population. Because all data were collected retrospectively and included nurses who had worked more than 3 years to address having experience with

oncofertility care, recall bias is conceivable. The participants had a wide range of working time since graduating from school. This variability allowed the nurses to clearly and consistently explain their psychological changes and reflect on their experiences to formulate and establish their specific care role. In addition, all nurses were recruited from the one medical centre that provided assisted reproduction services. Whether our findings could be applied to hospitals without such services requires further study. The results reflect the decisions of psychological changes about care roles of oncofertility among nurses in Taiwan. We believed this model to be a reflection of eastern cultural norms. Thus, whether this model reflects nursing care in other Asian and Western countries who want to provide oncofertility services requires more research. The model developed in this study needs to be further validated using a larger and more heterogeneous sample in the future. Our results were only built from the analysis of the nursing experience. Based on the typical methodology of grounded theory, future study is needed to observe and interview the nurses and their stakeholders in the reality.

5 | CONCLUSIONS

Our research illustrated the decision-making process about whether to provide the oncofertility care from the perspective of Registered Nurses in Taiwan. The study also shed light on the process of psychological cognition that is necessary for oncofertility care. Understanding oncofertility from the self to the other was a key factor in deciding the care action/role in oncofertility among Registered Nurses. Assisting nurses build or enhance their initial assessment tools for fertility intention before cancer therapy could help them to increase their sensitivity to the fertility needs of their patients. Based on patient-centred care, we suggest nurses enrol in advanced training to develop better communication skills and research available resources on fertility preservation so that they may provide the appropriate and timely intervention. Strategies to overcome negative personal perspectives and barrier difficulties of nurses to provide optimal fertility care in women with cancer should be implemented in the future. Nursing education on empathy for fertility needs in reproductive-age patients is recommended to understand patient's perspectives and create more professional roles in nursing. Future studies are needed to develop and validate our results within a larger and heterogeneous sample of nurses.

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CONFLICT OF INTERESTS

The authors have no conflicts of interest to disclose.

AUTHOR CONTRIBUTION

CTL and SMH: Study design. SMH, YHC and WTC: Data collection. CTL and SMH: Data analysis. CTL, SMH and YHC: Manuscript writing.

ETHICAL APPROVAL

The study was approved by the institutional review board of MacKay Memorial Hospital (18MMHIS095). All participants agreed to accept the interview and signed the research consent.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, Sheng-Miauh Huang, upon reasonable request.

ORCID

Ching-Ting Lien  <https://orcid.org/0000-0001-6830-560X>

Sheng-Miauh Huang  <https://orcid.org/0000-0002-3715-0147>

Yi Hua Chen  <https://orcid.org/0000-0002-0821-4113>

Wen-Ting Cheng  <https://orcid.org/0000-0002-9127-3367>

REFERENCES

- Adams, S. B. (2018). Empathy as an Ethical Imperative. *Creative Nursing*, 24(3), 166–172. <https://doi.org/10.1891/1946-6560.24.3.166>
- Alhassan, M. (2019). Effect of a 2-day communication skills training on nursing and midwifery students' empathy: A randomised controlled trial. *British Medical Journal Open*, 9(3), e023666. <https://doi.org/10.1136/bmjopen-2018-023666>
- Anazodo, A., Laws, P., Logan, S., Saunders, C., Travaglia, J. O., Gerstl, B., Bradford, N., Cohn, R., Birdsall, M., Barr, R., Suzuki, N., Takae, S., Marinho, R., Xiao, S., Chen, Q.-H., Mahajan, N., Patil, M., Gunasheela, D., Smith, K., ... Ledger, W. (2019). The Development of an international oncofertility competency framework: A model to increase oncofertility implementation. *The Oncologist*, 24(12), e1450–e1459. <https://doi.org/10.1634/theoncologist.2019-0043>
- Barlow, N. A., Hargreaves, J., & Gillibrand, W. P. (2018). Nurses' contributions to the resolution of ethical dilemmas in practice. *Nursing Ethics*, 25(2), 230–242. <https://doi.org/10.1177/0969733017703700>
- Bradford, N. K., Walker, R., Henney, R., Inglis, P., & Chan, R. J. (2018). Improvements in clinical practice for fertility preservation among young cancer patients: results from bundled interventions. *Journal of Adolescent and Young Adult Oncology*, 7(1), 37–45. <https://doi.org/10.1089/jayao.2017.0042>
- Brenan, M. (2018). Nurses again outpace other professions for honesty, ethics. The Gallup Organization. Retrieved from <http://news.gallup.com/poll/245597/nurses-again-outpace-professions-honesty-ethics.aspx>
- Casey, P. M., Faubion, S. S., MacLaughlin, K. L., Long, M. E., & Pruthi, S. (2014). Caring for the breast cancer survivor's health and well-being. *World Journal of Clinical Oncology*, 5(4), 693–704. <https://doi.org/10.5306/wjco.v5.i4.693>
- Chun Tse, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE Open Medicine*, 7, 2050312118822927. <https://doi.org/10.1177/2050312118822927>
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research techniques and procedures for developing grounded theory*. Sage.
- Fabi, A., Lanzetta, G., Vizza, E., Corsi, D., Moschetti, L., Spinelli, G., Mentuccia, L., Lalle, M., Perrone, M., Baiocco, L., Falcicchio, C., Milani, A., Giannarelli, D., Cognetti, F., & Pugliese, P. (2019). The unmet need for oncofertility preservation in women: Results of a survey by different oncological specialists in Lazio, Italy. *Current Problems in Cancer*, 43(6), 100479. <https://doi.org/10.1016/j.currproblcancer.2019.05.002>
- Goossens, J., Delbaere, I., Beeckman, D., Verhaeghe, S., & Van Hecke, A. (2015). Communication difficulties and the experience of loneliness in patients with cancer dealing with fertility issues: A qualitative study. *Oncology Nursing Forum*, 42(1), 34–43. <https://doi.org/10.1188/15.ONF.34-43>
- Goossens, J., Delbaere, I., Van Lancker, A., Beeckman, D., Verhaeghe, S., & Van Hecke, A. (2014). Cancer patients' and professional caregivers' needs, preferences and factors associated with receiving and providing fertility-related information: A mixed-methods systematic review. *International Journal of Nursing Studies*, 51(2), 300–319. <https://doi.org/10.1016/j.ijnurstu.2013.06.015>
- Hendershot, E., Maloney, A. M., Fawcett, S., Sarvanantham, S., McMahon, E., Gupta, A., & Mitchell, L. (2016). Advanced practice nurses: Improving access to fertility preservation for oncology patients. *Canadian Oncology Nursing Journal*, 26(1), 40–45. <https://doi.org/10.5737/236880762614045>
- Huang, S. M., Hsieh, P. L., Hsiung, Y., Tseng, L. M., Chen, P. H., & Hung, C. T. (2017). Decision-making process regarding fertility among reproductive-age women with cancer in Taiwan. *Cancer Nursing*, 40(5), 394–402. <https://doi.org/10.1097/NCC.0000000000000439>
- Jerpseth, H., Dahl, V., Nortvedt, P., & Halvorsen, K. (2017). Nurses' role and care practices in decision-making regarding artificial ventilation in late stage pulmonary disease. *Nursing Ethics*, 24(7), 821–832. <https://doi.org/10.1177/0969733015626600>
- Keim-Malpass, J., Fitzhugh, H. S., Smith, L. P., Smith, R. P., Erickson, J., Douvas, M. G., Thomas, T., Petroni, G., & Duska, L. (2018). What is the role of the oncology nurse in fertility preservation counseling and education for young patients? *Journal of Cancer Education*, 33(6), 1301–1305. <https://doi.org/10.1007/s13187-017-1247-y>
- Kim, J., Kim, S. K., Hwang, K. J., & Kim, S. H. (2017). Fertility preservation during cancer treatment: The Korean Society for Fertility Preservation clinical guidelines. *Clinical and Experimental Reproductive Medicine*, 44(4), 171–174. <https://doi.org/10.5653/cerm.2017.44.4.171>
- Komatsu, H., Yagasaki, K., & Yamauchi, H. (2018). Fertility decision-making under uncertainty and uncertainty in cancer patients. *Sexual & Reproductive Healthcare*, 15, 40–45. <https://doi.org/10.1016/j.srhc.2017.12.002>
- Krouwel, E. M., Nicolai, M., van Steijn-van Tol, A., Putter, H., Osanto, S., Pelger, R., & Elzevier, H. W. (2017). Fertility preservation counseling in Dutch Oncology Practice: Are nurses ready to assist physicians? *European Journal of Cancer Care*, 26(6), e12614. <https://doi.org/10.1111/ecc.12614>
- Letourneau, J., Smith, J., Ebbel, E., Craig, A., Katz, P. P., Cedars, M. I., & Rosen, M. P. (2012). Racial, socioeconomic and demographic disparities in access to fertility preservation in young women diagnosed with cancer. *Cancer*, 118(18), 4579–4588. <https://doi.org/10.1002/cncr.26649>
- Levine, J. M., Kelvin, J. F., Quinn, G. P., & Gracia, C. R. (2015). Infertility in reproductive-age female cancer survivors. *Cancer*, 121(10), 1532–1539. <https://doi.org/10.1002/cncr.29181>
- Li, C. C., Huang, S. M., Lai, J. C. Y., Hsiung, Y., Chen, Y. H., & Lee, C. F. (2018). Development and validation of a fertility intention scale in breast cancer survivors. *Journal of Nursing Research*, 26(3), 177–184. <https://doi.org/10.1097/jnr.0000000000000223>
- Loren, A. W., Mangu, P. B., Beck, L. N., Brennan, L., Magdalinski, A. J., Partridge, A. H., Quinn, G., Wallace, W. H., Oktay, K., & American Society of Clinical Oncology (2013). Fertility preservation for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. *Journal of Clinical Oncology*, 31(19), 2500–2510. <https://doi.org/10.1200/JCO.2013.49.2678>
- Nibbelink, C. W., & Brewer, B. B. (2018). Decision-making in nursing practice: An integrative literature review. *Journal of Clinical Nursing*, 27(5–6), 917–928. <https://doi.org/10.1111/jocn.14151>
- Nobel Murray, A., Chrisler, J. C., & Robbins, M. L. (2016). Adolescents and young adults with cancer: Oncology nurses report attitudes and barriers to discussing fertility preservation. *Clinical Journal of Oncology Nursing*, 20(4), E93–E99. <https://doi.org/10.1188/16.CJON.E93-E99>

- Oktay, K., Harvey, B. E., & Loren, A. W. (2018). Fertility preservation in patients with cancer: ASCO clinical practice guideline update summary. *Journal of Oncology Practice*, 14(6), 381–385. <https://doi.org/10.1200/JOP.18.00160>
- Raphael, J., Trudeau, M. E., & Chan, K. (2015). Outcome of patients with pregnancy during or after breast cancer: A review of the recent literature. *Current Oncology*, 22(S1), S8–S18. <https://doi.org/10.3747/co.22.2338>
- Ronn, R., & Holzer, H. (2015). Breast cancer and fertility: An update. *Current Opinion in Supportive and Palliative Care*, 9(3), 285–293. <https://doi.org/10.1097/SPC.0000000000000164>
- Rosenberg, S. M., Gelber, S., Gelber, R. D., Krop, E., Korde, L. A., Pagani, O., & Partridge, A. H. (2017). Oncology physicians' perspectives on practices and barriers to fertility preservation and the feasibility of a prospective study of pregnancy after breast cancer. *Journal of Adolescent and Young Adult Oncology*, 6(3), 429–434. <https://doi.org/10.1089/jayao.2017.0031>
- Sharma, R. S., Saxena, R., & Singh, R. (2018). Infertility & assisted reproduction: A historical & modern scientific perspective. *The Indian Journal of Medical Research*, 148(S), S10–S14. https://doi.org/10.4103/ijmr.IJMR_636_18
- Sinclair, S., Beamer, K., Hack, T. F., McClement, S., Raffin Bouchal, S., Chochinov, H. M., & Hagen, N. A. (2017). Sympathy, empathy and compassion: A grounded theory study of palliative care patients' understandings, experiences and preferences. *Palliative Medicine*, 31(5), 437–447. <https://doi.org/10.1177/0269216316663499>
- Speller, B., Micic, S., Daly, C., Pi, L., Little, T., & Baxter, N. N. (2019). Oncofertility decision support resources for women of reproductive age: Systematic review. *JMIR Cancer*, 5(1), e12593. <https://doi.org/10.2196/12593>
- Speller, B., Sissons, A., Daly, C., Facey, M., Kennedy, E., Metcalfe, K., & Baxter, N. N. (2019). An evaluation of oncofertility decision support resources among breast cancer patients and health care providers. *BMC Health Services Research*, 19(1), 101. <https://doi.org/10.1186/s12913-019-3901-z>
- Stevenson, E. L., Gispanski, L., Fields, K., Cappadora, M., & Hurt, M. (2019). Knowledge and decision making about future fertility and oocyte cryopreservation among young women. *Human Fertility (Cambridge, England)*, 1–10. Advance online publication. <https://doi.org/10.1080/14647273.2018.1546411>
- Strachan, P. H., Kryworuchko, J., Nouvet, E., Downar, J., & You, J. J. (2018). Canadian hospital nurses' roles in communication and decision-making about goals of care: An interpretive description of critical incidents. *Applied Nursing Research*, 40, 26–33. <https://doi.org/10.1016/j.apnr.2017.12.014>
- Strauss, A. L., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*, 2nd ed. Sage Publications.
- Tabak, N., Bar-Tal, Y., & Cohen-Mansfield, J. (1996). Clinical decision making of experienced and novice nurses. *Western Journal of Nursing Research*, 18(5), 534–547. <https://doi.org/10.1177/019394599601800505>
- Tariman, J. D., & Szubski, K. L. (2015). The evolving role of the nurse during the cancer treatment decision-making process: A literature review. *Clinical Journal of Oncology Nursing*, 19(5), 548–556. <https://doi.org/10.1188/15.CJON.548-556>
- Taylor, J. F., & Ott, M. A. (2016). Fertility preservation after a cancer diagnosis: A systematic review of adolescents', parents' and providers' perspectives, experiences and preferences. *Journal of Pediatric and Adolescent Gynecology*, 29(6), 585–598. <https://doi.org/10.1016/j.jpog.2016.04.005>
- von Wolff, M., Germeyer, A., Liebhenthron, J., Korell, M., & Nawroth, F. (2018). Practical recommendations for fertility preservation in women by the FertiPROTEKT network. Part II: Fertility preservation techniques. *Archives of Gynecology and Obstetrics*, 297(1), 257–267. <https://doi.org/10.1007/s00404-017-4595-2>
- Wang, Y., Logan, S., Stern, K., Wakefield, C. E., Cohn, R. J., Agresta, F., Jayasinghe, Y., Deans, R., Segelov, E., McLachlan, R. I., Gerstl, B., Sullivan, E., Ledger, W. E., & Anazodo, A. (2020). Supportive oncofertility care, psychological health and reproductive concerns: A qualitative study. *Supportive Care in Cancer*, 28(2), 809–817. <https://doi.org/10.1007/s00520-019-04883-1>
- Ward, J. (2016). The empathy enigma: Does it still exist? Comparison of empathy using students and standardized actors. *Nurse Education*, 41(3), 134–138. <https://doi.org/10.1097/NNE.0000000000000236>
- Weller, S. C., Vickers, B., Bernard, H. R., Blackburn, A. M., Borgatti, S., Gravlee, C. C., & Johnson, J. C. (2018). Open-ended interview questions and saturation. *PLoS One*, 13(6), e0198606. <https://doi.org/10.1371/journal.pone.0198606>
- Wright, E., Norton, W., & Geary, M. (2018). Nurses' experiences of undertaking fertility-related discussions with teenagers and young adults with cancer: An interpretive phenomenological analysis. *Journal of Advanced Nursing*, 74(12), 2860–2870. <https://doi.org/10.1111/jan.13804>

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