Objective: The purpose of this study was to analyze the difficult experiences of nurses who cared for patients undergoing radiation therapy and factors related to patient feelings toward the progress and difficulties of treatment and the kind of care needed. Methods: A descriptive survey using a questionnaire. Anonymous self-report data were collected from a sample of 228 nurses who had 2–5 years of nursing experience in a National University Hospital in Japan. Years of working experience; knowledge and training in radiation therapy and difficult experiences of nurses caring for patients undergoing radiation therapy. Results: In hospital "A", about 80% of the nurses had cared for patients undergoing radiation therapy, and about 40% had experience with difficult cases. The characteristics of competent nurses in radiation nursing were the following: while not having knowledge and experience, they were seriously facing their patients. However, the treatment process could not be predicted, skills related to the whole-human involvement of patients were insufficient, and communication was similar. In addition, the characteristics of competent nurses in radiation nursing became apparent. Although these nurses lacked knowledge and experience, they interacted with patients in a serious manner. However, the treatment process could not be predicted, and the skills related to the holistic involvement of patients were insufficient. Furthermore, communication between the nurses and patients was difficult. Conclusions: Competent nurses with 2–5 years of working experience, but lacking specific knowledge and experience regarding radiation therapy could cope with difficult radiation therapy cases. However,
Introduction

In 2007, the “Cancer Control Act” and “the promotion of a basic plan with measures to prevent cancer” were established in Japan. This included the securement of quality medical care that was equally accessible for cancer patients in Japan.

Radiation has been widely utilized in medical settings, and radiation therapy has been further developed in most of the world. Patients have fewer complications and treatment has advanced.

The role of the nurse in radiation treatment is becoming increasingly important. However, it is predictable that nurses will experience difficulties in providing support during patients’ decision-making process; caring for patients during adverse events and supporting patients through the completion of treatment.

Hashiguchi indicated that there are four roles of the nurse in radiological nursing: to educate the patients about their therapy, including self-care, to collaborate with physicians for the management of adverse events, to collaborate with radiology technicians to provide high-quality treatment safely, and to provide psychosocial support for patients.

And also, Kume indicated that adaptation to radiation therapy varies widely from initial treatment to palliative treatment; therefore, nurses want to know about radiation therapy plans, and there is a strong need for nurses who specialize in treating and caring for patients undergoing radiation therapy. Teraoka et al. indicated that there are adverse events associated with radiation therapy and problems arise secondarily in radiological nursing, so the situation can be complicated and difficult.

Consequently, it is clear that nurses will face demands from the patients and knowledge is required. However, many nurses lack the basic knowledge to be able to assume the role, and the literature indicates that nursing interventions are often conducted by trial and error. Therefore, it is predicted that some nurses will feel distressed and inadequate in supporting these patients.

Definition of keywords

In the present study, a “competent nurse” has 2–5 years of experience and is seen as “full-fledged” and is considered “mid-level” in terms of the five levels of skill acquisition of clinical nursing practice according to Benner.

Additional education, training, and mentoring from expert nurses would improve the quality of care for patients undergoing radiation therapy and reduce distress for nurses with less experience. In this study, the need for educational measures and a support system to help competent nurses face difficult cases were suggested.

Key words: Competent nurse, difficult case, radiation therapy

“Difficult case” was defined as situations with difficulties corresponding to policy, and also cases where multidisciplinary cooperation was required. “Radiation therapy” included external radiation, brachytherapy, and radiopharmaceutical therapy. External radiation is often used. In this therapy, radiation comes from a source outside of the body. In brachytherapy, a radioactive isotope in a sealed container is placed close to the site of the tumor. Radiopharmaceutical therapy includes oral radioactive isotopes that are not sealed or isotopes that are administered by intravenous injection.

Objective

The objective of this study was to clarify and analyze difficult cases involving radiotherapy among less experienced nurses and factors involving patient feelings toward the progress of treatment, the difficulties of the treatment and care needed.

Methods

Data collection

The participants in this study included 228 nurses with 2–5 years of experience in hospital "A". Self-administered questionnaires were distributed to participants, and a collection bag was prepared in the hospital to allow for their anonymous return. When the study period was finished, the surveys were collected.

1. Participant background information including age, sex, years of working experience, lecture/training attendance for radiation therapy, and experience in caring for patients undergoing radiation therapy were collected.
2. Participants were asked for their nursing experience in caring for patients undergoing radiation therapy. Information was elicited about roles in the treatment of patients, years of working experience in caring for patients undergoing radiation therapy, and years of experience as the primary nurse.
3. Regarding the knowledge of radiotherapy, a previous study was consulted to ask participants about what “knowledge they considered to be necessary for caring for patients who undergo radiation therapy.” Multiple answers were allowed for the 15 items.
4. Regarding difficult cases and responses, information was...
collected about difficult experiences, years of working experience and encountering difficult cases, treatment sites, medical treatments, timing of treatments, and presence of supporters.

5. The following questions were based on previous research and were used as a guide to obtain information about difficult cases:

(1) “What was the situation of the case?”
(2) “What were the causes and/or incentives associated with the case?” and
(3) “What were the responses and the results of the case?”

Data analysis

Participant backgrounds, the experience of caring for patients undergoing radiation therapy, and knowledge of radiation therapy were handled as a simple aggregate. Reports of difficult cases and the responses and items were evaluated for content.

Ethical considerations

Participant rights were clearly written and explained; they were assured that the data would only be used for research purposes and that anonymity and confidentiality would be protected. Participants were informed of their right to refuse or withdraw at any time. The return of questionnaires was considered as providing fully informed consent. The research was approved by the Ethical Review Board of Kagoshima University Medical and Dental Hospital.

Results

Ninety-four (41.0%) questionnaires were collected. Participant backgrounds are shown in Table 1.

Participants’ backgrounds

The sample included 6 men and 88 women. The average age was 25.4 years old (standard deviation: ±2.83).

Regarding participation in lectures and training for radiation therapy, 16 nurses (17.0%) participated and 78 did not (83.0%).

Nursing experience of patients undergoing radiation therapy is shown in Table 2.

Knowledge of radiation therapy

Knowledge that was considered necessary for the care of patients undergoing radiation therapy is shown in Table 3. The participants were asked to think about the “knowledge that is necessary to care for patients receiving radiation therapy” and to select all that applied.

Difficult cases and the responses

Table 4 shows data as a simple aggregate: number of difficult cases and nurses’ years of working experience with difficult cases, treatment sites, medical treatments, timing of treatments, and presence of supporters. Situations of difficult cases are also shown. Furthermore,
Table 3: Knowledge considered necessary for patients undergoing radiation therapy

| Items                                      | n (%) |
|--------------------------------------------|-------|
| Skin care for radiation dermatitis         | 80 (85.1) |
| Knowledge about radiation                  | 76 (80.8) |
| Radiation sickness, malaise                 | 60 (63.8) |
| Oral care for mucositis                    | 57 (60.6) |
| Emotional support                          | 56 (59.5) |
| Pain control                               | 55 (58.5) |
| Nausea and vomiting                        | 37 (39.4) |
| Description and guidance of exposure to patients and families | 31 (33.0) |
| Defecation, urination disorder             | 27 (28.7) |
| Knowledge about nutrition support          | 25 (26.6) |
| Radiation pneumonitis                      | 22 (23.4) |
| Basic knowledge on dose distribution       | 20 (21.2) |
| Spiritual pain                             | 20 (21.2) |
| Sexuality support                          | 6 (6.4) |

Table 5 shows a list of details concerning patients in 29 difficult cases.

To summarize the cases in Table 5, the nurses regarded three situations as difficult cases: the first is that nurses could not answer patients’ questions about treatment. The second is that nurses could not manage pain control, oral mucositis, and also skin care effectively. The third concerns the special cases. The nurses had difficulty coping with pediatric cancer patients and dementia patients undergoing radiation therapy.

Table 6 shows examples of the situations that nurses encountered during the difficult cases. Nurses were asked to freely describe and respond to the question: “At what point did you feel that the scene was difficult?”

Discussion

Participants’ backgrounds

The choice of participants

This study aimed to examine the experiences of competent nurses from hospital “A” with 2–5 years of working experience. In 2–5 years, Benner indicated that a nurse grows from novice to expert. Nurses who participated in this study were considered to be in the middle of that range. Benner indicated that characteristics of knowledge that nurses have a “practical knowledge,” and it is knowledge that can be learned only by practice. [6]

In addition, the researcher cared for patients experiencing mucositis and radiodermatitis. The researcher had the following experiences and thoughts while caring for these patients: she frequently experienced distress because the patients became exhausted during treatment and she feared facing them, and she felt inadequate in supporting these patients. The researcher wanted to learn basic knowledge about radiation and understand medical information to relieve patients’ pain as much as possible. Based on these experiences, the researcher selected nurses with 2–5 years of experience to be surveyed to detect the characteristics of difficult cases of radiation therapy for nurses, and the factors related to patient feelings toward the progress or difficulties of treatment and the subsequent care needed. Furthermore, nurses specializing in caring for patients who undergo radiation treatment have few systematized educational opportunities, and many nurses do not have the opportunity to take any radiation-related courses
Table 5: List of the difficult cases

| ID | Age | Nursing experience at the time of difficult cases | Treatment site | Treatment content | Content of difficult case |
|----|-----|---------------------------------------------------|----------------|------------------|----------------------------|
| 1  | 36  | 1 year                                            | Head and neck  | Concurrent chemoradiotherapy→surgery | The appearance time of adverse events and question of contents |
| 2  | 27  | 1 year                                            | Head and neck  | Concurrent chemoradiotherapy         | Pain control               |
| 3  | 25  | 2 years                                           | Head and neck  | Concurrent chemoradiotherapy         | The symptom management (oral mucositis) |
| 4  | 32  | 2 years                                           | Head and neck  | Concurrent chemoradiotherapy         | The symptom management petition from a patient whose desire for the treatment has decreased |
| 5  | 24  | 2 years                                           | Head and neck  | Surgery→concurrent chemoradiotherapy | Skin care for radiation dermatitis |
| 6  | 24  | 1 year                                            | Head and neck  | Radiation therapy alone              | The symptom management (oral mucositis) |
| 7  | 26  | 1 year                                            | Brain          | Radiation therapy alone              | Communication with the patient |
| 8  | 24  | 1 year                                            | Brain          | Radiation therapy alone              | Relationship with the pediatric cancer patient |
| 9  | 24  | 2 years                                           | Brain          | Surgery→concurrent chemoradiotherapy | Hair loss |
| 10 | 24  | 3 years                                           | Thigh          | Surgery→radiation therapy           | Skin care for radiation dermatitis |
| 11 | 26  | 1 year                                            | Head and neck  | Concurrent chemoradiotherapy         | The symptom management (oral mucositis) |
| 12 | 26  | 1 year                                            | Bone metastasis| Concurrent chemoradiotherapy         | Complaint from patient about the meaning of treatment continuation |
| 13 | 26  | 1 year                                            | Pelvic region  | Concurrent chemoradiotherapy         | The symptom management (diarrhea and nausea) |
| 14 | 26  | 1 year                                            | Pelvic region  | Concurrent chemoradiotherapy         | The appearance time of adverse events and question of contents |
| 15 | 23  | 1 year                                            | Head and neck  | Concurrent chemoradiotherapy         | Relationship with the dementia patient |
| 16 | 26  | 1 year                                            | Head and neck  | Surgery→concurrent chemoradiotherapy | Relationship with the patient who complains of pain |
| 17 | 25  | 1 year                                            | Esophagus      | Concurrent chemoradiotherapy         | The symptom management (oral mucositis) |
| 18 | 24  | 3 years                                           | Esophagus      | Concurrent chemoradiotherapy         | The symptom management (pain, nausea) |
| 19 | 26  | 3 years                                           | Esophagus      | Concurrent chemoradiotherapy         | Skin care for radiation dermatitis |
| 20 | 24  | 2 years                                           | Esophagus      | Concurrent chemoradiotherapy         | The symptom management (oral mucositis) |
| 21 | 27  | 1 year                                            | Esophagus      | Surgery→concurrent chemoradiotherapy | Skin care for radiation dermatitis |
| 22 | 23  | 1 year                                            | Esophagus      | Concurrent chemoradiotherapy         | The symptom management (pain) |
| 23 | 24  | 1 year                                            | Esophagus      | Concurrent chemoradiotherapy         | Skin care for radiation dermatitis |
| 24 | 23  | 1 year                                            | Esophagus      | Concurrent chemoradiotherapy         | Matters concerning interruption of treatment |
| 25 | 23  | 1 year                                            | Pelvic region  | Radiation therapy alone              | The symptom management |
| 26 | 26  | 4 years                                           | Esophagus      | Concurrent chemoradiotherapy         | The symptom management (nausea and radiation dermatitis) |
| 27 | 28  | 5 years                                           | Esophagus      | Surgery→concurrent chemoradiotherapy | Skin care for radiation dermatitis |
| 28 | 29  | 1 year                                            | Bone metastasis| Concurrent chemoradiotherapy         | The symptom management overnight radiation exposure |
| 29 | 26  | 3 years                                           | Brain          | Surgery→concurrent chemoradiotherapy | At first giving treatment as a nurse |
| 30 | 27  | 4 years                                           | Head and neck  | Unanswered                           | Unanswered |
| 31 | 24  | 2 years                                           | Esophagus      | Unanswered                           | Unanswered |
| 32 | 28  | 4 years                                           | Brain          | Unanswered                           | Unanswered |

during their nursing training. Hence, nurses may experience the same fears, feelings of inadequacy, and distress that the researcher did. Departmental changes, which included assigning inexperienced nurses to care for patients undergoing cancer radiation therapy, expanded the participant pool up to 5 years.

Participants' backgrounds

In hospital “A”, about 70% of the nurses had experience in caring for patients undergoing radiation therapy. About 17% had participated in radiation therapy training and lectures. This small percentage was probably related to the fact that there was no radiation therapy educational program in hospital “A”. Furthermore, training for oncology nursing in the hospital education program was intended for nurses who were level II or higher on the clinical ladder.

Clinical ladder: It is the career development plan of nurses in Japan that was planned so that the know-how of technical knowledge and techniques can be mastered in stages. Level II nurses can carry out routine nursing duties independently in the workplace.\[10\]

1. Nursing experience of caring for patients undergoing radiation therapy
   • Two years was the longest duration that any of the participant nurses had worked and cared for a patient receiving radiation therapy.

2. For the treatment type, bone metastasis was the highest, and about 50% of the nurses had cared for patients. The goal of radiation therapy for bone metastasis is pain relief, so it is important that treatment occurs according to the condition of the patient.\[11\] Another goal is to maintain and improve the patient quality of life (QOL). At the time of treatment planning, the health-care team devises ways to maintain therapeutic positions and pain control. Nurses take responsibility to perform expert care if adverse events occur.
difficult experiences of undergoing radiation therapy.

In this way, new nurses are not provided daily care to patients before receiving any technical education. However, these new nurses still lack sufficient knowledge and experience. Consequently, they still lack sufficient knowledge and experience and it is likely that they will worry about being unable to cope with difficult situations.

**Table 6: Situation of difficult cases, “At what point did you feel it was difficult?”**

| Questions from patients |
|-------------------------|
| How many adverse events are likely to occur and when will they happen? |
| What therapeutic effects can be expected? |
| What is radiation therapy treatment? |
| Is there a therapeutic effect just with radiation therapy? |
| Is hair loss inevitable? |
| Is there any sense in continuing the treatment? |
| Complaints from patients |
| If I cannot control the pain, even after using opioid medication, what should I do? |
| I cannot stand any more adverse effects |
| I want to die and quit the other treatment, but then I do not know what to do |
| I want to continue treatment, but I have a very painful sore throat |
| Nurses open responses |
| To cope with the difficulties, I was crying while I was eating |
| I did not know what to do about the concerns voiced by the patient |
| Adverse events are difficult enough, but the difficulties are multiplied when the patient voices frustration. I had an early errand and had to leave |
| Patients need care for dermatitis |
| Patients with stomatitis have trouble eating meals |
| Timing of adverse events causes difficulties |
| It is difficult to treat pain in pediatric patients |

**Difficult cases**

About 40% of the nurses had experienced difficulties in caring for patients undergoing radiation therapy. At the time of the difficult experience, the most common level of experience was in the 1st year for 18 nurses, followed by the 2nd year for 5 nurses. The 1st-year nurses had to provide daily care to patients before receiving any technical training, which included knowledge of the cancer patient’s psychological background.

**The symptoms of the patients**

With regard to the treatment site, the head and neck was the most common, followed by the esophagus. Chemotherapy and radiation were the most common treatments. In the head and neck area, the total dose of radiotherapy was 60–70 Gy. Many patients who underwent concurrent chemoradiotherapy often exhibited significant adverse events.

Combined treatment is becoming more standard, from which, more adverse events are expected over the course of treatment. Therefore, patients experience excessive pain and continued treatment becomes difficult (Japan Society for Head and Neck Cancer, 2012). In addition, with mucositis at the irradiated site, pain occurs with ordinary stimuli such as conversing or eating (Wells, 1998). This is an important characteristic of a difficult case. In addition, it is thought that the head and neck area and the esophagus influence the basic human desire to converse and eat. It is also thought that the QOL of the patient includes the control of sharp pain from palliative irradiation due to the bone metastasis.

**Characteristics of nurses inexperienced in radiation therapy treatment**

**The work environment of the nurses**

The nurses are unfamiliar with the environment. Although their experience and knowledge are limited, the nurses are going to face the patient with a sincere attitude. In a study by Tsutazawa (2012), difficulties for patients and families were identified in a wide variety of areas: hospital nursing, psychiatric nursing, cancer nursing, end-of-life care, emergency nursing, and pediatric nursing. Pain and suffering and poor communication with the patient were identified in hospital nursing. However, their research also included the nurses’ perspective, and there are elements that cause difficulties, such as problems contacting physicians, insufficient time to complete tasks, and the business elements of facilities. In this way, new nurses are not accustomed to the environment, and there is an overlapping of complicated tasks. Consequently, they still lack sufficient knowledge and experience and it is likely that they will worry about being unable to cope with difficult situations.

**Communication skills of the nurses**

They lack sufficient communication skills. Repeated attempts to listen and understand are not always successful, and when the patient shows irritation, the nurses may interpret this as rejection. Consequently, nurses often feel that difficulties stem from their relationship with the patient.

**Understanding the treatment process of the nurses**

Difficulties were related to patient concerns about therapy and included many questions about the radiation treatments, such as “How many adverse events are likely to occur?” and “What therapeutic effects can be expected?” The patients expressed concerns about the adverse events, for example, “If I cannot control the pain, even after using opioid medication, what should I do?” and “I cannot stand any more adverse effects.” However, new nurses could not predict the treatment process that the patient would follow. Therefore, nurses feel helpless when they cannot do anything for patients to relieve their suffering from adverse events, and inexperienced nurses cannot adequately answer the patients’ questions or address their problems.

**The limited experience of the nurses**

All in all, they could not deal with the bad news that the patient faced. In that case, it is likely that nurses with less experience feel bad because they cannot effectively provide emotional support for these patients. These issues are likely due to lack of knowledge and experience. However, these
new nurses face patients undergoing radiation therapy with a serious attitude. They also want to care for patients in some way although they lack experience and knowledge.

Understanding the holistic medical care of the nurses

They did not understand the relationship between holistic medical care and the patients’ perspectives. Hence, they felt a sense of duty to respond to patients who were expressing their spiritual pain. In principle, it is important to understand the physical and psychological pain of cancer patients.[3] They need high-level nursing care that enhances QOL. Therefore, it is also important for nurses to have knowledge about radiation therapy to understand patient backgrounds and support them while they undergo treatment.

Characteristics of nurses inexperienced in radiation therapy treatment

The results above indicated that the following were characteristics of these nurses:
1. Although their experience and knowledge were limited, they faced the patient with a sincere attitude
2. They could not predict the treatment process that the patient would follow
3. They lacked sufficient communication skills
4. They did not understand the relationship between holistic medical care and the patients’ perspectives. Hence, they felt a sense of duty to respond to patients who were experiencing spiritual pain
5. They could not cope with the bad news that the patient received.

Support for the nurses

Hence, some nurses feel inadequate in supporting and caring for these patients, resulting in distress for the nurse. However, when nurses take steps to overcome knowledge deficits, they can experience personal growth and rewards.[14] Therefore, the presence of mentoring nurses to help less experienced nurses is important, and more specialized support and care can be provided to patients. Moreover, cooperation between nurses with specific knowledge and expert skills results in efficient high-level nursing care and facilitates a multidisciplinary approach to patient care.

Limitations of the Study and Suggestions for Future Studies

The participants in this study were all nurses at the same hospital; therefore, generalization of results is limited. Furthermore, since the research period is short, participants may not have enough time to answer all the questions fully. Moreover, we could not investigate all the factors that affect the nurse’s experience of difficult cases. This is a limitation. However, this study revealed an overview of the experience and challenges that nurses’ encounter when caring for patients undergoing radiation therapy for cancer.

In the future, we want to conduct qualitative research through interviews and improve the reliability and validity of the research results.

Conclusion

In hospital “A”, about 80% of the nurses had cared for patients undergoing radiation therapy, 40% of whom had experienced difficult cases. In addition, the characteristics of nurses inexperienced in radiotherapy treatment were shown. These nurses who lacked experience and knowledge could cope with difficult radiation therapy cases, but would likely benefit from additional education and training and mentoring from expert nurses experienced in dealing with the difficulties of caring for patients undergoing radiation therapy. Therefore, the improvement of education in radiotherapy nursing, including the knowledge of the cancer nursing and the construction of a support system are important and it may be said this is an issue for the future consideration.

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Conflicts of interest

There are no conflicts of interest.

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