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Determination of Fit to Work Status for Thyroid Cancer Survivor: A Case Study in Occupational Health Setting

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Abstract
Introduction: A thyroid cancer worker after undergoing ablation procedure requires specific recommendation when return to work. This study aimed to determine a framework of the fit to work (FTW) status from the occupational health nursing viewpoint. The implication is to help answer the question whether the worker is fit to work as a cancer survivor.
Methods: This study used a Case Study method with descriptive design. The subject was a therapist associate who had office-based work. Blueprint Test of case management assessment method by American Board of Occupational Health Nursing (ABOHN) standard combined with the Glasgow Coma Scale (GCS) were used as the instrument after the ablation procedure. We analyzed the case with The Fit to Work (FTW) Model of Hybrid Model.
Results: FTW assessment showed vital signs within normal limits. Immunological examination found abnormalities. The left and right thyroid lobes were not visualized and there was no mass in the surgical bed. The client was advised for specialist follow up after 6 months. After the ablation procedure, the employee had a verbal communication disorder. The Glasgow Coma Scale (GCS) recorded point 5 hoarseness with a decrease of tone quantity of about 90%. Based on the medical report and his specialist's advice, 6 months after ablation the employee's medical condition showed improvement.
Conclusion: With At-Will Model of Hybrid as the framework to determine the fitness status, fit with restrictions was declared and regular fitness status update was advised.

Keywords: fit to work, occupational health nursing, thyroid cancer, cancer survivor, case study

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Introduction

More than 19.1 million people lived with cancer in the world and 10 million of them died because of it. [1] The most common were breast and lung cancers, 11.7% and 11.3% respectively.[1] It is not known how many people had thyroid cancer, but in America, in 2017 the number increased by 47,000 cases.[2] The death rate due to cancer reaches 1-2% worldwide.[3] In Europe, more than 3 million cancer clients per year were workers.[4] In Indonesia, the prevalence of cancer was 1.49 per one million population.[5] Malignant thyroid cancer ranks 9th out of 10 thyroid cancers (4.43%) in Indonesia.[6] Cancer that occurs in workers causes physical and psychological impacts, [6] especially during this Covid-19 pandemic where the risk is greater [7]. The increasing number of cancer cases has attracted the attention of world bodies, both the World Health

Organization (WHO) and the International Labor Organization (ILO)[8] The increasing attention of various institutions towards workers and occupational health is not only for the sake of business and industry interests, [9] but also human productivity and welfare, economic interests, and health maintenance[10]. According to ILO, workers have the right to receive proper treatment, in terms of work and occupational health services.[11] Therefore, the fitness status of workers must be used as a pillar in the process of returning to work after a work accident or suffering from an illness.[12]

This case study raised the fitness status of a therapist associate who was diagnosed as having a thyroid cancer, working in an international company engaged in medical equipment. Cases of FTW like this are rare among nurses working in industrial settings.[13] The current treatment for thyroid cancer is to use an ablation procedure in addition to the conventional treatment of total thyroidectomy.[14] The side effects of thyroidectomy include reduced voice loss that results in the unability to communicate verbally.[15] In terms of occupational health nursing, the role of OH nurses is very important in identifying all factors related to the fitness status of employees who experience health and work problems[16] because the objective of OHN management is to maximize work productivity.[17] Therefore, OH nurses' competency in ensuring that workers can return to work under the umbrella of the fitness to work (FW) assessment is very significant. Among them is an understanding of several FTW standards that need to be prepared as a consideration in determining the workers' fitness status at the worksites. Other popular FTW references from the OHN side are the American Board of Occupational Health Nursing (ABOHN) and Occupational Safety and Health Administration (OSHA), both of which were used as guidelines in the management of this case study.[18,19]

Based on the above considerations, we conducted research using a case study method with descriptive approach. The objective was to prepare a framework assessment of FTW for thyroid cancer workers from the OHN's point of view. As the case like this in the workplace is rare, by raising the issue of handling thyroid cancer workers in the workplace from the OHN viewpoint, it is expected that the study result can be considered as a novelty in OH nursing view point, besides improving employee productivity.

Methods

This research used a case study approach through the nursing process. The subject was an international company worker engaged in the field of medical devices. The worker was diagnosed with thyroid cancer and underwent total thyroidectomy and ablation for the first time. The research was conducted from August 2021 to April 2022, using interview techniques, observation to the subject and their families, and supported by references related to case management studies. Research instruments included the researchers, medical and laboratory examination results as well as the study guidelines and FTW standard references from ABOHN and OSHA. This study took place after obtaining informed consent from the subject. The research was started after obtaining approval from the Health Research Ethics Committee of the Poltekkes Kemenkes Jayapura Ministry of Health No.034/KEPK-J/VIII/2021, dated 16 August 2021. There were three stages carried out in this study, namely Case Management Assessment (Blue Print Test) according to ABOHN, determination of the Glasgow Coma Scale (CGS), and Fit to Work of Hybrid Model. The Case Management Blueprint Test for FTW consists of Assessment, Planning, Implementation, and Evaluation. The Case Management version was used because ABOHN is an accredited, and standardized occupational health nursing institution.[19] Likewise, OSHA as the USA's official institution in charge of occupational health and safety is one of the world's reference centers.[20] The determination of the worker's level of awareness was completed using the CGS because this method has been used by many studies on similar cases.[21] In the FTW model, we

used The At-Will Model of Hybrid because this model is the most suitable for the current situation and conditions of the workers as well as the company during Covid-19 pandemic.[22] The study was carried out by implementing the healthcare protocols during Covid-19 pandemic.

RESULTS

Assessment

Mr. RA was 28 years, male, bachelor in nursing, 4 years working as a nurse, recently worked as therapist associate in an office-base setting of a renal care company for the last 1.5 years in Sulawesi, and originally from Aceh. The subject felt an enlargement in the lower neck on March 2021. After being examined by a specialist, he was advised for a total thyroidectomy. Physical examination on September 6, 2021, showed that the subject's health outcomes were generally good. He was well conscious, all vital signs were within the normal limits. During the first admission in a major government hospital of Makassar, his vital signs showed high fever until 39 degrees centigrade, BP 110/70 mmHg, respiration 20/ minute, pulse 96/minute. At the second admission, during nuclear treatment, the vital signs showed a temperature of 36.4^0, pulse 80x/minute, respiration 18x/minute, blood pressure 120/80 mmHg. His body weight was 74 kilograms (BMI = 25.34). The results of the laboratory test showed a malignant thyroid cancer, which then suggested him for ablation therapy. After a total thyroidectomy, the subject complained of hoarseness in his voice and very low volume, making it difficult to communicate verbally.

Ultrasound was also performed and the result was suspected thyroid cancer. Thyroidectomy was performed at the end of August 2021 at Zainul Abidin Hospital of Aceh. Lab examination recorded Hemoglobin 17.2 g/dl, erythrocytes 5.8 million/mm and hematocrit 49%, leukocytes 16.0. Thyroid T4 1.79, TSH 77,050. The conclusion from the results of the ultrasound examination showed the presence of Papillary Thyroid carcinoma with metastases to the lymph nodes. After that, a nuclear therapy referral was continued at Hassan Sadikin Hospital of Bandung in early September 2021. After the ablation, the subject felt a weakness. The specialist recommended him to drink up to 6 liters a day for a week, avoiding seafood after a nuclear therapy. Follow-up was recommended after 6 months.

Patient said the worst episode was during the admission in Makassar in which he was having high fever (39^0 C) and restless. However, no other worsening condition experienced by him. He said his appetite normal, no vomiting nor diarrhea. After thyroidectomy he experienced inability to speak for about one month. He could speak gradually, 40% at the first month, 60% at the second month, 80% at the third month, and 90% at the fourth month after the surgery. He felt physically fit and did not feel any sickness but his voice quality decreased during the first 3 months after surgery. The operation did not affect his office work including outside visit to hospitals or other renal care facilities for office work purposes **Table 1** shows that the total score of Best Eye response was 10, Best Motor Response Obeys Commands was 20, and Best Verbal Response was 15. The responses are scored between 1 and 5 with a combined total score of 3 to 15, with 15 being normal. Score of less than 5 is associated with an 80% chance of being in a vegetative state or death. Score of greater than 11 is associated with 90% chance of recovery.

Planning

According to the ABOHN Case Management standard, if any significant abnormality is detected, the OHN should refer to a physician-based health assessment and if any major lifestyle risks are identified, appropriate advice could be given.[19,23] Therefore, the subject was advised to rest after the specialist advice. After that, it was planned to meet a specialist at Zainul Abidin Hospital where later a thyroidectomy was performed.

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Table 1. Glasgow Coma Scale

Parameter	Client's Response	Score
Best Eye Response	Spontaneous eye opening	4
	Eye opening to voice stimuli	3
	Eye opening to pain stimuli	2
	None	1
Best Motor Response	Obeys commands	6
	Localizes to pain	5
	Withdraws to pain	4
	Abnormal Flexion (decorticate response)	3
	Extensor posturing (decerebrate response)	2
	No movement	1
Best Verbal Response	Conversant and oriented	5
	Confused and disoriented	4
	Utters inappropriate words	3
	Makes incomprehensible sounds	2
	Makes no sounds	1

The client was also advised to consult an ENT specialist regarding his voice disorders. Also, meet with nutritionist for the nutritional need.

Implementation

The implementation of FTW was carried out based on priority of the problems encountered. That was done because the results of laboratory examinations, ECG and others were considered valid for 1 month unless emergency. Due to distance constraints, the intervention management in the case was conducted by interviewing the client, his family members and provided him with the FTW form. The goal was to know the progress of his health conditions.

The FTW form was prepared according to the ABOHN standard which contains a health questionnaire that includes administrative information: name: RA (Initial), male, 28 years, occupation: therapist associate, and the address was in Aceh. The subject mentioned that he did not have any significant medical history, major illness, surgery or any accident in the workplace. He received the second Covid-19 vaccines and currently was taking some medication of the thyroid problems. The basic clinical examination were 175 cm height, 80 kg body weight, BP 120/80 mm/Hg, pulse 84 x/mnt, temperature 36.7 degrees centigrade, 18 x/mnt respiratory, and visual aquity 6/6. Those data acquisition were collected online.

Based on the GCS scoring implementation after all healthcare procedures were performed, the parameter of eye response was spontaneous (score 4), the motor response is obeys commands (score 6), and the verbal response is conversant and oriented (score 15). The GSC total score is 15 (**Table 1**). In verbal conversation, the client could not utter louder as usual though he was conversant, oriented, and comprehensive sound. The next stage is to assess his fitness status using Hybrid Model to analyze the case. **Figure 1** shows different scenarios which one the subject fit to work.

Evaluation

Mr. RA's job description 75% requires office work, and only 25% travelling that was much reduced during the pandemic. The job includes performing management activities, customer care, coordinating with healthcare professionals, providing training and CAPD nursing education, designing SOP, checking logistics and ensuring availability, forecasting business

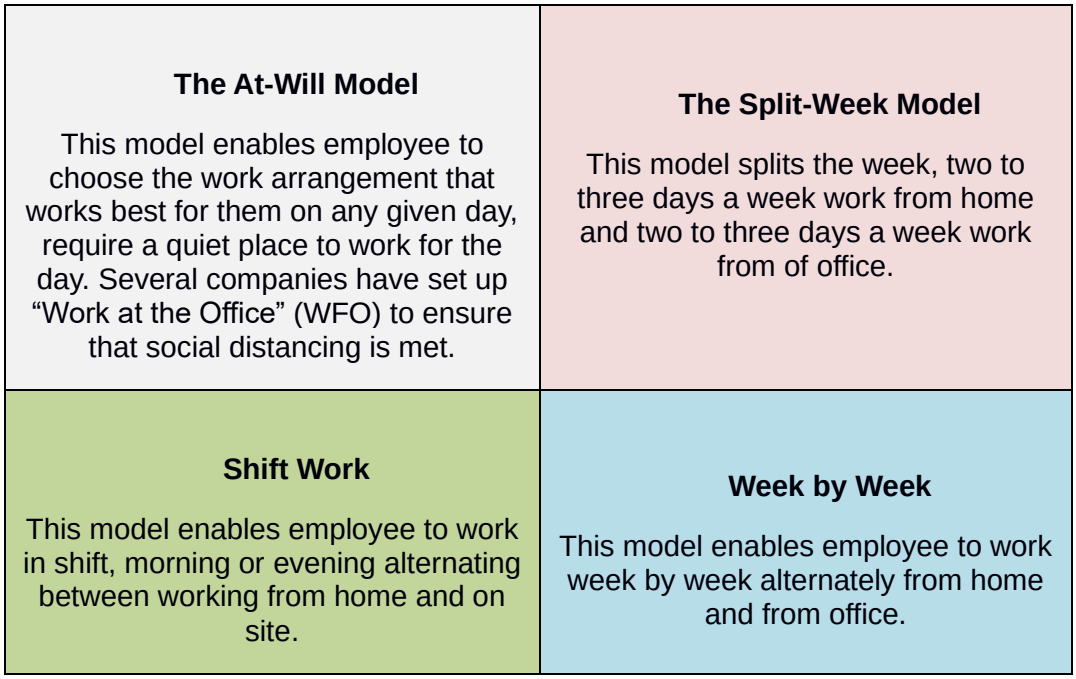

Figure 1. The Hybrid Work Model

planning, research, performing quality control, communicating with healthcare providers (hospitals, CAPD center, medical professionals), collaborating with other teams (customer care, IT, clinicians), providing patient care and/or rehabilitative and developmental Peritoneal Dialysis (PD) therapy to individuals with physical disabilities and/or functional limitations in the clinic, inpatient, outpatient, and outreach programs. Analyzing products range in hospitals, planning therapy programs, directing and assisting patients in exercises and using of wheelchairs and other devices, and evaluating PD patient progress; Educating patients and families in appropriate physical therapy methods; Leading the work of and serving as a resource for CAPD Nurses, as well as preparing report were also his duties.

Current medical condition: The patient did not experience any balance disorder which was vertigo positional that lasted for a few seconds only during the first few days after thyroidectomy and the first day after the ablation. During the medical check-up (6 months after the ablation) in April 2022, his vital signs showed normal, 36.0^{0}C, BP 120/80 mmHg, respiration 18x/minute, and pulse 84x/minute. Body weight was 84 kilograms (BMI=28.77). Laboratory results showed WBC (10.8), RBC (5.63), HGB (16.5), FT4 (<0.07), and TSH (>60.00), which is very high. The latest medical report (April 2022) i.e. USG neck examination projected no mass of residual at colli region, multiple lymphanodenopathy at colli region with level Ia and Ib left; no radiological abnormality in the thorax. Laboratory exams showed WBC 10.6, RBC 5.63, HGB 16.5, FT4 <0.07, TSHs >60.00 which is still high, and his weight was 84 kgs (BMI=28.77). There was an increase of 3.43 or 13.5%.

Based on the above data (subjective and objective) in the previous sections, there were 3 medical conditions faced by the subject who worked as therapist associate after total thyroidectomy and ablation therapy. Firstly, he had a balance disorder due to hormonal changes, so specialist intervention was needed. The medical conditions were most probably due to metabolic disorders as the side effects of nuclear therapy. The patient experienced the balance disorder which was vertigo positional that lasted for a few seconds during the first month after thyroidectomy and the first day after the ablation.

Secondly, the subject had a voice disorder so that he was unable to communicate verbally. Thirdly, he needed the help of some specialists who were in remote, and in different locations. Those three problems could affect his work performance. However, the subject said his work was not affected, as he was mostly working from home (WFH) especially during Covid-19 which was recommended by the management of the organization. The management advised to minimize the physical contacts even with customers, patients and clients. Even during admission, he brought laptop and mobile phones where he could communicate with his colleagues and supervisors. As per his high BMI, he was advised to reduce it and he did regular exercise with a gymnastic center.

The roles of OHN in this evaluation stage are identifying the health condition, prioritizing problems, consulting with OH Physicians and discussing the results of their recommendations with supervisors and the Human Resources Department (HRD). The final recommendations are to be discussed internally with the OH team, then with the client's supervisor and HRD. With regards to FTW recommendation, the FTW model of Hybrid can be useful tool. Based on the client's physical condition and after taking several considerations (distance, family support, work location, and medical consultation centers), the evaluation from OHN viewpoint, it was advised to use The At-Will Model as the FTW model for the client (**Figure 1**). The FTW decision from the OHN viewpoint was Fit with Notes (with restriction).

Study Gap and Limitations

Many researches have been conducted on thyroid cancer. However, only a few have discussed thyroid cancer in terms of occupational health in order to determine fitness status in occupational health settings, especially in Covid-19 era. Therefore, this case study contributes to research in occupational health and safety in general and in the OHN discipline in particular. The weakness of this study lies in the number of cases, due to limitations of distance, time and funds. In addition, researchers did not have direct contact for a long time so that physical assessments could not be carried out effectively. These gaps and limitations can be considered for a better future study.

Discussion

The occupational health problems in this case study are unique. During the treatment and physical therapy, the subject looked fit and did not experience any significant activity disturbances. He was suffering from malignant cancer. For the last 6 months before total thyroidectomy, he did not feel anything bothersome, but suffering from fever twice. From his medical history, he also did not have any significant medical history, as an individual, as well as from his family medical history. Some references mentioned that there is no clear cause of thyroid cancer. [24] The majority of thyroid cancer patients also have no symptom.[25] Therefore, thyroid cancer patients, except for disturbing speech intensity, can still carry out routine activities as usual. [15] Many research findings mentioned that cancer for many people is considered a worrying health disorder [26], which makes anxiety and stress in the workplace. The management of cancer cases is undergoing rapid changes, so with current nuclear therapy patients only need to take drugs in liquid or capsule form. [14] Then the patient is put in an isolation room for two to three days. Patients do not need to be afraid of nuclear therapy because the spread of radioactive iodine is only in the area of the thyroid cancer cells. This therapy also reduces the likelihood of local recurrence and improves the condition of patients with metastases. [6] However, not everyone understands this, so it can affect the patients themselves and their work. In addition, nuclear therapy is only available in big cities in Java Island in Indonesia.

Underlying medical condition

There are three medical conditions faced by the subject in which, if separated according to priority over time, cover the short, medium and the long term. First, the problem of elimination disorders after nuclear therapy such as a slight nausea, a

little dizziness, constipation is in the short-term category. Those problem will gradually disappear as the body recovers after thyroidectomy and nuclear therapy. [27] The problem in the medium term was nuclear therapy follow-up after another 6 months, one year, and one year later. The subject was advised to return to Bandung (Java), while he was from Aceh (his health insurance card origin is in Aceh) but he worked in Makassar (South Sulawesi). The third problem (the long term problem) was the subject's dependence on hormonal needs where the thyroid gland was no longer producing. There was no solution except having to take this drug for life according to the specialist advice.

The subject was a registered nurse, working as a therapist specialist in a medical equipment company for about a year. His work activities were 75% office-based jobs, and 25% were traveling. The traveling activity has decreased since the Covid-19 pandemic, due to government restrictions.[28] The problem was, those office activities generally require two-way communication i.e. online discussions. Sometimes he had to be involved in webinars as a moderator, or as a trainer in some scheduled training. His role in webinars and training required the ability to speak, sometimes even with a rather loud tone. While some references mention this voice recovery period can last 3-6 months.[27] At work in Makassar, the subject was the only company employee who worked as a representative to bridge the communication with company clients from various provinces outside Makassar. Some of the possible solutions can be hiring a new employee on temporarely basis, relocate, or dismiss him. Yet, those were purely a matter of management intervention, but need to be known and taken into account as an OH nurse in making Fit to Work decisions.

Analysis of Patient's condition to the work

FTW status is determined based on consideration of physical condition, disease/injury progression, occupation, co-workers, family, environment, company management rules, transportation to government regulations.[29] Everything is put together, linked to one another for consideration. For the last 6 months after surgery the patient did not experience any significant health problems that required serious attention from specialists, except for continuing taking his medicine for thyroid and weight gain which he managed by doing regular exercise in a gym. Besides, the patient claimed to be able to carry out his duty which was office base properly without any problems. Two times contacts with the treating physician from October 2021 to April 2022 conveyed he was medically advised not to have to come to the nuclear therapy in Bandung anymore. He was advised to approach the nearest medical specialist for further medical check-up instead. The principle of occupational health is an understanding of the existence of work hazards and the relationship to the employee health status which in this case is very minimal for the office work.[30] Neither the health conditions of the workers nor the work activities are significantly affected, except a few days of sick leave during and after surgery, which is very limited and can be tolerated. Therefore, based on the final medical report and his nuclear specialist report, from the OH Nursing view point he could be declared Fit with medical notes.

The mitigating factor for the Fit with notes (restriction) decision making is that the majority of employees work independently, not under direct supervision, meetings and discussions are conducted online, remotely from the representative office. While the burdensome was that several activities such as distribution of tools, training, leadership and discussions that require employees to participate directly verbally may not last long. Moreover, the employee did not have any work partner in his work area. Therefore, the Fit with Restriction status for the subject needs to be limited and evaluated on monthly basis for the next six months. The first 3 months the client was advised to submit his medical report from his specialist and the nuclear specialist after six months check-up. Thus, the employee was not laid off just because of his health problem that was cancer. Instead, he was professionally empowered.

The At-Will Model

Researchers took The At-Will Model as a recommended FTW decision choice for discussion with the OH team, HRD or others, because this model provides flexibility to employees without much harm to the company, especially during the Covid-19 pandemic.[31] While other FTW models require the presence of employees on-site, that is difficult for the sick ones. The At-Will Model does not require employees to be physically present on site.[22] Work can be adapted to the conditions of employees.

Conclusion

Our study found that the subject was an employee who was diagnosed with thyroid cancer. The conclusions drawn as a result of the FTW decision from the OH Nursing viewpoint was based on the results of physical examinations, laboratories, nature of work, health facilities, and work locations. Each aspect was considered and then matched with the FTW The-At Will Model of Hybrid. The recommendation of this case study was that the employee was declared fit with restriction. The model was recommended by many researches to overcome similar problems, for the benefits of both employees and the business.

Ethics Approval

This case study received ethics approval from the Research Committee of Poltekkes Kemenkes Jayapura, Papua, No. 003/KEPK-J/II/2022.

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Authors Contributions

SH: Conceptualization, data collection, analysis, writing and revising the manuscript.
IJHT: Conceptualization, data collection, analysis, and revising the manuscript. AF: Data collection, analysis, and revising the manuscript.
RA: Conceptualization, data collection, analysis, and revising the manuscript. All authors have read, agreed and approved for the publication of the final manuscript.

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