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Health in environment: reduce surgical site infections by applying Florence Nightingale's environmental theory

Anna Rana

Abstract

Surgical site infection is one of the most common causes of readmission in hospitals and it also leads to an overall increased burden. This can be decreased by applying basic concepts of Nightingale (1860) "Environmental Theory" while giving care to the patients. Keeping in view Nightingale's environmental theory, this paper aims to discuss the case of a patient suffering from a surgical site infection. It will help readers to understand the environmental factors which affect the patients' health and provide a way to promote healing and fast recovery by modifying their environment.

Keywords: Florence Nightingale, Environmental Theory, surgical site infection.

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Introduction

The word 'theory' is originated from the Greek "theorein", means "to look at" and defined as "a belief, policy, or procedure proposed or followed as the basis of action".¹ In the nursing profession, several theories have been developed that are defined as "an organized framework of concepts and purposes designed to guide the practice of nursing".^{2,3} Nursing theories are used in nursing education, research, and practice. Moreover, they serve as a basis for nursing care, guide nursing practice, and provide a foundation for clinical decision-making. Nowadays, as the healthcare system is becoming increasingly technology-oriented, the use of nursing theories in practice is reducing.⁴ However, to provide effective, efficient, and holistic care, nurses must rely on sound theoretical principles to develop and implement the plan of care.³ It is evident that theory-guided practice helps to promote the quality of nursing care and also enables nurses to understand "what they do for the patients and why they do it."⁵ This paper aims to emphasize the implementation of Nightingale's "Environmental Theory" into practice and describe how it promotes the patient's health.

Nightingale Environmental Theory: Nightingale is considered the mother of modern nursing. She was very compassionate towards the nursing profession and

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contributed greatly towards this profession. She was the first nursing theorist who presented "Environmental Theory" and wrote *Notes on Nursing: What It Is and What It Is Not*. She highlighted 13 cannons that include "ventilation and warming, health of houses, petty management, noise, variety, food, bed and bedding, light, cleanliness of rooms and walls, personal cleanliness, chattering hopes and advice, and observation of the sick". The concepts included in Nightingale's theory reflected the meta-paradigm of modern nursing. The Nursing paradigm consists of the person, health, nursing, and surrounding environment.⁶ Moreover, these concepts are interrelated with each other. According to Selanders, "Environment is the umbrella concept in Nightingale's theory of nursing."⁷ She contended that the environment could be altered to improve health conditions so that the natural laws would allow healing to occur.⁸ This theory is globally known and widely used in practice.⁹

Case Scenario

A 65-year-old Asian man, who had undergone abdominal surgery (laparotomy) 15 days back at a government hospital, was seen during a home visit in a community by the author. Upon entering the home, it was noticed that the patient belonged to low socioeconomic status and a family of seven resided in a two-room mud house. He was in a miserable condition, lying in a corner of a dimly lit room looking pale and lethargic. He had been losing weight and had lost appetite after surgery, according to his wife. The patient's wife was the one who takes care of her husband. Moreover, on physical examination, an unpleasant odour emanated from the wound and his body was warm to touch. His vitals showed that he had a temperature of 102°F and was tachycardic (pulse of 105 beats per minute). On further examination, it was noticed that his dressing was very dirty and on removal, there was swelling, redness, and purulent bloody discharge leaking from it. Furthermore, he was wearing dirty clothes and his surroundings were also unkempt, the air was dingy because there was no window in the room, the bedsheet under him had blood stains and a dustbin full of trash was present underneath his bed. On further inquiry from his wife, it was learned that the dressing had not been changed since after surgery nor had he been given a bath.

Discussion and Analysis

Upon analysis of the case, it was revealed that the patient's deteriorating health condition could possibly be because of various factors that include low immunity due to old age, poor living conditions, and poor hygiene. Additionally, his caretaker did not know how to take care of the wound site that includes its handling, changing dressing, and cleaning. His signs and symptoms all pointed towards a possible surgical site infection. However, these deteriorating factors can be analysed under the light of Nightingale's theory.

Personal Cleanliness: With regards to personal cleanliness, Nightingale stated: "unwashed skin of a patient is like giving slow poison to the patient and if their skin remains unwashed or their dirty clothes remained on them, it is interfering injuriously with the natural processes of health."⁸ Nightingale also described that if the patient's skin is washed and dried properly, it gives comfort and relaxes the patient. But, in this case, the patient's cleanliness was badly neglected. The dressing was leaking, and purulent discharge, along with blood, was oozing during the patient's assessment, as his dressing had not been changed since his surgery. Moreover, the patient was wearing blood-stained clothes and had not taken a bath since he had surgery due to his fear of wound infection and delayed recovery. The patient's situation signifies a lack of awareness and negligence in personal hygiene and wound care. Here, the nurse has a very important role, she should pay attention to the patient's condition and address his problem. Firstly, dirty dressing should be changed and the wound should be cleaned. Secondly, clean dressing should be applied under aseptic measures. Thirdly, the patient should be given a sponge bath and his clothes should also be changed.

Improper Bedding Leads to Fever: In *Notes on Nursing*, she stated, "Feverishness is generally supposed to be a symptom of fever — in nine cases out of ten, it is a symptom of improper bedding."⁸ In the stated scenario, the patient's body felt very warm, and on checking body temperature the patient had 102°F fever. It was noticed that the bedsheet was gathered under the patient which produced heat and the patient got febrile. Bed and bedding also have a great role in the patient's recovery. According to Nightingale, "The patients who are on bed rest deposit their harmful floras on the bed and if the bedding is not changed frequently, it becomes saturated with these floras, which re-enter the patient's body causing more harm."⁸ In this scenario, it was the contributing factor in the worsening of the patient's condition. Furthermore, persistent wetness and friction due to the wrinkled bedsheet irritate the patient's skin which puts the patient at potential risk of developing pressure sores as well.^{10,11}

Foul Smell: Regarding foul smell, she explained, "The human body, even when in health, is far more injured by the influence of foul air. Therefore, to keep the air pure, the room should have windows that are opened for ventilation."⁸ As mentioned in the current case, the presence of soiled dustbin and dirty dressing of the patient produced a foul smell that contaminated the air and environment. Additionally, it is also supported by the germ theory of the disease that says that environmental contamination gives birth to microorganisms that are harmful to health. Similarly, in this case, the contaminated environment delayed the patient's recovery.

Petty Management: Petty management refers to the continuity of care when nurses do not pay attention or are not involved in patient care, as then the continuity of care is breached. Concerning this scenario, the nurse did not pay attention to the patient's surroundings like a dustbin full of garbage, closed window, and the presence of smell; therefore, canon of petty management was missed. Nurses must manage the patient's environment by removing the soiled dustbin from the room, open the window, and ensure the patient's comfort. This would help to prevent further harm to the patient. However, with the increased workload on nurses, it is difficult to pay attention to the patient's needs except for their presenting complaint. But it should not be the reason to neglect the patient's needs. Florence described that a devoted nurse has an art of multiplying herself.⁸ So, nurses should have this art to provide holistic care to the patient.

Healthy Food: Nightingale had also highlighted the importance of healthy food and food preferences. In a patient's recovery, one of the most important and most neglected element is food. In the stated scenario, this important element was also neglected. Upon further investigation, it was discovered that the patient was complaining of nausea, and was unable to eat and hence was losing weight. Also, his wife explained that the patient refused to eat because he thought it interferes with his healing process. However, the cause of his weight loss could be infection and poor immunity. It is the nurse's responsibility to address this issue and explain its importance to the patient and his family. Additionally, the patient's food preferences should be considered and it must be ensured that the patient has some food or drink according to his/her health status.⁸

Discharge Teaching: Discharge teaching is a vital element of patient recovery. Since this patient was discharged from the hospital after surgery, probably no discharge teaching was provided to the patient and his family. Nobody told them about wound care, changing the dressing after three days, touching the wound after washing hands, and when

to come for follow up. This led to prolonged healing and worsening of the patient's condition.¹³ At this point, the nurse should play her role by providing discharge teaching or health education to the patient and family. It leads to decreased readmission, saves healthcare resources, and promotes patient's well-being.

This situation revealed that many basic elements, that are essential for a normal life and are required to help in the recovery of a sick person, were missing. Proper sunlight, fresh air, food, healthy house, and good personal cleanliness, as well as tidy surroundings, are basic human needs. When a person becomes sick, he also requires all these basic elements to become healthy. Although the disease itself has a natural way of progression, if these basic elements are not accessible, it worsens the patient's condition. Moreover, if all these elements are accessible it helps to provide vital energy to fight against the disease.⁸

Conclusion

It was concluded that despite the new technology growing trend and its usage in health care, the importance of Nightingale's theory could not be neglected. A nurse can make a huge contribution to the patient's recovery by applying this theory concepts into her practice while giving care to the patients. Moreover, as mentioned by Florence Nightingale in her *Notes on Nursing*,

nurse's duty is not only to give medications but also to deal with patients in terms of holistic care.

Recommendation

Hospitals should have a written policy of discharge teaching for patients regarding their medication, diet, time for dressing change, and follow up visit. In addition to this, nurses should train patients and their family members to perform wound care with hygienic measures and also properly explain its importance. It would help the patients

and their families to understand further care processes. Hospitals should have a discharge checklist that can be completed by a patient assigned nurse. There should be a system to check compliance of health care professionals with hospital policies.

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