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APPLICATION VIRGINIA HENDERSON'S THEORY APPROACH ON GASTROCUTANEOUS FISTULA PATIENT : A CASE STUDY

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ABSTRACT

Background: Gastrocutaneous fistula (GCF), a rare complication often seen after gastric surgery, connects the stomach to the skin. Managing GCF is challenging due to risks like infection, nutritional deficits, and psychosocial disorders. The Virginia Henderson nursing theory addresses these challenges by focusing on fulfilling 14 basic patient needs to promote independence and accelerate recovery. **Methods:** This case study illustrates the application of Henderson's theory to a 60-years-old male patient with GCF who experienced acute pain, nutritional deficits, and risk of infection. Nursing interventions included pain management through pharmacological and nonpharmacological techniques, optimization of nutrition with a high-calorie diet and parenteral supplementation, and prevention of infection through strict wound care. **Results:** Evaluation showed improvement in the patient condition, including decreased pain, improved nutritional status, and prevention of infectious complications. **Conclusion**: This study confirms that the application of the Virginia Henderson model is effective in managing GCF cases holistically, covering the physiological, psychological, and social aspects of the patient. This approach is expected to be a reference for nursing staff in optimally treating patients with similar condition.

Keywords: Gastrocutaneous fistula, Virginia Henderson, nutrition, infection.

Introduction

Fistula is an abnormal channel connecting the lumen of a hollow organ to another hollow organ or to the skin, typically found in the abdomen. These are classified by location, volume of discharge, and cause. The presence of a fistula significantly impacts patients physically and psychologically, posing a challenging condition for both the healthcare team and the patient.(Dahlia, 2007).

A gastrocutaneous fistula (GCF) specifically represents a connection between the stomach and the skin. By definition, it consists of an internal orifice (gastric outlet), an external orifice (cutaneous outlet), and a tract (usually covered by epithelium). GCF is a rare and challenging complication, accounting for 0.5–3.9% of normal-weight patients undergoing gastric surgery (Kobayashi et al., 2023). These fistulas can arise from intestinal injury, infection, and anastomotic leakage. While typically treated conservatively or endoscopically, large or difficult-to-treat GCFs may necessitate

surgical intervention (Masino et al., 2022). GCF predominantly occurs after iatrogenic gastric injury (especially following splenectomy), gastroenteric anastomosis damage, gastric suture line disruption, or failure of gastrostomy tube tract healing. Other less common causes include chronic inflammatory disease, carcinoma, pancreatic abscess, and radiation therapy (Papavramidis et al., 2021)

Nursing, as a profession, plays a crucial role in enhancing the quality of health services. Within hospitals, nursing services constitute the largest component of an integrated health service system. As healthcare providers, nurses are required to possess a professional ethos encompassing knowledge, skills, and attitudes toward individuals, families, and communities, whether sick or healthy. This includes addressing the entire process of human life in a comprehensive bio-psycho-socio-spiritual manner. Therefore, nurses must effectively apply nursing model theories in their care applications (Zaharany et al., 2021).

Virginia Henderson's model theory emphasizes the importance of fostering client independence to prevent delayed progress during and after hospitalization. She posits that nurses should assist individuals in achieving independence in activities contributing to their health or recovery. Henderson describes the nurse's role as substitute (doing for the person), supplementary (helping the person), and complementary (working with the person), all with the ultimate goal of maximizing the person's independence(Alligood, 2017)

Rooted in Virginia Henderson's conceptual model, known as the 14 basic needs of patients, the theory outlines physiological (first 8 components), security (9th component), psychological (10th and 14th components, focusing on communication and learning), spiritual and moral (11th component), and sociological (12th and 13th components, related to work and recreation) aspects ((Nelsey & Brownie, 2012). This theory provides a detailed framework for nursing care, making it highly applicable to patients with gastrocutaneous fistula who require a thorough initial assessment. Specifically, in managing GCF, this approach emphasizes addressing key patient problems such as acute pain related to physical injury agents , nutritional deficits due to inability to absorb nutrients , and the risk of infection indicated by invasive procedures. By focusing on these critical physiological needs, alongside the patient's psychological and spiritual well-being, Henderson's model facilitates comprehensive and individualized care. This report focuses on GCF as the primary case, acknowledging that nurses' in-depth knowledge and experience significantly influence care management, especially due to the rare incidence of GCF.

Based on the aforementioned background, this study aims to examine in depth the application of Virginia Henderson's theory in the nursing care of patients with Gastrocutaneous Fistula.

Results

Patient Profile

A man, Mr. S, aged 60 years, elementary school education, farmer, married, was admitted to the hospital on February 14, 2025 at 16.30 Western Indonesian Time (WIB), Medical Record Number 0-90-62-89. A new patient referred

from Mitra Sehat Hospital Situbondo with a diagnosis of Gastrocutaneous Fistula

The main complaint, pain in the fistula area in the right abdomen, fluid and food coming out of the fistula since 4 months ago, there were irritation and redness wounds around the fistula, the patient felt nauseous, weak, afraid of food because food came out of the fistula hole. The patient said he was afraid that reoperation would fail.

Medical History

The patient's previous history was that he had surgery in February 2024 with a diagnosis of gastric perforation at Mitra Sehat Hospital, due to wound dehiscence, repair surgery was performed in October 2024. The surgical wound did not heal and there was a fistula that released the food the patient ate. Therefore, the patient was referred to Dr. H. Koesnadi Bondowoso Hospital for digestive surgery specialization.

Supporting examinations: Laboratory (Complete Blood, RFT, LFT, serum electrolytes, GDA, and PT/APTT), Fistulography and Upper Endoscopy

The patient underwent Distal Gastrectomy bypass gastrojejunum + jejunojenunostomy and duodenum repair.

Picture 1 pre operation

Picture 2 post operation

Nursing Assessment

The assessment was conducted by focusing on 14 aspects of Virginia Henderson's theory;

1. Breathing normally.
   The patient had no problems with the respiratory system, the patient could breathe spontaneously with Respiration rate 20x/minute, no intercostal retraction, vesicular breathing in both lung fields, no

rhonchi and wheezing, symmetrical chest movement, normal chest shape, Blood pressure 107/75mmHG, pulse 86x/minute, Heart Sounds: S1 and S2 regular, murmurs and gallops not found.

2. Eating and drinking (nutrition).
   The patient complained of nausea, was afraid to eat and drink because it would come out of the fistula hole, the patient looked thin. The patient only drank milk 6x100cc a day. Nutritional intake was assisted with parenteral fluids. Drinking only a little water. Body Weight: 54 kg, Height: 168 cm Body Mass Index: 16.07 (Thin). Dry oral mucosa, no lesions, no dental caries, normal bowel sounds, there were fistulas and scars on the stomach.
3. Elimination.
   The patient said that bowel movements were irregular, little and liquid, no difficulty urinating, urine was yellow and clear, bowel sounds were normal. No hematuria, clear urine.
4. Activity and mobilization.
   The patient said his body felt weak, pain in the wound during activity. The patient rested in bed in the supine and semifowler positions. Daily activities were assisted in part by nurses and family. The patient often slept because when sitting and standing the fluid from the fistula would come out, there was a decrease in muscle strength 4, normal joint range of motion, and no paralysis.
5. Sleep and rest.
   The patient said he could sleep but often woke up because he felt very sensitive to the hospital environment such as the sound of the stretcher, pump alarm.
6. Getting dressed.
   During the assessment, the patient was in a mild dependency condition. The patient was able to dress himself although often assisted by family.
7. Maintaining body temperature and modifying the environment.
   There was no fever, body temperature 36.9oC. Body temperature control is still good. If the room is cold, the patient uses a blanket to warm the body.
8. Personal hygiene.
   General appearance is not clean, there is a fistula wound in the stomach. The skin is slightly dirty, body odor (+), no eye discharge and no visual aids. Nails are not clean, pink and slightly long, not cut, the nose is clean and there is no discharge. Clean black hair, no dandruff. Poor oral hygiene, dry lip mucosa and dirty tongue, oral hygiene is done 2x/day when waking up and going to bed.
9. Avoiding environmental hazards.
   Pain assessment was carried out using the PQRST assessment. P (provocation): pain is felt in the area around the irritated fistula, Q (quality) pain is felt like burning, R (region) pain in the right abdomen around the fistula area, S (severity) Initial pain is felt 6/10 and does not decrease with rest, Time (time) pain is felt continuously, and when arriving at the hospital it has started to decrease.
   There is a fistula wound in the stomach, there are many tissues and

plastic bags because they are used to clean the fluid coming out of the fistula. The fistula looks dirty, irritated, reddish and at risk of infection.

The environmental circulation is good with restrictions on visiting hours. The temperature and humidity of the room are good with the use of AC. Each bed is provided with handrub for hand hygiene, curtains for patient privacy.

10. Communication and social interaction.
    The patient can communicate well and use Indonesian and Madurese. Family relationships are less harmonious. During treatment, the patient was only looked after by his mother and sister. Communication with nurses was good and open and he did not experience hearing, speech and language disorders. The patient said he was anxious about his health condition. He never thought he would experience an illness like this and was afraid that the operation would fail again.
11. Worship according to his beliefs.
    The patient is a Muslim. The worship that is done is praying before going to bed and in the morning. However, the patient does not pray. The patient admitted that he surrendered and asked God for the best.
12. Work.
    The patient is a farmer with work activities from morning to afternoon, since being sick the patient has only been active at home, his activities are only lying down, and as an activity he is assisted by his family.
13. Play and Recreation.
    The patient only works and farms, the patient said he does not have time and money for recreation
14. Learning ability.
    The patient has an elementary school education and lives in a village with limited access to education and information.

Nursing Interventions according to (SDKI, 2017), (SLKI, 2018), (SIKI, 2018)

Tabel 1.1 Nursing Intervention

No	Nursing Diagnostic	Purpose	Intervention	Rationale
1.	Acute pain related to physical injury agents **(D.0077)**	After nursing actions are carried out, it is expected that acute pain will be resolved with the following outcome criteria: **Pain Level (L..08066)** 1. Pain complaints decrease 2. Grimacing decreases 3. Pain scale decreases 4. Difficulty sleeping decreases 5. Blood pressure improves	**Pain Management (I.08238)** **Observation** 1.Identify location, characteristics, duration, frequency, quality, intensity of pain 2. Identify pain scale 3. Identify non-verbal pain response Therapeutic 1. Provide non-pharmacological techniques to reduce pain (eg: TENS, hypnosis, acupressure, music therapy, biofeedback, massage therapy, aromatherapy **Education** 1. Teach non-pharmacological techniques to reduce pain **Collaboration** Collaborate in providing analgesics if necessary	1. Identifying the characteristics of pain scale and discomfort in patients 2. Massage therapy is an anti-pharmacologic al therapy that can be applied to patients with complaints of mild pain.
2.	Nutritional Deficit related to Inability to absorb nutrient	After performing nursing actions for 3 x 24 hours, the patient's nutritional status improved	**Nutrition management** **Definition: Identifying and managing a balanced nutritional intake**	1. Increase the client's appetite 2. Increase and maintain 3. The amount

	s **(D.0019)**	with the following outcome criteria: **Nutritional Intake and Output** 1. Knowledge of proper nutritional intake standards increased 2. Body weight improved 3. Body mass index improved 4. Meal frequency improve 5. Appetite improved	**Observation Actions:** 1. Identify nutritional status 2. Identify food allergies and intolerances 3. Identify preferred foods 4. Identify calorie and nutrient needs 5. Identify the need if oral intake can be tolerated 6. Monitor food intake 7. Monitor body weight 8. Monitor laboratory test results **Therapeutic:** 1. Facilitate determining dietary guidelines (eg, food pyramid) 2. Serve food attractively and at the appropriate temperature 3. Provide high-calorie and high-protein foods 4. Provide food supplements, if necessary **Education:** 1. Encourage sitting position, if possible 2. Teach the programmed diet **Collaboration:** 1. Collaborate on parenteral nutrition 2. Collaborate with a nutritionist to determine the number of calories and types of nutrients needed, if necessary	of calories and nutrients needed 4. To maintain the correct diet for the client
3.	Risk of infection is indicate d by the effects of invasive procedures **(D.0142)**	After nursing actions are carried out, it is expected that the risk of infection will be resolved with the following outcome criteria: **Infection Level (L.14137)** 1. Redness decreases 2. Swelling decreases 3. Wound improves	**Infection Prevention (I.14539) Observation** 1. Monitor for signs and symptoms 2. Local and systemic infections **Therapeutic** 1. Wash hands before and after contact with the patient and the patient's environment **Education** 1. Explain the signs and symptoms of infection 2. Teach how to wash hands properly 3. Advise increased nutritional intake **Collaboration** 1. Collaborate on antibiotic administration	1. Identifying signs of infection 2. Preventing the spread of infectious organisms 3. So that patients know the signs and symptoms of infection 4. To speed up healing

Discussion

Overview of Gastrocutaneous Fistula Management

Enterocutaneous fistula treatment is because the fistula often forms skin erosion and ulcers around the fistula due to gastric secretions, active pancreatic secretions, and digestive secretions containing bile. Recently, devices and methods of treatment for fistula closure have been developed. Gastrocutaneous fistula can be treated almost entirely with endoscopic treatment using the cutting, suturing, and blocking method. Although surgical intervention is rarely performed because it is not as effective and safe as conservative treatment, it can be performed in some cases depending on the condition of the fistula, because it is more effective in treating the fistula than conservative treatment.(Kobayashi et al., 2023).

Application of Virginia Henderson's Theory in Nursing Care

Comprehensive nursing care needs to be supported by a complete and accurate assessment. The assessment is carried out in detail focusing on 14 components of basic needs. This helps nurses to establish nursing diagnoses accurately. Optimal management is highly dependent on proper examination. Virginia Henderson's theoretical approach in nursing care for patients with gastrocutaneous fistula (GCF) provides deeper insight into the importance of meeting the patient's basic needs.(Arifiati et al., 2022)

Management of Key Nursing Diagnoses

Based on the assessment conducted, the patient experienced several major problems, including acute pain, nutritional deficits, and risk of infection. These three problems became the main focus of nursing interventions to improve the patient's physical, psychological, and social conditions.

The patient experienced significant acute pain due to irritation in the fistula area. Pain assessment using the PQRST method showed that the pain was felt continuously and did not decrease with rest. Pain can be treated with pharmacological and non-pharmacological pain management. Pharmacological treatment procedures are carried out by administering painkillers or analgesics. However, sometimes long-term use of drugs can cause side effects. Other options, non-pharmacological therapies that can be done to relieve pain, such as deep breathing relaxation techniques, massage, compresses, music therapy, murottal therapy, distraction techniques and guided imagery (Suddarth., 2013). This therapy tends to be used more in patients with chronic pain because chronic pain is considered more dependent on a multidisciplinary approach and should involve more than one therapeutic modality.

Education and distraction techniques are often used in the management of chronic pain. It is important to remember that acute pain can also benefit from such non-pharmacological approaches in combination with appropriate pharmacological treatment. Utilizing these methods in acute pain management offers various advantages, including reducing the need for analgesic drugs, providing patients with greater control, improving coping mechanisms and quality of life, and accelerating recovery. This therapy is also easier to implement and causes no significant side effects. Furthermore, education and distraction techniques can promote patient independence and are relatively safe for long-term application(Small & Laycock, 2020). Therefore, interventions are carried out with a combination of pharmacological and non-pharmacological approaches, such as distraction techniques, music therapy, and light massage. These techniques have been shown to reduce pain perception and increase patient comfort. This approach is in line with Virginia Henderson's concept which emphasizes the fulfillment of physiological needs and patient comfort in undergoing the treatment process.

Nutritional deficits are a major challenge in these patients. Management of enterocutaneous fistula (ECF) can be challenging due to large volumes of fluid loss, which can lead to electrolyte imbalance, severe dehydration, malnutrition, and sepsis. Nutritional support plays a key role in the successful

management and closure of ECF. The principle of nutritional support for patients with ECF should prioritize enteral nutrition (EN), supplemented with parenteral nutrition if necessary. Although total parenteral nutrition (TPN) may be indicated, enteral feeding should be encouraged as early as possible if the patient tolerates it, which can protect the intestinal mucosal barrier and prevent bacterial translocation.(Tang et al., 2020). The patient experienced weight loss, was afraid to eat, and only consumed limited amounts of milk. The nursing approach taken included monitoring nutritional status, providing a high-calorie and protein diet, and educating about the importance of proper nutritional intake. In addition, collaboration with the nutrition team and providing parenteral nutrition are important steps in ensuring that patients receive sufficient intake to support the wound healing process and recovery of body condition.

The risk of infection in GCF patients is elevated because of the presence of open wounds that continue to discharge fluid. The discharge of fistula fluid from the ileum contains digestive enzymes, so that fistula fluid is very corrosive to the skin around the fistula (Dahlia, 2007). Therefore, infection prevention is carried out by closely monitoring signs of infection, education about wound care, and implementing strict hygiene standards. In addition, collaboration with doctors in administering antibiotics if necessary is part of the intervention to prevent further complications.

In addition to the physical aspect, a holistic approach is also applied in handling the psychological and social aspects of patients. Anxiety in pre-operative patients that is not managed properly will affect the healing process of the results of the operation itself, including patients being less cooperative, causing all meaningful information for the healing process not to be received well by the patient. Anxiety can also hinder the operation schedule, due to the influence of increased blood pressure so that better preparation is needed (Putri & Martin, 2023). Patients show high levels of anxiety regarding the possibility of failed reoperation. Therefore, nurses play a role in providing emotional support, building therapeutic communication, and involving families in the care process to increase patients' confidence in dealing with their condition.

The Virginia Henderson model approach that focuses on 14 basic needs has been proven effective in helping patients achieve independence and improve their quality of life. With a comprehensive assessment and appropriate interventions, nurses can provide optimal nursing care for patients with gastrocutaneous fistula..

Conclusion

The role of nurses as providers of nursing care can be done by using the Virginia Henderson Model approach in various cases by exploring nursing care problems starting from assessment, determining diagnosis, planning, implementing actions and evaluating patients with gastrocutaneous fistula. This model theory allows nurses to provide nursing care to increase independence due to physical and psychological changes.

References

Alligood, M. R. (2017). *Nursing theorists and their work-e-book.* Elsevier Health Sciences

Arifiati, M., Yona, S., & Herawati, T. (2022). Aplikasi Pendekatan Teori

Virginia Henderson pada Pasien Diseksi Aorta: Case Study. *JOURNAL OF Qualitative Health Research & Case Studies Reports*, *1*(2), 81–88. https://doi.org/10.56922/quilt.v1i2.235

Dahlia, D. (2007). Balutan Parcel Alternatif Penatalaksanaan Fistula Gastrointestinal pada Luka Dehiscence: Studi Kasus. *Jurnal Keperawatan Indonesia*, *11*(2), 72–76. https://doi.org/10.7454/jki.v11i2.190

Kobayashi, Y., Yagi, S., Yamada, K., Kato, D., Enomoto, N., Nohara, K., & Kokudo, N. (2023). Refractory gastrocutaneous fistula treated by two-stage surgery: a case report. *Surgical Case Reports*, *9*(1), 0–4. https://doi.org/10.1186/s40792-023-01788-4

Masino, E. E., Calderón Novoa, F. M., Cano, V., Wright, F., & Duro, A. (2022). Gastrocutaneous fistula: Laparoscopic resolution. *Revista de Gastroenterología de México (English Edition)*, *87*(3), 396–397. https://doi.org/10.1016/j.rgmxen.2022.05.006

Nelsey, L., & Brownie, S. (2012). Effective leadership, teamwork and mentoring--essential elements in promoting generational cohesion in the nursing workforce and retaining nurses. *Collegian (Royal College of Nursing, Australia)*, *19*(4), 197–202. https://doi.org/10.1016/j.colegn.2012.03.002

Papavramidis, T. S., Mantzoukis, K., & Michalopoulos, N. (2011). Confronting gastrocutaneous fistulas. *Annals of Gastroenterology*, *24*(1), 16–19.

Putri, S. B., & Martin, W. (2023). Faktor Internal Dan Eksternal Yang Berhubungan Dengan Tingkat Kecemasan Pasien Pre-Operasi Mayor Di Ruang Rawat Inap Bedah. *Nan Tongga Health And Nursing*, *14*(1), 60–67. https://doi.org/10.59963/nthn.v14i1.119

Small, C., & Laycock, H. (2020). Acute postoperative pain management. *The British Journal of Surgery*, *107*(2), e70–e80. https://doi.org/10.1002/bjs.11477

Suddarth., B. &. (2013). *Buku Ajar Keperawatan Medical Bedah* (Institusi Ilmu Kesehatan Bhakti Wiyata Kediri (ed.); 1st ed.). EGC. https://onesearch.id/Record/IOS7039.slims-5163?widget=1

Tang, Q. Q., Hong, Z. W., Ren, H. J., Wu, L., Wang, G. F., Gu, G. S., Chen, J., Zheng, T., Wu, X. W., Ren, J. A. A., & Li, J. S. (2020). Nutritional Management of Patients With Enterocutaneous Fistulas: Practice and Progression. *Frontiers in Nutrition*, *7*(October), 1–12. https://doi.org/10.3389/fnut.2020.564379

Zaharany, T. A., Hariyati, R. T. S., & Anisah, S. (2021). Pengembangan Literasi Digital Keperawatan Dimasa Pandemi Covid-19: Case Study. *Jurnal Kepemimpinan Dan Manajemen Keperawatan*, *4*(1). https://doi.org/10.32584/jkmk.v4i1.873