

## CASE REPORT

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# The Use of Life Activities-Based Nursing Model in the Care of Individuals with Buerger's Disease

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**ABSTRACT** Buerger's disease (Thromboangiitis obliterans) is a non-atherosclerotic segmental inflammatory disease that mainly affects small and medium-sized arteries, veins, and arm and leg nerves. Although the mortality rate is not high, the symptoms it causes significantly reduce the quality of life. The Life Activities Model is a nursing model that solves the problem with a humanistic approach by considering the individual as a whole to support patients to increase their quality of life. In this case, care management of a 51-year-old male patient whose quality of life decreased due to severe pain and whose lower extremity thrombosis developed due to treatment-resistant Buerger's disease was presented using a nursing model based on life activities. By using the Life Activities-Based Nursing Model in the care of the individual with Buerger's disease, we increased the patient's compliance by supporting them to perform the activities of daily living in the best way possible.

**Keywords:** Buerger's disease; nursing; model

Buerger's disease (BD), also known as thromboangiitis obliterans, is a segmental, inflammatory disease of arteries and veins, especially in the small and medium-sized vessels of the upper and lower extremities.<sup>1</sup> It is a non-atherosclerotic disease, usually seen in men aged 20-50 years who smoke.<sup>2</sup> Although the disease can be seen in all geographical regions, it is more common, especially in Far East countries. There is no prevalence study on the incidence rates in Türkiye.<sup>3</sup> The most common involvement of BD, a peripheral vascular disease, is pain in the lower extremities, and the most basic symptom is a pain in the affected area.<sup>4</sup>

The model developed by N. Roper, W. Logan, and A. T. Tierney in 1970 is frequently used in nursing practice and education.<sup>5-9</sup> In this study, the data of an individual with BD were collected according to the Life Activities Model, nursing diagnoses were determined, and interventions were applied.

## CASE REPORT

The 51-year-old male patient complained of frostbite and pain five months after a sprained foot. When he applied heat to his foot, a wound occurred, and he applied

to the hospital. The wound was dressed using batikon, rifamycin sodium, and nitrofurazone in the hospital. An angiography examination was performed when the pain was felt in each dressing, and "BD" was diagnosed.

Despite the recommendations, the patient, who had been smoking for 20 years from the age of 15, did not quit smoking, so the wounds progressed to the toes, and necrosis occurred. As a result, two toes were amputated (Figure 1). When paracetamol/dexketoprofen used for pain was insufficient, he used tramadol hydrochloride and morphine. After using morphine for three months, peripheral nerve blockade and a collagen pad were applied for acute pain, and the wounds progressed to the level where the tendons were visible (Figure 2). Hyperbaric oxygen therapy was applied when atrophy developed due to difficulty in walking and inability to use the foot due to the injuries. Since the patient did not continue the treatment, he received ozone therapy when the wounds flared up again and saw a positive result. In the last treatment protocol, vasopressin was administered at 80 dL/min in 1 ampoule of 150 ccs Isotonic sodium chloride solution for ten days. According to

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FIGURE 1: Amputation of two toes.



FIGURE 2: Progression of wounds to tendon level.

the patient’s statement, vasopressin relieved the patient both physiologically and psychologically. Due to the progression of the disease and the non-healing of the wounds, the patient became unable to engage in physical activity. The patient, who uses a wheelchair in his daily life, has become unable to maintain his sexual energy due to the severe and prolonged pain. To the pandemic conditions, the nursing care of the patient, who was followed up for 10 days in the hospital environment, was applied and followed closely.

The dependency status of the case regarding life activities is shown in Table 1, and 12 life activities are scored in this table.

**1. Maintaining a safe environment:** As long as the patient was hospitalized in the internal medicine clinic, his vital signs were evaluated four times a day and recorded in the nurse observation form. Vital signs during hospitalization; body temperature was recorded as 36.8 °C, heart rate 94/min, respiration 18/min, SpO<sub>2</sub> 95%, blood pressure 120/60 mmHg. The patient has wounds that are always at risk of bleeding. The independence of the patient, who had difficulty walking due to foot wounds, was evaluated as 8/10 because of the risk of falling.

**2. Communicating:** No problem was observed in the patient’s vision and hearing. The patient’s independence was evaluated as 5/10. It was observed

TABLE 1: The cycle of addiction/independence for life activities.

Life activities	Addiction-independence cycle									
	Addictive					Independence				
	10	9	8	7	6	5	4	3	2	1
She is maintaining a safe environment										
Communicating										
Breathing										
Eating food and drinking fluids										
Eliminating body wastes										
Personal cleansing and dressing										
Controlling of body temperature										
Mobilizing										
Working and playing										
Expressing sexuality										
Sleeping										
Dying										

that the patient, who was willing to communicate, experienced anxiety due to the risk of bleeding from invasive procedures and wounds.

**3. Breathing:** The patient's respiratory rate was 18/min. Since breathing was determined to be regular, rhythmic, and comfortable, and there was no need for oxygen, its independence was evaluated as 1/10.

**4. Eating food and drinking fluids:** The patient, fed three meals a day, had difficulty consuming all the meals due to his pain, and his independence was evaluated as 5/10.

**5. Eliminating body wastes:** Since he stated that he usually has the habit of defecating once a day, sometimes one defecation in 2 days, and micturition 6-7 times, his independence was evaluated as 0/10.

**6. Personal cleansing and dressing:** Since his clothes are clean and he can wear them himself, his independence is evaluated as 1/10.

**7. Controlling of body temperature:** Body temperature did not deviate from normal during the observation of the patient, and since it was last recorded as 36.8 °C, its independence was evaluated as 1/10.

**8. Mobilizing:** During the periods when the depth of the wounds on his feet increased, he could not walk and became dependent on a wheelchair. He refrained from moving because the scars on his feet increased with walking. At the same time, the independence of the foot was evaluated as 9/10, as atrophy developed due to the inactivity of the foot.

**9. Working and playing:** His independence was evaluated as 4/10 since he stated that he did not have much energy to have fun due to the extreme pain and could not work because he had difficulty walking.

**10. Expressing sexuality:** His independence was evaluated as 6/10 because he could not maintain a sexual life due to the severity of the pain and its persistence for a long time.

**11. Sleeping:** He stated that he could not sleep well on nights when he was in pain. His indepen-

dence was evaluated as 7/10 because he was tired, weak, and low in energy during the day.

**12. Dying:** Since he stated that he did not experience any fear of death, his independence was evaluated as 1/10.

Before the research, permission was obtained from the Bayburt University Social and Human Sciences Research Ethics Committee (research protocol no: April 13, 2022 and 75 decision number) and the institution where the research was conducted. Verbal and written informed consent form was obtained from the individual participating in the study.

## DISCUSSION

BD, which involves small/medium-sized arteries and veins, especially in the extremities, is seen in middle-aged, smoking men. In patients who did not stop smoking after diagnosis, 43% of patients had limb amputations within seven years.<sup>10</sup> The main symptom in patients is the pain felt due to decreased blood circulation in the affected extremity, and gangrene may be encountered with the progression of circulatory disorder. Coldness, paresthesia, changes in skin pigmentation, claudication, and ischemic ulcers can also be seen in the extremities.<sup>11</sup>

Nursing models provide systematic, purposeful, and effective nursing care to patients. Although case reports for many diseases have been prepared using the Life Activities-Based Nursing Model, no case of BD has been found when the literature is examined.<sup>12-15</sup>

As a result, it has been seen that nursing interventions in line with the Nursing Model Based on Life Activities, which is based on 12 basic life activities, support the patient's daily life activities better and increase their adaptation. At the same time, it is predicted that it will be an effective model for the objective evaluation, diagnosis, and intervention planning of many cases in nursing.

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vides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

### Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or mem-

bers of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

### Authorship Contributions

All authors contributed equally while this study preparing.

## REFERENCES

- Huang WW, Wu CH, Li CF, Pai MC. Late onset Buerger's disease with multiple cerebral infarcts. *Tzu Chi Med J.* 2007;19(1):28-31. [Link]
- Igari K, Inoue Y, Iwai T. The epidemiologic and clinical findings of patients with buerger disease. *Ann Vasc Surg.* 2016;30:263-9. [Crossref] [PubMed]
- Yılmaz Demirbaş M, Gülsever M, Bozkurt AK. Comparison of ADP-and collagen-induced platelet aggregation responses between patients with Buerger's disease and healthy individuals. *Turkish Journal of Thoracic and Cardiovascular Surgery.* 2009;17(2):106-9. [Link]
- Lazarides MK, Georgiadis GS, Papas TT, Nikolopoulos ES. Diagnostic criteria and treatment of Buerger's disease: a review. *Int J Low Extrem Wounds.* 2006;5(2):89-95. [Crossref] [PubMed]
- Bulut ÖÜ, Şahin S, Kaplan S. Roper, Logan ve Tierney'in Yaşam Aktivitelerine Dayalı Hemşirelik Modeline Göre Hiperemesis Gravidarum Olgu Değerlendirmesi. 2. Uluslararası 3. Ulusal Doğum Sonu Bakım Kongresi; 2019 Ekim 3-6; Konya, Türkiye. [Link]
- Elshef M, Noble H. Management of COPD using the Roper-Logan-Tierney framework. *Br J Nurs.* 2011;20(1):29-33. [Crossref] [PubMed]
- Kacaroğlu Vicdan A, Gülseven Karabacak B, Ecevit Alpar Ş. 2012-2014 NANDA-I hemşirelik tanılarının yaşam aktivitelerine dayalı hemşirelik modeline göre sınıflandırılması [Classification of 2012-2014 NANDA-I nursing diagnostics using the nursing model based on activities of living]. *International Journal of Human Sciences.* 2015;12(2):1626-36. [Crossref]
- Köşgeroğlu N, Mert Boğa S. Yaşam aktivitelerine dayalı hemşirelik modeli (YADHM)'ne göre zihinsel engelli bireylerin sorunları ve hemşirelik [Mental disabled persons' issues according to the daily life activities model (DLAM)]. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi.* 2011;4(1):148-54. [Link]
- Williams BC. The Roper-Logan-Tierney model of nursing: a framework to complement the nursing process. *Nursing.* 2015;45(3):24-6. [Crossref] [PubMed]
- Chen YW, Nagasawa T, Wara-Aswapati N, Ushida Y, Wang D, Takeuchi Y, et al. Association between periodontitis and anti-cardiolipin antibodies in Buerger disease. *J Clin Periodontol.* 2009;36(10):830-5. [Crossref] [PubMed]
- Malecki R, Kluz J, Przeździecka-Dolyk J, Adamiec R. The pathogenesis and diagnosis of thromboangiitis obliterans: is it still a mystery? *Adv Clin Exp Med.* 2015;24(6):1085-97. [Crossref] [PubMed]
- Bilgiç Ş, Çelikkalp Ü, Sarıkaya N. Nekrotizan fasiitli bir olgunun yaşam modeli doğrultusunda tanılanması [Diagnosis of a necrotizing faciitis case according to the living model]. *Gümüşhane University Journal of Health Sciences.* 2017;6(4):320-5. [Link]
- Yüksel Acar C, Yalın H. Trombotik trombositopenik purpura ve hemşirelik bakımı: olgu sunumu [Thrombotic thrombocytopenic purpura and nursing care: a case study]. *Journal of Education and Research in Nursing.* 2016;13(1):59-66. [Link]
- Bulucu Büyüksoy GD, Demir G, Durmuş H, Dazıroğlu N. Tip II diyabetli hastaya klinikte bütüncül yaklaşımla sunulan hemşirelik bakımı: olgu sunumu [Holistic nursing care for hospitalized type II diabetes patient: case report]. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi.* 2016;3(3):77-82. [Link]
- Akkoyun S, Arslan FT. Yaşam Aktivitelerine Dayalı Hemşirelik Modeli'ne göre kronik böbrek yetmezliği olan çocuk hastanın değerlendirilmesi: olgu sunumu [ evaluation of a pediatric patient with chronic kidney disease according to Nursing Model Based on Life Activities: a case report]. *Genel Sağlık Bilimleri Dergisi.* 2019;1(1):78-93. [Link]