

Original Article

An Individual with Scleroderma's Evaluation According to Henderson Nursing Model: A Case Study

Berna Cafer Karalar

Nurse Specialist, Institute of Nursing, Department of Internal Medicine Nursing, Ege University, Izmir, Turkey

Duygu Akbas Uysal

Nurse Specialist, Bozyaka Training and Research Hospital, Izmir, Turkey

Esra Oksel

Associate Professor, Faculty of Nursing, Department of Internal Medicine Nursing, Ege University, Izmir, Turkey

Correspondence: Berna Cafer Karalar, Nurse Specialist, Institute of Nursing, Department of Internal Medicine Nursing, Ege University, Izmir, Turkey. E-mail: berna9395@hotmail.com

Abstract

In nursing, which is a professional health discipline, models and theories shed light on managing cases and improving nursing. Nursing theories provide a ground for analysing the the problems of patients in different aspects, integrating into nursing practice and forming a frame for nursing management.

Scleroderma is a rare connective tissue disease that can hold more than one organ or system. Scleroderma's aetiology has not yet been solved and there is not an exact cure for it. That is why the aim of its cure is to enhance life quality and provide symptom management. The effects of the disease have an impact on sclerodermatous individuals in multitude of ways biopsychosocially. In this respect, the need for a wholistic diagnosis of the patients is inevitable.

Henderson's model that diagnoses physiological, psychological, sociocultural, spiritual, and developmental human need is deemed a fit model for the investigation of sclerodermatous individuals in all aspects. For testing the practicality of the model, it is aimed to be applied on a female sclerodermatous patient.

Nursing care is planned according to the model and in this accord the planned attempts have been performed.

Keywords: Scleroderma, Henderson, Nursing model, systemic sclerosis

Introduction

Scleroderma, today, is an auto-immune, inflammatory collagen tissue disease whose particular cause is not known accurately (Derk, 2003). It is a progressive disease that holds organs and systems in various ways. Scleroderma has two main forms. The first form, localised scleroderma, is a fibrous defect created by morphea, linear scleroderma and related symptoms affecting the

skin and subdermal tissue. As for the second form, systemic sclerosis (SSc), it is divided into two categories. It is observed as a mild or medium cutaneous SSc related to the late organ fibrosis and common cutaneous SSc characterized by acute organ damage. SSc's common cutaneous form (dcSSc) is characterized with the thickening of the skin and most commonly with a distinct involvement of mainly more than one viscera such as lungs, gastrointestinal system, heart, and

kidneys (Veerraghaven & Sharma, 1998; Allanore, Matucci, Cerinic & Distler, 2016). SSc's rate of incidence is 74.4 out of 100.000 in women and 13.3 out of 100.000 in men (Bernatsky et al, 2009). Especially in heart and lungs, mortality rates are high due to visceral involvement. In about 70-85% of patients' lung involvement occurs and, accordingly, mortality rates are quite high. The apparent complaint in patients with lung involvement is exertional dyspnea. Less frequently, chronic cough is observable (Simeon, Armadans & Fonollosa, 2003; Kiroğlu et al 2005).

Scleroderma is a chronic disease that requires good observation, cure, and nursing. In this sense, when nursing is being planned, a systematic care plan which is based on nursing models must be exercised. Accentuating in her model the basic human needs, Henderson was influenced by Maslow while generating his theory and in it she used basic human needs hierarchy to identify the priorities in nursing care planning.

Henderson proposes 14 components for nursing care. These components are planned according to the physiological, sociological, and psychological needs of the patients (Erol, Tanrikulu & Dikmen, 2016; Oksel, 2020).

According to Virginia Henderson, 14 components necessary to the effective nursing care for the patient are as follows:

1. Eupnea, breathing normally
2. Sufficient food and drink intake
3. Disposal of the body waste
4. Moving and maintaining proper posture
5. Sleeping and resting
6. Choosing proper clothes, dressing and undressing
7. Keeping body temperature normal by regulating dressing and changing environment
8. Keeping the body clean, well-groomed and maintaining integrity of skin
9. Abstaining from the dangers in the environment and from harming others
10. Expressing feelings, needs, fears etc. while communicating with others
11. Praying according to patients belief
12. Working with a feeling of success
13. Taking part in different sorts of entertainment

14. Learning, exploring, enjoying, and using current health facilities for attaining "normal" development and health

Henderson's components are individual centred and always evaluated as part of present four factors: (a) age; (b) temperament, emotional state or existing state; (c) social and cultural state and (d) physical and intellectual capacity. The first nine components are physiological. The tenth and fourteenth components are the psychological aspects of communication and learning. The eleventh component is spiritual and moral. The twelfth and thirteenth components are related to social aspect. Virginia Henderson considers the patient as a helpless individual in the process of gaining their freedom and obtaining mind-body integrity (Erol, Tanrikulu & Dikmen, 2016).

Emphasizing the basic human needs, Henderson nursing model is thought to be illuminating in the nursing of a sclerodermatous patient's wholistic care. The aim of this study is to test the practicality of this model on a sclerodermatous female patient.

Case Report

This study is conducted on a patient with lung involvement caused by scleroderma in a pulmonology clinic. A female patient is chosen on the score of frequent incidences of disease among women. The data are collected after a written and verbal consent by the patient.

H.S. is a 56-year-old housewife. She lives with her mother in Izmir. H.S. described her complaints to the hospital as exhaustion, weariness, not being able to walk on the road, and increasing cough and dyspnoea. First symptoms appeared after the period she had abortus and gradually increased. Having been diagnosed with scleroderma for 30 years, she remarked that her diagnosis was late. Her case is accompanied by a lung involvement, Raynaud's phenomenon, and pulmonary hypertension. According to her family history, she lost her father, who had cardiac problems, to myocardial infarction; moreover, her mother is diagnosed with dementia. H.S has been smoking three cigarettes a day for the past 30 years.

H.S. is an oriented, cooperating patient who is open to communication. In her anamnesis, she declared to having no pain. In her first inspection, it was observed that she had telangiectasia in skin, face, dorsa, and hands; constraint in her mouth opening; loss of skin elasticity; sclerodactylia in her fingers and both her sub and top extremity fingertips were cold and cyanosed. Thinning is

existent on hair, eyebrows, and body hair. Dyspnoea and cough disturb the patient. Rhonchus was discovered in auscultation.

Oxygen saturation was not traced during the first examination. Then, the hands were evaluated by a heating process (SO₂: 92). Blood pressure was measured as 112/80 mmHg, pulse as 78/min, body heat as 36,5 c, respiratory sounds as 20/min (in rest)- 32/min (effort), and blood glucose level as 106 mg/dl. The patient is given oxygen support via nasal cannula.

There is a decrease in oral intake due to loss of appetite, limited mouth opening, exhaustion while eating, and early satiety. The patient is supported by a foley catheter, her urine follow-up is conducted. She defecates once a day.

She walks with support in the hospital but mostly she resists to move. However, by the support of the nurse and relatives she moves with accessory

devices. In personal care, she is helped with putting her shoes on.

She indicated that she cannot rest and wakes up weary owing to the environmental factors in the hospital, waking up early, and having troubles in falling into sleep.

H.S. has a dry skin and is cold intolerant. Telangiectasias are traced on her face, back and hands (Picture 1). The patient's peripheral branule administration was formidably provided and due to her having advanced Raynaud's phenomena, saturation measurement was unable to be performed and all these led to delays in her care and treatment protocols. With proper nursing attempts, problems like these are aimed to be solved.

After the nursing diagnosis, problems in six areas were determined about the patient and are shown in Table 1.

Picture 1. Telangiectasias on the patient's face and back



*Permission was obtained from the patient to publish the pictures.

Table 1: Problems Determined According to the Henderson Nursing Model

Basic Need	Problems Determined
Breathe normally.	Ineffective breathing pattern
Eat and drink adequately.	Imbalanced nutrition: less than body requirements
Move and maintain desirable postures.	Activity Intolerance
Sleep and Rest	Disturbed Sleep Pattern
Maintain body temperature within normal range by adjusting clothing and modifying the environment.	Ineffective peripheral tissue perfusion

Keep body clean, well-groomed and protect the integument.	Impaired skin integrity
--	-------------------------

Accordingly, in this study, an evaluation of a scleroderma patient with symptoms affecting life quality adversely will be presented according to the Henderson Nursing Model (Table 2).

Discussion

There are case studies in literature that are analysed by employing Henderson Nursing Model. It is determined that Henderson Model is quite practical, understandable and viable for the cases whose majority are with a chronic medical history and for a wholistic nursing diagnosis and care (Bozkurt, 2021; Yildiz & Caydam, 2019; Ahtisham & Jacoline, 2015; Yilmaz & Aygin, 2015; Kilic, Citak & Okdem, 2019). For the symptomatic treatment of scleroderma, it is the nurse's part to help patients develop practical management strategies (Vincent & Wilson, 2004). That is why the nurses should be aware of the physical, emotional, and sociocultural impacts to provide the patients with the proper treatment (Cinar et al, 2012). Nurses must plan a customized nursing care adoptable to patients, their symptoms and personal needs (Brown, 2010). To this end, the diagnosis must be exact for a wholistic nursing care management in patients with scleroderma.

The pre-eminent step of the model's physiological needs is respiration. One of the most common scenes in sclerodermatous patients is lung involvement. That is why the first interference, just like in this case, is the respiratory system. Whether based on activity or not, dyspnea frequently causes problems in the patients' life qualities and their daily life activities (Sozener, Karabiyikoglu & Duzgun 2010). Nursing attempts are planned and practiced in order to provide continuity in respiration and activities, moreover, the patient is provided with care according to customized needs.

Another component, sufficient food and drink intake poses a problem for scleroderma patients. Specifically, the patient's nourishment on solid food, their oral hygiene management and dental care constitute another problem due to microstomy, which is one of the possible causes. In this respect, nursing attempts are performed for the patient's healthy nourishment and preventing malnutrition. At the same time, specific and multidisciplinary interventions that must be

started as early as possible are planned (Jung, et al, 2017; Ozcan, Ciftci & Turk, 2021).

Raynaud's phenomena is frequently observed in patients with scleroderma. Usually, Raynaud's phenomena, affecting 96,3% of all the patients, is the first symptom of scleroderma and the most important reason for morbidity (Williams, Carl & Lifchez, 2018). The situations that cannot be managed result in digital ulceration, losses of function and amputations. In this accord, its management is of importance (Cinarr et al, 2012; Hughes et al, 2019). Informing and strengthening the patient and earning them a habit is substantial to block and prevent Raynaud attacks. The patients are provided with information, nursing management and discharge education to help them cope with their symptoms and adapting them to their daily life activities (Joachim & Acorn, 2003).

Conclusion

Scleroderma is one of the disease groups that are unfamiliar and are not come across in other clinics except for rheumatology. In a disease like scleroderma which affects different tissues, a comprehensive diagnosis is required to provide for the needs of an individual. Henderson Nursing Model focuses on physiological, psychological, sociological, spiritual, and intellectual grounds therefore it concentrates on 14 different basic needs with a holistic perspective. It helps planning the care processes by scrutinizing all the problems of the patient and determining the problems. Much as the usage of this model, which considers individuals holistically in order to meet the needs, is effective in reducing the serious symptoms of the disease; it is also considered to be an easy-to-apply model. Presenting nursing cases by using a theoretical framework, especially in cases that are rarely seen in the clinical environment, will contribute to the literature of nursing as well as sharing knowledge and experience, improving and extending care standards.

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Table 2: Nursing Diagnosis, Attempts and Evaluations Identified According to Henderson Nursing Theory (Vincent & Wilson, 2006; Williams, Carl & Lifchez, 2018, Brown, 2010;)

Identified Problems	Nursing Diagnosis	Nursing Interventions	Evaluation
<p>Descriptive Qualities: existence of class 2 dyspnea, tachypnea (32/min), exhaustion, weariness, increasing cough and dyspnea at nights</p> <p>Aim: Keeping respiratory functions and gas exchange in normal functions</p>	<p>Dyspnea, cough and Ineffective breathing Pattern caused by lack of oxygen</p>	<ul style="list-style-type: none"> • Tracing vital signs • Providing the proper posture where the patient is comfortable • Preferably semi-fowler position • Hearing lung noise. Using bronchodilator, mucolytic medication in order if necessary • Keeping oxygen system in ready and starting oxygen treatment by doctor's request • Preparing NIV and CPAP to be used if necessary • Daily change of nasal cannula • Keeping personal belongings of the patient nearby. • Informing the patient of the processes to be done, preventing anxiety • Checking the intake and removal of liquid, and urine amount • Direction to smoking cessation clinic must be ensured 	<ul style="list-style-type: none"> • Oxygen saturation was traced especially. Extremities were measured after the necessary heating process with fingers wrapped in cotton due to Raynaud's phenomena. (Before heating SO₂:79 After heating SO₂:92) • Patient was provided with semi-fowler position in which she felt comfortable. • Oxygen treatment continued by 3 lt. with nasal cannula due to the increase of patient's need of oxygen in effortful situations. • Respiratory rate fluctuated between 20-24/min • Anxiety level was decreased by necessary attempts and education. • Pathological breath sounds decreased. • Intake and removal of liquid was traced (+200) • There was no need for administering CPAP or NIV to the patient • She was led to smoking cessation clinic. • The patient is in oxygen support for 16 hours a day, 3 lt./min.
<p>Descriptive Qualities: Limited mouth opening, loss of appetite, quick exhaustion, early satiety</p> <p>Aim: Providing adequate nutrition</p>	<p>Limited mouth opening, loss of appetite, less than the body requirement caused by exhaustion</p>	<ul style="list-style-type: none"> • Checking daily food and liquid intake • Sparing enough time for eating • Liquid food and nibbles for swallowing easy • Encouraging eating by small degrees and frequently • Drinking water between bites • Sufficient warmth for food • Raising bedhead • Continuing nasal oxygen support 	<ul style="list-style-type: none"> • The patient especially preferred cool food, liquid and in custard form. • Upon exhaustion and saturation decrease during eating, oxygen support was continued (SO₂: 88-92) • Patient was reluctant to finish meals. She declared that she does not like hospital food and that is why she could not eat.

		<ul style="list-style-type: none"> • Skipping meal in exhaustion, providing meal as soon as possible • Continuing mouth care • Direction to dentist check 	<ul style="list-style-type: none"> • Having been observed that she does not eat hospital foods, cooperation was done with patient relatives. • Patient finished all the soup coming from home • Patient brushed her teeth in bedhead and bedroom. • Visitation was planned to the doctor in charge after her release.
<p>Descriptive Qualities: existence of class 2 dyspnea, tachypnea (32/min), exhaustion, weariness, increasing cough and dyspnea at nights</p> <p>Aim: Increasing activity performance</p>	<p>Dyspnea, lung involvement and Activity Intolerance due to weariness</p>	<ul style="list-style-type: none"> • Observing patient during activity, checking vitals • Planning activities when she feels good and her energy is high • Planning activity periods of resting • Checking nutrition and hematologic values • Supporting patient with a device during walking 	<ul style="list-style-type: none"> • Patient is reluctant to walk • Patient walked with the nurse, a walker, and her son. She walked a corridor with oxygen support and returned back to her bed. • During her 4 day hospital stay, she walked 3 days. • Dyspnea, tachycardia, desaturation did not occur. (SO2 :90 pulse: 88/min) • Patient is mobile for bed.
<p>Descriptive Qualities: Inability to sleep due to cough, waking up immediately, patient's declaration to not being able to relax</p> <p>Aim: Providing enough sleep and rest</p>	<p>Cough, Disturbed Sleep Pattern due to environmental factors</p>	<ul style="list-style-type: none"> • Maintaining control of environmental factors • Regulation of the treatment plan according to patient • Re-organizing pillow and devices for restful position and comfort • Continuing oxygen support • Encouragement for semi-fowler position 	<ul style="list-style-type: none"> • Because the clinic is intensive and the patient next to her is uneasy at, she indicated that she cannot sleep. • Next two days in her single room and the decrease in voices, she indicated to having a restful sleep. • She indicated that her head being lifted by 30 degrees and in oxygen support, she felt comfortable
<p>Descriptive Qualities: History of Raynaud's phenomena, cold hands, skin colour, inability to saturation measurement,</p> <p>Aim: Providing sufficient perfusion and oxygenation</p>	<p>Ineffective peripheral tissue perfusion due to decrease in tissue nourishment and blood build up</p>	<ul style="list-style-type: none"> • Extremities, fingers taken to heating • Checking all the pulses • Observing skin temperature, colour and tissue • Protecting sclerodermatic regions, abstaining from invasive attempts • Lessening behaviours that prevent blood circulation such as tourniquet, frequent checking of blood pressure and tight attire • Protection from cold and air flow, wearing heavy clothes, if necessary to be supported with a blanket • Supporting with oxygen treatment • Restricting unnecessary invasive procedures • Encouragement to quit smoking 	<ul style="list-style-type: none"> • Both hands were commenced to be heated because saturation was not able to be measured although they were • 30 minutes later the fingers were heated, and oxygen saturation was able to be measured • No Raynaud's attack occurred in the hospital. • All the pulses are vibrant and able for measurement • Skin colour is nude and warm

<p>Descriptive Qualities: Prone to digital ulcer, dry and cold skin, possible inadequate blood line up, insufficient mobilisation, malar telangiectasias on face, dorsa, and hands</p> <p>Aim: Prevention of the deterioration of skin integrity</p>	<p>Impaired skin integrity caused by dermis and vein damage</p>	<ul style="list-style-type: none">• Observation for digital ulceration• Conducting skin evaluation (Braden)• Choosing fibrosis and sclerosis free zones for injection• Heating extremities before attempts• Moistening the skin specifically to prevent digital ulcer• Informing the patient to protect her skin integrity<ul style="list-style-type: none">✓ Using a soft soap✓ Bathing in warm water instead of hot water✓ Using baby oil and applying lanolin based creams✓ Using hypoallergenic odourless cosmetics, soft soaps and shampoo✓ Using gloves when working with household cleaners and chemicals✓ Using sunscreen with 15 or more sun protector factor✓ Rinsing clothes well	<ul style="list-style-type: none">• Patient's Braden Scale is 15 points• No pressure sore or digital ulcer developed in the hospital environment
--	---	---	---

References

- Ahtisham Y & Jacoline S. (2015) Integrating nursing theory and process into practice; Virginia's Henderson need theory. *International Journal of Caring Sciences* 8 (2): 443-450
- Ahtisham Y & Jacoline S. (2015) Integrating nursing theory and process into practice; virginia's henderson need theory. *International Journal of Caring Sciences* 8(2):443-450
- Bernatsky S, Joseph L, Pineau CA, Belisle P, Hudson M & Clarke AE. (2009). Scleroderma prevalence: demographic variations in a population-based sample. *Arthritis Rheum* 61(3): 400-404. DOI: 10.1002/art.24339
- Bozkurt C, Yildirim Y, Aykar FS, Fadiloglu ZC. (2021) Evaluation of an individual with chronic obstructive lung disease according to the henderson nursing model. *CUSBED* 6(1): 59-68 <https://doi.org/10.51754/cusbed.807105>
- Brown S (2010) Management of digital ulcers related to systemic sclerosis. *Nursing Standard* 24 (32): 53-62. DOI: 10.7748/ns2010.04.24.32.53.c7714
- Cinar FI, Unver V, Yilmaz S, Cinar, M, Yilmaz F, Simsek I & Dinc A. (2012). Living with scleroderma: patients' perspectives, a phenomenological study. *Rheumatology international* 32(11): 3573-3579. DOI: 10.1007/s00296-011-2230-2
- Derk CT & Jimenez SA. (2003) Systemic sclerosis: current views of its pathogenesis. *Autoimmun Rev* 2(4):181-91 DOI: 10.1016/S1568-9972(03)00005-3
- Erol F, Tanrikulu F, Dikmen Y. (2016) Assessment of a case with cerebrovascular event according to henderson's model of nursing: case report. *J Contemp Med (Case Reports)* 6:94-103. DOI: 10.16899/ctd.38880
- Hughes M, Baker A, Farrington S, Pauling JD. (2019) Patient organisation-led initiatives can play an important role in raising awareness about Raynaud's phenomenon and encourage earlier healthcare utilisation for high-risk groups. *Ann Rheum Dis* 78(3): 439-441. DOI: 10.1136/annrheumdis-2018-214161
- Joachim G & Acorn S. (2003) Life with a rare chronic disease: the scleroderma experience. *J Adv Nurs* 42(6): 598-606. DOI: 10.1046/j.1365-2648.2003.02663.x
- Jung S, Martin T, Schmittbuhl M, Huck O. (2017) The spectrum of orofacial manifestations in systemic sclerosis: a challenging management. *Oral diseases* 23(4): 424-439.
- Kilic G, Citak EA, Okdem FS. (2019) Evaluation of a Patient Diagnosed with Amyotrophic Lateral Sclerosis According to Henderson's Nursing Model: A Case Report. *University of Health Sciences Journal of Nursing* 1(3): 229-238.
- Kiroglu F, Cankaya K, Yuca K, Kiris M. (2005) The otolaryngologic manifestations of scleroderma in a case. *KBB-Forum* 4(4):185-187.
- Koca S & Ozgen M.(2010) Etiopathogenesis and current treatment of scleroderma. *F.U. Journal of Health Science and Medicine*, 24 (1): 69-76
- Ozcan M, Ciftçi V, Turk I. (2021) The relationship between oral and periodontal findings with disease type in scleroderma patients. *Cukurova Med J* 46(1): 39-45. DOI: 10.17826/cumj.783473
- Simeon CP, Armadans L, Fonollosa V. (2003) Mortality and prognostic factors in spanish patients with systemic sclerosis. *Rheumatology (Oxford)* 42: 71-75. DOI: 10.1093/rheumatology/keg033
- Sozener ZC, Karabivikoglu G, Duzgun N. (2010) Evaluation of the functional parameters in scleroderma cases with pulmonary involvement. *Tuberk Thorax* 58(3): 235-241.
- Veerraghaven & Sharma OP. (1998) Progressive systemic sclerosis and the lung. *Curr Opin Pulm Med* 4: 305-309. DOI: 10.1097/00063198-199809000-00011
- Yildiz E & Caydam OD. (2019). Application of Henderson's model in management of nursing care: a case diagnosed with pancreatic cancer, *University of Health Sciences Journal of Nursing* 1(3): 239-248.
- Yilmaz AC & Aygin D. (2019) Analysis of early nursing care in bariatric surgery patient according to the virginia hendersons nursing theory. *Journal of Ankara Health Sciences* 8(1): 50-61.
- Vincent R, Wilson H (2006) Scleroderma in practice: the role of the nurse. *Nursing in Practice* DOI: 10.1111/odi.12507
- Williams AA, Carl HM, Lifchez SD. (2018) The scleroderma hand: manifestations of disease and approach to management. *The Journal of Hand Surgery* 43(6): 550-557. DOI: 10.1016/j.jhsa.2018.03.02126: 58–62.