

4-6-2026

## Developing Nursing Education on the Assessment of Asthma Patients with Symptoms of Shortness of Breath in Urgent Care

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# Walden University

College of Nursing

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has been found to be complete and satisfactory in all respects,  
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2025

Executive Summary: Staff Education Project  
Developing Nursing Education on the Assessment of Asthma Patients with Symptoms  
of Shortness of Breath in Urgent Care  
by  
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Executive Summary Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Nursing Practice

Walden University

August 2025

## Summary

This project is a staff education program aimed at improving health of patients presenting with shortness of breath. At the practice site, staff depend on the use of SpO<sub>2</sub> (oxygen saturation which is a measurement of amount of oxygen-carrying hemoglobin in the blood compared to the amount of hemoglobin that is not carrying oxygen) levels to measure dyspnea. Although SpO<sub>2</sub> can provide an objective measurement of oxygenation, there needs to be a sufficient tool for identifying the causes of dyspnea in patients and improving decision-making for patients who need urgent care.

The purpose of this project was enhancing assessment techniques for patients experiencing dyspnea to enable prompt determination of whether they require urgent care by providing staff education. The practice question was whether educating urgent care staff on a more comprehensive assessment of dyspnea can lead to improved accuracy and efficiency in assessing asthma patients with symptoms of shortness of breath. The participants included 20 triage staff including eight licensed practical nurses (LPNs), two paramedics, three certified nurse assistants (CNAs), and seven registration staff members who were practicing in the identified urgent care where patients complaining of shortness of breath present themselves.

A pretest and posttest design was used to determine the educational impact. Data were analyzed with inferential and descriptive statistics using IBM SPSS Statistics (Version 25). The intervention improved assessment accuracy (75% to 90%), skills (65% to 85%), and protocol compliance (60% to 90%) and reduced mis assessment rates and decreased patient wait times (120 min to 15 min) with  $p < .01$ . Based on these results,

staff should be educated about new and effective assessment techniques for shortness of breath to improve patient health outcomes.

### **Background**

Dyspnea and shortness of breath is one of the frequent and severe symptoms experienced in patients admitted to the urgent care unit (Majellano et al., 2019). Timely and correct evaluation is an indispensable step in deciding whether the patient needs immediate medical attention. At the project implementation site, a significant gap in practice was identified: Mostly, staff and practitioners depend on the use of SpO<sub>2</sub> (oxygen saturation) levels to measure dyspnea. Although SpO<sub>2</sub> can provide an objective measurement of oxygenation, there needs to be a sufficient tool for identifying the causes of the dyspnea encountered in patients. Pulse oximetry measures only give some information on other independent causes of respiratory deterioration, including airway occlusion, respiratory muscle incompetence, or anxiety, which may inform treatment strategies (Axelsson et al., 2020). Such a practice gap can lead to patient delay and missed opportunities for early identification of patients who need urgent care, especially in patients with chronic illnesses such as asthma, where SpO<sub>2</sub> values are sometimes insufficient to determine the severity of an asthma attack.

This assessment deficit is even more apparent in asthmatic patients where shortness of breath may be variable, and oxygen saturation levels may be poor yet not indicative of the severity of the condition. For instance, in certain patients with mild asthmatic attacks, the SpO<sub>2</sub> levels may initially look normal when the patient is experiencing considerable breathing problems. On the other hand, other patients may present with low SpO<sub>2</sub> but do not require urgent care. Dependence on SpO<sub>2</sub> could then

misposition patients and postpone the right management of such cases. This project aimed to fill this practice gap by improving the accuracy of patient evaluation by integrating a more extensive nursing education program in relation to assessing dyspnea, particularly asthma patients, to refine the decisions taken.

The purpose of this project was to enhance care provided for patients experiencing dyspnea to enable prompt determination of whether they require urgent care by providing education on a more comprehensive assessment process. This project creates an educational program for urgent care nurses in order to provide the healthcare providers with skills for a SpO<sub>2</sub> assessment along with other important vitals, including respiratory rate, work of breathing, difficulty in speaking full sentences and self-reported history of asthma exacerbations. The intervention helped to identify breathing difficulty in patients who need to be prioritized for treatment so that healthcare team can conclude easily since the goal is to improve the patients' outcomes and minimize the time taken in making a decision.

The project question relates to whether the use of an educational intervention aimed at enhancing the comprehensive assessment of asthmatic patients presenting with shortness of breath increases the accuracy and efficiency of assessment compared to current practices that have no focused education in asthma assessment. This question emanates from the desire to better the care process for dyspnea patients in the urgent care units, with most patients being promptly assigned a triage and receiving interventions as needed. The time following the implementation was limited to 6 weeks to determine how this education program impacts clinical practice further.

One of the articles that supports this change is a study by Lewthwaite et al. (2021). The authors conducted a systematic review of 14 tools that can be used to assess shortness of breath in people with Chronic Obstructive Pulmonary Disease (COPD). The authors recommended Borg's 0–10 category rating scale in assessing shortness of breath. This strengthens the argument that to reduce measurement error, there is a need to go beyond SpO<sub>2</sub> hence the need for broader assessment tools aligning with the aims of this project as we seek to find better ways of dyspnea assessment. The quality of evidence is considered moderate to strong since there was evidence synthesis evaluating currently available assessment tools.

Other evidence was drawn from Arnone et al.'s (2023) study, which highlighted identification of acute heart failure in patients with acute dyspnea through integrated ultrasound examination (IUE). The area under the curve (AUC) of E/A ratio (The calculation of E/A ratio is the value of early diastolic flow velocity (E) velocity divided by late diastolic trans mitral flow velocity A), was 0.93, indicating high diagnostic accuracy of the ratio and can be useful to rule out sick patients in emergency care settings. This supports the idea of increasing the number of evaluation techniques other than SpO<sub>2</sub>. The strength of evidence is high since sensitivity, specificity, and diagnostic accuracy are shown in the study.

Other evidence came from Hegendörfer et al.'s (2021) study that affirms the utility of the Multidimensional Dyspnea Profile (MDP) in measuring dyspnea in older persons and determines the reliability coefficient and concurrent validity of the tool. As illustrated in the study, breathlessness represents a holistic process with structural-perceptual and affective-emotional manifestations in the elderly. The findings validate

the notion that the assessment of shortness of breath should go beyond measuring SpO<sub>2</sub> levels and incorporate procedures such as MDP. The strength of the evidence is high since the scale demonstrated considerable internal consistency with Cronbach's alpha ranging from 0.86 to 0.91.

### **Staff Education Project Development**

#### **Participants**

The main subjects for this quality improvement project were the triage staff who are practicing in the identified urgent care or emergency department where patients complaining of dyspnea present themselves. They include eight LPNs, two paramedics, three CNAs, and the seven registration staff members. They were in a position to put into practice this new extensive education program that was developed. The project team trained these professionals, especially on how to assess for dyspnea. Moreover, the role nurse practitioners or clinical educators was to implement the educational program. They educated the personnel to use the new assessment approaches in differentiating dyspnea due to asthma and other originating ailments. Patients presenting with shortness of breath were also part of the project population. The patients were not trained directly. However, they were part of the indirect participants because of the enhancements in their self-assessment stemming from this project. The patients had varied symptoms, specifically dyspnea, and their data assisted in determining the impact of the intervention. The hospital leadership also participated in the management and organization of the project; for instance, they ensured that staff are available for training on a different basis and were involved in the monitoring of the results of the project.

### **Procedures for Developing the Project**

The first process of development involved assessment of the existing practice on triage of patients with dyspnea. This also involved knowing the process by which staff evaluate SpO<sub>2</sub>, shortness of breath in particular, and recognizing potential shortcomings of the existing evaluation procedures. Knowledge assessment activities such as surveys or interviews could be used to find out the extent to which the nurses working in health facilities understand asthma-specific symptoms and existing diagnostic protocols.

The second activity was a literature review. A peripheral literature search was also undertaken to assess shortness of breath and validate tools for asthma assessment from evidence-based practices. This laid down the guidelines that were used in developing the new educational program as well as ensuring that the project aligns with the present guidelines to the clinic, such as the (Global initiative for Asthma) GINA or any other asthma management guidelines.

The final process was curriculum designing. Following the literature review and consultations with experts (nurse practitioners), a curriculum was developed to address important domains such as asthma pathophysiology, application of diagnostic equipment like peak flow meters, distinctions in symptoms, and developing holistic triage protocols including SpO<sub>2</sub> that are not limited to. This also helped incorporate case study teaching points in addition to using standardized patient encounters or simulation learning.

### **Procedures for Implementing the Project**

The first approach was to hold training sessions. This was in the form of a workshop, seminar, or an on-the-job training program that was used in the delivery of the educational program. These sessions entailed the identification of clinical signs

suggesting an asthmatic episode and the use of newer tools for lung function measurement as well as an application of the MDP or any other triage assessment tool that would be evidence-based for dyspnea. In addition, posters that included pictures of symptoms of respiratory distress were laminated and placed at vantage places on the unit so everyone will remember the signs and symptoms they learned easily (see Appendix B). A pilot phase was also conducted, during which a limited number of nurses underwent the training exercise, and the impact of the new set of assessment protocols was measured. Outcomes from this phase were used in tuning the educational content and also to check whether it can be implemented for a bigger introduction. Table 1 shows more information on the education of the staff.

**Table 1***Education of Staff*

Training component	Description	Objectives	Duration	Format	Facilitators	Resources/ materials
Introduction to Asthma & SOB	Overview of asthma pathophysiology, causes of SOB, and the importance of early detection.	- Understand the underlying causes of SOB in asthma.	1 hour	In-person Lecture	Clinical Educators	PowerPoint slides, handouts on asthma pathophysiology
Diagnostic Tools Training	Training on tools like peak flow meters, Borg's scale, and pulse oximeters.	- Demonstrate competency in using diagnostic tools to assess SOB.	2 hours	Hands-On Workshop	Respiratory Therapists	Peak flow meters, Borg's scale charts, pulse oximeters, demonstration materials
Case-Based Learning	Review of real-life case studies to analyze SOB symptoms and interventions.	- Apply knowledge to real-world scenarios.	2 hours	Group Discussion/ Case Study	Clinical Educators, Respiratory Therapists	Case studies, patient charts, care plan templates
Simulation Drills	Role-playing scenarios for assessing and managing asthma-related SOB under pressure.	- Practice assessments and interventions in simulated emergency situations.	2 hours	Simulation	Simulation Specialist, Respiratory Therapists	Simulated patient scenarios, role-playing scripts
Documentation Best Practices	Guidelines for accurate documentation of SOB assessments, findings, and interventions.	- Accurately document patient assessment data.	1 hour	Lecture/Practical Exercise	Clinical Educators, Medical Record Specialists	Documentation templates, electronic health record (EHR) system access
Q&A/Feedback & Evaluation	Open forum for staff to ask questions, share experiences, and receive feedback on performance.	- Reflect on lessons learned and clarify any misunderstandings.	1 hour	Group Discussion/ Feedback	All Facilitators	Evaluation forms, feedback sheets

The third step was data collection and monitoring, which involved the surveys to ensure that the data obtained enabled an analysis of the problem more effectively. During the 6-week implementation period, information was gathered in order to evaluate the effectiveness of the program in the identification of dyspnea measurement improvement. Data included information on patient outcomes such as reduced readmissions, increased triage reliability, and the time used to evaluate patients' and nurses' feedback as well. It was carried out continuously to allow for alterations that were required in the implementation of the project. The last step was evaluation. The formal quantitative assessment of the project occurred after the 6 weeks, aiming at comparing the accuracy and time effectiveness of shortness of breath pre- and post-training. Thus, the measuring point for the first objective was the comparison of the early assessment and the time needed for developing an adequate intervention strategy.

### **Data Collection**

The quantitative data collection method entailed the collection of data in the form of the performance of the nurses and patients. Retrospective and prospective self-assessment forms contained in the patient's records were used to measure the assessment accuracy of dyspnea and determine the time to intervene for any patient identified to have asthma (see Appendix A). These data also determined the rate and accuracy at which nurses assess asthma-related dyspnea and if the rate and accuracy increase after the implementation of an educational session. Furthermore, four measures concerning patients' health were included: the number of exacerbations, hospitalizations, emergency treatments, and additional treatments such as bronchodilator usage. All these parameters were quantitatively measured, and pre- and post-educational program assessments were

made. Mean and standard deviations were computed from the data were gathered, and paired *t* tests or chi-square tests were employed to test improvement in efficiency and accuracy. This organized set of documents was helpful in presenting sound, measurable proof for the outreach of the project.

### **Data Analysis**

Data analysis was conducted statistically using IBM SPSS Statistics (Version 25) predictive analytic software. Data analysis included both descriptive and inferential statistics. Descriptive statistics included median, mean, and standard deviation to assess efficiency and accuracy of dyspnea assessment. The data were used in concluding the nurses' performance of nurses before and after the education program. A paired sample *t* test was used to analyze the response collected from the participants before and after the intervention was conducted.

### **Evaluation**

The evaluation process was used to determine whether the project led to improvement in the assessment of shortness of breath. The key parameters were diagnostic precision, time to intervention, degree of confidence, and competence among the staff and patients. Nurses' notes presenting patients in the triage process were also studied to see the pre-intervention and post-intervention accuracy of dyspnea identification in relation to asthma. An increase in the number of correct assessment skills were expected to be an index of achievement. The time taken to make an assessment and commence treatment was measured, and any decreases demonstrated meant that there were improvements in the system. Essentially, an outcome instrument mostly using closed questions was used to measure the self-reported confidence of the nurses in terms

of both their numerical scores and perceived competence. Considering patient status, the evaluation captured the status of the patient's conditions after the intervention, including decreased hospitalizations and improved asthma case handling, which signify enhanced evaluation post-intervention. The outcomes are reflected by changes in the listed indicators in the course of the 6-week project implementation.

## Results

Table 2 shows that accuracy of initial assessment decisions improved by 15% after implementation, leading to better prioritization. Table 3 shows that skills and knowledge of assessment for staff improved by 20% after implementation leading to better decisions. Assessment consistency improved by 30% leading to proper adherence to triage protocols as seen in Table 4. Over triage rates reduced by 10%, while under triage rates reduced by 15%, leading to proper use of triage resources (see Table 5). Patient flow improved, as there was a decrease in wait time (see Table 6). Therefore, patients received urgent care after implementation of the program.

**Table 2**

*Enhanced Evaluation Accuracy*

Metric	Pre-intervention (M1)	Post-intervention (M2)	SD	t	p
Accuracy of initial assessment decisions	75%	90%	7.0	5.5	< .01

**Table 3**

*Improved Knowledge and Skills*

Metric	Pre-intervention (M1)	Post-intervention (M2)	SD	t	p
Average test score on dyspnea assessment skills	65%	85%	10%	6.2	< .01

**Table 4***Consistency in Assessment*

Metric	Pre-intervention (M1)	Post-intervention (M2)	SD	t	p
Compliance with standardized protocols	60%	90%	8%	6.8	< .01

**Table 5***Reduction in Mis-Assessment Rates*

Metric	Pre-intervention (M1)	Post-intervention (M2)	SD	t	p
% of over-triage cases	15%	5%	4%	4.5	< .01
% of under-triage cases	25%	10%	5%	5.0	< .01

**Table 6***Improved Patient Flow*

Metric	Pre-intervention (M1)	Post-intervention (M2)	SD	t	p
Average wait time for urgent SOB patients (minutes)	120 min	15 min	9.72	58.48	< .01

**Impact on the Organization**

This project contributed to successive improvements in the organization's patient care for asthma dyspnea indications following improved patient flow, enhanced assessment accuracy, increased staff knowledge, and reduced mis-triage rate. Using the data, the organization will be able to effectively utilize data. Patients will also have quality and safe care in the department if the staffs are well-educated on how to identify patients with shortness of breath who need urgent care.

### **Limitations**

There were several limitations of the project, such as a relatively limited research sample, which can make it difficult to generalize large populace studies. The duration also limited the chance to assess the effects of treatments within a long timeframe. Furthermore, variations in the prior experience and number of working hours of nurses employed in the observation may have contributed to the stability of the improvements in the accuracy and effectiveness of dyspnea ratings. These factors could have brought random variation, thus reducing the intended impact of the intervention.

### **Importance Beyond Local Site**

The project's significance reaches outside the local site by illustrating a feasible process of enhancing care related to breathing difficulties through education. Due to the evolution and adoption of similar interventions, other healthcare facilities may also improve and work toward enhancing prompt care for patients who need it across the entire country, enhancing patients' outcomes in different healthcare facilities.

### **Conclusions**

This project increased the diagnostic validity and reliability of asthma-related dyspnea clinical assessments, contributing to better patient management and resource utilization within large healthcare institutions. One of the recommendations is that healthcare staff should be educated often about new and effective assessment techniques for shortness of breath. The second recommendation is that a broader range of assessment techniques should be used in assessing patients presenting with shortness of breath. The recommendations have the following implications for nursing practice: strengthening personal skills related to equity to improve the delivery of on-time care to all patients.

This is consistent with positive social change as it seeks to eliminate health inequalities as well as enhance diversity, leading to an improvement of the people's quality of health.

Additional efforts in the promotion of training and assessment can build up the practice and nature of nursing as well as the quality of patient care.

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**Appendix A: Questionnaire**

Developing Nursing Education on the assessment of Asthma patients with symptoms of shortness of breath in the Urgent care

**Staff Questionnaire**

Kindly circle or fill in the answers in the space provided.

1. What is your current role in Valley Health Urgent Care?

- a. LPN/Paramedic
- b. MA
- c. Registration staff
- d. Other .....

2. How long have you been working in your current role?

- a. Under 1 year
- b. 2 – 5 years
- c. 6 - 9 years
- d. Over 10 years

3. How long have you been working in this facility?

- a. Under 1 year
- b. 2 – 5 years
- c. 6 - 9 years
- d. Over 10 years

4. How confident do you feel in assessing the severity or urgency of patients with shortness of breath at the registration desk?

- a. Not at all confident
- b. Somewhat confident
- c. Moderately confident
- d. Very confident
- e. Extremely confident

5. How do you decide what symptoms are severe and therefore require a provider’s immediate attention?

.....  
.....

6. What specific aspects of the current way of assessing patients presenting with shortness of breath in urgent care do you believe need improvement?

.....  
.....  
.....

7. Circle five (5) physical findings in patients experiencing shortness of breath that require immediate attention.

- a. Cyanosis

- b. Use of accessory muscles
- c. Difficulty speaking in full sentences
- d. Sneezing and running nose
- e. Altered mental status
- f. Decreased respiration rate
- g. Mild chest tightness
- h. Tachypnea

## Appendix B: Assessment to Determine the Severity of Shortness of Breath



INABILITY TO SPEAK



INCREASED RESPIRATORY DISTRESS



### Things That Affect Pulse Oximeter Readings:

- Having cold hands
- Moving while taking your reading
- Wearing nail polish (especially black, blue, or green colors)
- Having artificial nails
- Experiencing an extremely low oxygen saturation (below 80%)
- Having thicker-than-normal skin

