Journal of Surgical Nursing and Allied Health Sciences
Volume 2, Issue 2 - 2026, Pg. No. 7-10
Peer Reviewed & Open Access Journal

Review Article

Byssinosis (Brown Lung Disease)

V Archana[1], A Jaya Bharathi[2]

[1]M SC (N), Associate Professor, [2]M SC (N) Assisstant Professor, Arcot Sri Mahalakshmi Women's College Of Nursing,Ranipet. East Point College Of Nursing, Bangalore, India

I N F O

Corresponding Author:
V ArchanaArcot Sri Mahalakshmi Women's College Of Nursing,Ranipet. East Point College Of Nursing, Bangalore, India
E-mail Id:
archanavelu12@gmail.com
Orcid id:
https://orcid.org/0009-0007-0314-1334
How to cite this article:
Archana V, Bharathi A J. Byssinosis (Brown Lung Disease). *J Surg Nurs Allied Health Sci.* 2026;2(2):7-10.

Date of Submission: 2026-09-22
Date of Acceptance: 2026-10-22

A B S T R A C T

Byssinosis, also known as Brown Lung Disease, is an occupational respiratory disease caused by inhalation of cotton dust, mainly among workers employed in cotton textile industries. Repeated exposure to cotton dust can cause inflammation and narrowing of the airways, leading to chest tightness, cough, wheezing, and shortness of breath. Symptoms are often more pronounced on the first working day after a break, a phenomenon commonly known as "Monday chest tightness." Prolonged exposure may result in persistent respiratory impairment and reduced lung function. Diagnosis is based on occupational history, clinical assessment, and pulmonary function tests. Management includes reducing exposure to cotton dust, using appropriate respiratory protective equipment, improving workplace ventilation, and administering prescribed medications. Nursing management focuses on respiratory assessment, monitoring vital signs and oxygen saturation, promoting effective breathing, providing prescribed treatment, and educating workers about occupational safety. Early recognition and preventive measures are essential to reduce complications and protect the respiratory health of textile workers.

Keywords: Byssinosis, Brown Lung Disease, Cotton Dust, Occupational Respiratory Disease, Airway Inflammation, Textile Workers, Respiratory Symptoms, Pulmonary Function, Prevention, Occupational Health

Introduction

Byssinosis, also known as Brown Lung Disease, is an occupational respiratory disease caused by inhalation of cotton dust, particularly among workers in cotton textile mills.[1] It commonly affects workers involved in cotton processing, spinning, weaving, and other textile-related activities.

Repeated exposure to cotton dust can cause inflammation and narrowing of the airways, resulting in chest tightness, cough, wheezing, and difficulty in breathing.[2]



Figure 1. Byssinosis Also Known As Brown Lung Disease. Definition

Copyright (c) 2026: Author(s). Published by Advanced Research Publications

Byssinosis, also known as Brown Lung Disease, is an occupational respiratory disease caused by inhalation of cotton dust, particularly in workers employed in cotton textile mills. It causes inflammation and narrowing of the airways, leading to breathing difficulties.[3,4]

Causes:

Inhalation of cotton dust.

- Exposure to flax and hemp dust.
- Working in cotton spinning, weaving, and textile-processing industries.
- Prolonged exposure to dusty working environments.

Types / Stages Of Byssinosis

Grade 0: No symptoms of byssinosis.

Grade ½: Occasional chest tightness or breathing difficulty on the first working day of the week.

Grade 1: Chest tightness and/or breathing difficulty on the first working day of most weeks.

Grade 2: Symptoms occur on the first working day and other working days.

Grade 3: Persistent symptoms accompanied by reduced lung function, which may indicate advanced disease.

Pathophysiology

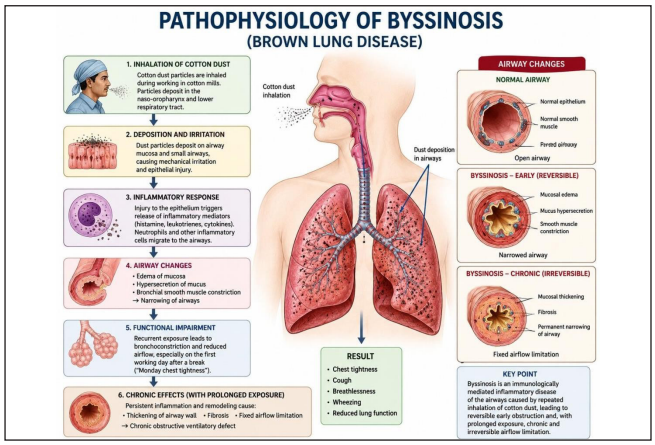


Figure 2. Pathophysiology of Byssinosis

Clinical Manifestations

- Chest tightness.
- Shortness of breath.
- Cough.
- Wheezing.
- Chest discomfort, especially on returning to work after a break.
- Reduced lung function in advanced cases.

Diagnostic Evaluation

- Occupational history
- Medical history
- Physical examination
- Pulmonary function test (spirometry)
- Peak expiratory flow rate (PEFR)
- Pre-shift and post-shift lung function testing
- Chest X-ray
- Arterial blood gas (ABG) analysis
- Pulse oximetry
- Complete blood count (CBC)
- Bronchodilator response test

Medical Management

- Eliminate or reduce exposure to cotton dust.
- Administer bronchodilators as prescribed.
- Give corticosteroids when clinically indicated.
- Provide oxygen therapy for hypoxemia.
- Administer mucolytics or expectorants when prescribed.
- Encourage breathing exercises.
- Provide pulmonary rehabilitation.
- Treat associated respiratory infections.
- Manage complications such as persistent airflow obstruction.
- Monitor oxygen saturation and respiratory status.
- Perform pulmonary function tests (spirometry).
- Improve workplace ventilation and dust-control measures.
- Use appropriate respiratory protective equipment.
- Encourage smoking cessation.
- Arrange regular medical follow-up.

Nursing management

- Assess respiratory status: Monitor respiratory rate, breathing pattern, chest movements, and breath sounds.
- Monitor vital signs: Check temperature, pulse, blood pressure, and oxygen saturation (SpO_2).
- Maintain a comfortable position: Place the patient in a Fowler's or semi-Fowler's position to promote lung expansion.
- Administer medications: Give prescribed bronchodilators and corticosteroids as ordered.
- Provide oxygen therapy: Administer oxygen as prescribed if the patient has hypoxemia.
- Promote airway clearance: Encourage effective coughing and deep-breathing exercises.
- Reduce dust exposure: Advise the patient to avoid cotton dust and other occupational respiratory irritants.
- Provide health education: Teach the importance of wearing appropriate respiratory protective equipment and following workplace safety measures.
- Encourage smoking cessation: Advise the patient to stop smoking and avoid secondhand smoke.

- Maintain adequate nutrition and hydration: Encourage a balanced diet and adequate fluids, unless medically restricted.
- Provide adequate rest: Encourage rest periods and balance activity with the patient's tolerance.12. Monitor lung function: Assist with regular pulmonary function tests and follow-up examinations.
- Prevent complications: Observe for worsening breathlessness, cyanosis, or decreased oxygen saturation and report promptly.
- Provide psychological support: Reduce anxiety by explaining the condition and treatment plan.
- Document nursing care: Record respiratory findings, vital signs, medications administered, oxygen therapy, and the patient's response to treatment.[6,7,8]

Nursing Diagnoses With Interventions

Ineffective Airway Clearance Related to: Airway inflammation and increased mucus production.

Interventions:

Assess respiratory rate, breath sounds, and cough effectiveness.

- Position the patient in Fowler's position.
- Encourage deep-breathing and effective coughing exercises.
- Encourage adequate fluid intake unless contraindicated.
- Administer prescribed bronchodilators and other medications.

Ineffective Breathing Pattern Related to: Narrowing of airways and increased airway resistance.

Interventions

- Monitor respiratory rate, rhythm, and depth.
- Assess for chest tightness and use of accessory muscles.
- Maintain a semi-Fowler's or Fowler's position.
- Teach pursed-lip breathing.
- Administer prescribed treatment and reassess breathing.

Impaired gas exchange related to ventilation-perfusion imbalance secondary to airway obstruction.

Interventions

- Monitor oxygen saturation (SpO_2).
- Assess for cyanosis, restlessness, and confusion.
- Administer oxygen as prescribed.
- Monitor arterial blood gas results if indicated.
- Report worsening respiratory distress immediately.
- Activity Intolerance Related to: Imbalance between oxygen supply and demand.

Interventions

- Assess the patient's response to physical activity.
- Monitor pulse, respiratory rate, and SpO_2 during activity.
- Provide adequate rest periods.
- Assist with activities of daily living as needed.
- Increase activity gradually according to tolerance

Ineffective Health Management Related to: Inadequate knowledge regarding occupational hazards and preventive measures.

Interventions

- Explain the causes and symptoms of byssinosis.
- Educate the patient to avoid cotton-dust exposure.
- Teach the correct use of suitable respiratory protective equipment.
- Encourage regular medical check-ups and pulmonary function tests.
- Advise smoking cessation and compliance with prescribed treatment.[9,10]

Anxiety Related to: Difficulty in breathing and fear of illness.

Interventions

- Assess the patient's anxiety level.
- Provide reassurance and emotional support.
- Explain procedures and treatments clearly.
- Encourage the patient to express feelings and concerns.
- Teach relaxation and controlled-breathing techniques.

Prevention

- Use appropriate respiratory protective equipment.
- Ensure proper ventilation and dust-control systems.
- Maintain a clean working environment.
- Conduct regular occupational health check-ups.
- Educate workers about respiratory hazards.[7,8]

Complications

- Chronic bronchitis.
- Persistent airway inflammation.
- Airway obstruction.
- Reduced lung function.
- Chronic obstructive pulmonary disease (COPD).
- Recurrent wheezing and chest tightness.
- Chronic cough and sputum production.
- Shortness of breath on exertion.
- Reduced exercise tolerance.
- Respiratory disability in advanced cases.
- Respiratory failure in severe cases.
- Reduced quality of life.

References

1. Momeni H, Fard SF, Arefinejad A, Afzali A, Talebi F, Salmani ER. Composition, production rate and management of dental solid waste in 2017 in Birjand, Iran. The international journal of occupational and environmental medicine. 2018 Jan 1;9(1):52. [Google Scholar]
2. Bouhuys A, Heaphy Jr LJ, Schilling RS, Welborn JW. Byssinosis in the United States. New England Journal of Medicine. 1967 Jul 27;277(4):170-5. [Google Scholar]
3. Dangi BM, Bhise AR. Cotton dust exposure: Analysis of pulmonary function and respiratory symptoms. Lung India: official organ of Indian Chest Society. 2017 Mar;34(2):144. [Google Scholar]
4. Er M, Emri SA, Demir AU, Thorne PS, Karakoca Y, Bilir N, Baris IY. Byssinosis and COPD rates among factory workers manufacturing hemp and jute. International journal of occupational medicine and environmental health. 2015;29(1):55-68. [Google Scholar]
5. Hinson AV, Schlünssen V, Agodokpessi G, Sigsgaards T, Fayomi B. The prevalence of byssinosis among cotton workers in the north of Benin. The international journal of occupational and environmental medicine. 2014 Oct 1;5(4):194. [Google Scholar]
6. 8.Lai PS, Christiani DC. Long term respiratory health effects in textile workers. Current opinion in pulmonary medicine. 2013 Mar;19(2):152.[Google Scholar]
7. Lacey J, Dutkiewicz J. Bioaerosols and occupational lung disease. Journal of aerosol science. 1994 Dec 1;25(8):1371-404. [Google Scholar]
8. Christiani DC. Lung disease in textile workers. [Google Scholar]
9. Khawar MT, Gong H, Zia Q, Nawaz HH, Li J. Chitosan nanofibres and polypropylene meltblown substrate based multilayer respiratory filter for byssinosis prevention. Journal of Industrial Textiles. 2022 Jun 30;52:15280837221111173. [Google Scholar]