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Jaundice: Etiology, Clinical Manifestations, Diagnosis, Management, Nursing Care, and Prevention

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Abstract

Jaundice is a significant clinical condition marked by a yellow discoloration of the skin, sclera, and mucous membranes resulting from increased bilirubin levels in the bloodstream. Rather than being a disease itself, jaundice represents an underlying disorder involving the liver, biliary system, or hematological processes. Hyperbilirubinemia develops when there is excessive bilirubin production, impaired hepatic uptake, defective conjugation, or obstruction in bile excretion. Jaundice remains a major global health concern owing to its association with viral hepatitis, alcoholic liver disease, hemolytic disorders, metabolic conditions, malignancies, and neonatal physiological immaturity. If not recognized and managed promptly, jaundice can lead to serious complications, such as hepatic failure, encephalopathy, coagulopathy, and kernicterus in neonates. Nursing professionals play a pivotal role in early identification, monitoring, patient education, supportive care, and prevention. This article provides a comprehensive and detailed review of jaundice, including its etiology, pathophysiology, clinical manifestations, diagnostic evaluation, medical, and surgical management, nursing care, complications, and preventive strategies, with special emphasis on the nursing perspective.

Keywords: Bilirubin metabolism, hepatitis, hyperbilirubinemia, jaundice, liver disorders, neonatal jaundice, nursing management, obstructive jaundice

INTRODUCTION

Jaundice, a term originating from the French word jaune meaning yellow, describes the yellow coloration of the skin, sclera, and mucous membranes caused by elevated bilirubin levels in the bloodstream. Bilirubin is a yellow pigment produced during the normal degradation of hemoglobin from aging red blood cells. Under normal physiological conditions, bilirubin is processed through a coordinated metabolic pathway that includes its formation, transport, uptake by the liver, conjugation, and eventual excretion into the intestine via bile [1–5].

Any disturbance in this metabolic pathway causes bilirubin to build up in the bloodstream, leading to hyperbilirubinemia and the manifestation of clinical jaundice. Jaundice can affect individuals of all age groups, ranging from neonates to elderly populations, with etiologies varying according to age, geographic location, lifestyle, and underlying health conditions. In adults, common causes include viral hepatitis, alcohol-induced liver injury, gallstones, and malignancies, while neonatal jaundice is often physiological due to immature hepatic enzyme systems [6–8].

Jaundice is more than just a cosmetic change; it serves as an observable sign of underlying systemic or liver-related disease. Hence, prompt identification, precise diagnosis, and appropriate management are crucial to avoid complications and enhance patient outcomes. Nurses, being frontline healthcare providers, play a critical role in identifying early signs, monitoring disease progression, and providing holistic patient care [9–13].

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BILIRUBIN METABOLISM: AN OVERVIEW

Bilirubin metabolism plays a key role in the development of jaundice. The process starts with the degradation of hemoglobin within the reticuloendothelial system, mainly in the spleen. The resulting unconjugated (indirect) bilirubin is lipid-soluble and is transported to the liver while bound to albumin. Hepatocytes then absorb bilirubin and conjugate it with glucuronic acid via the enzyme uridine diphosphate-glucuronyl transferase (UGT), transforming it into water-soluble conjugated (direct) bilirubin. This conjugated bilirubin is secreted into bile and passes into the intestine, where it is further metabolized into urobilinogen and stercobilin, which impart the normal brown color to feces [14–18].

Disruption at any stage of this pathway results in jaundice.

TYPES OF JAUNDICE

Pre-Hepatic (Hemolytic) Jaundice

Pre-hepatic jaundice occurs due to accelerated breakdown of red blood cells, causing an overproduction of unconjugated bilirubin that exceeds the liver's ability to process it. In this condition, the liver remains structurally and functionally normal [19–23].

Common causes include:

- Hemolytic anemia.
- Malaria.
- Sickle cell disease.
- Thalassemia.
- Autoimmune hemolysis.
- ABO or Rh incompatibility.
- Drug-induced hemolysis.

Patients typically present with anemia, splenomegaly, and elevated unconjugated bilirubin levels.

Hepatic (Hepatocellular) Jaundice

Hepatic jaundice occurs due to damage to liver cells, impairing bilirubin uptake, conjugation, and excretion. This is one of the most common types of jaundice encountered in clinical practice.

Causes include:

- Viral hepatitis (A, B, C, D, E).
- Alcoholic liver disease.
- Nonalcoholic fatty liver disease (NAFLD).
- Cirrhosis.
- Drug-induced liver injury.
- Autoimmune hepatitis.
- Genetic and metabolic disorders, such as Wilson's disease and hemochromatosis.

This type often presents with mixed elevation of conjugated and unconjugated bilirubin.

Post-Hepatic (Obstructive) Jaundice

Post-hepatic jaundice results from obstruction to bile flow after it has been conjugated in the liver. The obstruction leads to regurgitation of conjugated bilirubin into the bloodstream.

Common causes include:

- Gallstones.
- Biliary strictures.
- Pancreatic carcinoma.
- Cholangiocarcinoma.
- Biliary Atresia.
- Parasitic infections.

Patients commonly present with pale stools, dark urine, pruritus, and elevated alkaline phosphatase levels.

ETIOLOGY AND PATHOPHYSIOLOGY

Jaundice develops when there is an imbalance between the production and elimination of bilirubin in the body. This imbalance occurs due to disturbances at different stages of bilirubin metabolism. The mechanisms are explained below [24–26].

Increased Bilirubin Production

Excessive red blood cell destruction increases unconjugated bilirubin, overwhelming hepatic conjugation capacity [27].

Impaired Hepatic Uptake

Damage to hepatocytes reduces the liver's ability to extract bilirubin from the circulation.

Defective Conjugation

Deficiency or immaturity of UGT enzyme, as seen in neonates or genetic disorders, leads to unconjugated hyperbilirubinemia.

Obstructed Excretion

Once bilirubin is conjugated, it is excreted into bile and passes through the bile ducts into the intestine. Mechanical obstruction of the bile ducts prevents normal bile flow, causing conjugated bilirubin to back up into the bloodstream [28].

RISK FACTORS

Several lifestyles, environmental, and genetic factors increase the risk:

- Chronic alcohol consumption.
- Viral exposure (hepatitis A–E).
- Unsafe blood transfusion practices.
- Use of hepatotoxic medications (e.g., anti-TB drugs).
- Unhygienic conditions and contaminated food.
- Obesity and high-fat diet leading to gallstones.
- Family history of liver disorders.
- Tattooing or piercing with non-sterile equipment.
- Unprotected sexual activity.
- Metabolic syndrome.

CLINICAL MANIFESTATIONS

Symptoms vary depending on the cause and severity.

General Symptoms

- Yellow discoloration of skin, sclera, and mucous membranes.
- Dark, tea-colored urine.
- Clay-colored or pale stools.
- Fatigue and weakness.
- Loss of appetite.
- Abdominal discomfort.
- Itching (pruritus).
- Nausea and vomiting.
- Weight loss.

Severe or Advanced Symptoms

- Ascites (fluid accumulation in abdomen).
- Edema.
- Altered mental status (hepatic encephalopathy).

- Bruising (due to reduced clotting factors).
- Splenomegaly.

Symptoms Specific to Neonates
- Poor feeding.
- High-pitched cry.
- Lethargy.
- Risk of kernicterus if bilirubin rises severely.

DIAGNOSTIC EVALUATIONS

Correct diagnosis requires a combination of clinical examination, laboratory investigations, and imaging techniques.

Clinical Assessment
- Observation of yellow pigmentation.
- *Detailed patient history:* alcohol use, drug intake, infection exposure.
- Palpation for hepatomegaly or tenderness.

Laboratory Investigations
- *Liver Function Test (LFT):* Total, direct, and indirect bilirubin; ALT; AST; ALP; GGT.
- *Complete Blood Count (CBC):* To detect anemia or infections.
- *Hepatitis Serology:* HBsAg, Anti-HCV, IgM anti-HAV.
- *Coagulation Profile:* PT/INR.
- Urine bilirubin test.
- Reticulocyte counts to assess hemolysis.

Imaging Studies
- *Ultrasound Abdomen:* First line for detecting obstruction.
- *CT Scan/MRI:* For tumors or structural abnormalities.
- *MRCP (Magnetic Resonance Cholangiopancreatography):* Non-invasive imaging of bile ducts.
- *ERCP:* Diagnostic + therapeutic for obstructive causes.

Invasive Procedures
- Liver biopsy for chronic liver disease evaluation.
- Endoscopic procedures for biliary obstruction.

MEDICAL MANAGEMENT

Management varies according to the underlying cause.

Hemolytic Jaundice
- Treat underlying infection (e.g., antimalarial drugs).
- Blood transfusion if severe anemia.
- Folic acid supplementation.
- Corticosteroids for autoimmune hemolysis.

Hepatic Jaundice
- Antiviral therapy for hepatitis B and C.
- Abstinence from alcohol.
- Avoid hepatotoxic drugs.
- Vitamin K for coagulation defects.
- Nutritional support (low-fat diet).
- Management of cirrhosis complications.

Obstructive Jaundice
- ERCP to remove stones.
- Stenting for bile duct strictures.
- Cholecystectomy for gallbladder stones.
- Biliary bypass surgery in malignancy.

Supportive Measures
- Adequate hydration (IV fluids).
- High-carbohydrate diet.
- Monitoring of electrolytes.
- Antiemetics.
- Cholestyramine to relieve itching.

SURGICAL MANAGEMENT
- Cholecystectomy (laparoscopic preferred).
- ERCP (Endoscopic retrograde cholangiopancreatography) with sphincterotomy.
- Hepatic resection in tumors.
- Biliary drainage procedures.
- Liver transplantation in end-stage liver failure.

NURSING MANAGEMENT

Nurses play a crucial role in early detection, monitoring, and patient education.

Assessment
- Monitor skin and sclera color.
- Vital signs and hydration level.
- Assess stool and urine color.
- Monitor liver function test values.
- Evaluate nutritional intake.

Nursing Interventions
- Maintain adequate hydration.
- Provide small, frequent meals low in fat.
- Administer medications as prescribed.
- Monitor intake-output chart.
- Prevent skin breakdown (due to itching).
- Provide emotional support.
- Educate patients about alcohol cessation.
- Promote hygiene and infection prevention.
- Encourage vaccination for hepatitis.

Health Education
- Avoid alcohol and hepatotoxic drugs.
- Practice safe sex.
- Use clean water and maintain hygiene.
- Handwashing to prevent hepatitis A & E.
- *Dietary advice:* avoiding high-fat or fried foods.
- Importance of follow-up check-ups.

COMPLICATIONS

If untreated, jaundice may lead to:
- Chronic liver failure.

- Hepatic encephalopathy.
- Portal hypertension.
- Variceal bleeding.
- Ascites and Edema.
- Coagulopathy.
- Multi-organ failure.
- Kernicterus in neonates.

PREVENTION STRATEGIES

- Hepatitis A and B vaccination.
- Safe blood transfusion practices.
- Avoid sharing needles.
- Hygienic food and water consumption.
- Avoid excessive alcohol intake.
- Maintain healthy body weight.
- Safe sexual behaviors.
- Early treatment of gallstones and liver diseases.

DISCUSSION

Jaundice remains a significant global public health problem, particularly in developing and low-resource regions. The high prevalence of viral hepatitis (especially hepatitis A, B, C, and E), widespread alcohol use disorders, and poor sanitation contribute substantially to the burden of jaundice worldwide. Inadequate access to clean drinking water and unsafe food practices increase the risk of waterborne hepatitis infections, while excessive alcohol consumption leads to progressive liver damage, resulting in hepatic jaundice [29].

Early diagnosis of jaundice plays a crucial role in improving patient outcomes. Prompt identification of elevated bilirubin levels and the underlying cause allows timely medical or surgical intervention. Early treatment helps prevent serious long-term complications, such as chronic liver disease, cirrhosis, hepatic encephalopathy, liver failure, and, in neonates, kernicterus. Delayed diagnosis, on the other hand, significantly increases morbidity and mortality.

Nurses have a crucial role in both the management and prevention of jaundice. As primary caregivers, they are frequently the first to identify early manifestations, such as yellowing of the skin and sclera, dark-colored urine, and alterations in stool color. Their duties go beyond direct clinical care and include ongoing patient monitoring, administering medications, providing nutritional support, and offering patient education and counseling. Importantly, nurses also act as educators, providing guidance on alcohol cessation, medication adherence, hygiene practices, and the importance of follow-up care.

From a public health perspective, preventive strategies are essential in reducing jaundice-related morbidity. Vaccination programs against hepatitis A and B have proven highly effective in lowering infection rates. Providing safe drinking water and maintaining adequate sanitation helps reduce the spread of enteric hepatitis viruses. Public awareness campaigns help educate communities about safe food practices, responsible alcohol consumption, and early health-seeking behavior. Additionally, early screening programs for liver diseases and hepatitis enable timely intervention before irreversible liver damage occurs [30].

CONCLUSION

Jaundice serves as an important and easily recognizable clinical sign that reflects underlying systemic or hepatic dysfunction. Rather than being a disease itself, it indicates disturbances in bilirubin metabolism caused by conditions affecting the liver, biliary tract, or hematological system. The visible nature of jaundice allows healthcare professionals to detect potential internal pathology at an early stage, making it a valuable diagnostic clue in clinical practice.

Successful management of jaundice depends on a coordinated multidisciplinary approach. Early diagnosis through clinical assessment and laboratory investigations enables prompt identification of the underlying cause. Accurate differentiation between pre-hepatic, hepatic, and post-hepatic jaundice is essential for selecting appropriate treatment strategies. Timely medical management, such as antiviral therapy, nutritional support, or correction of metabolic abnormalities, and surgical interventions, including biliary drainage or cholecystectomy when indicated, help prevent disease progression and complications.

Focused and committed nursing care is essential for enhancing patient outcomes. Nurses contribute significantly through continuous monitoring, administration of prescribed treatments, nutritional management, prevention of complications, and patient education. Their involvement ensures holistic care, addresses both physical and psychological needs, and promotes adherence to treatment and follow-up.

Preventive measures are equally vital in lowering the occurrence of jaundice. Health education empowers individuals and communities to adopt safe hygiene practices, avoid excessive alcohol consumption, seek early medical care, and adhere to vaccination programs. Lifestyle modifications, such as maintaining a healthy diet, avoiding hepatotoxic substances, and practicing safe behaviors, further reduce the risk of liver disease.

In conclusion, recognizing jaundice as an indicator of underlying pathology and managing it through coordinated medical, nursing, and preventive efforts can significantly reduce morbidity and improve overall health outcomes.

REFERENCES

1. World Health Organization. Jaundice: Causes, symptoms and management. Geneva: World Health Organization; 2025. Available from: https://www.who.int/news-room/fact-sheets/detail/hepatitis-%EF%BD%82?utm_source=chatgpt.com.
2. Park K. Park's textbook of preventive and social medicine. 27th ed. Jabalpur: Bhanot Publishers; 2023.
3. Mayo Clinic. Jaundice: Symptoms and causes [Internet]. Rochester (MN): Mayo Foundation for Medical Education and Research; 2024 [cited 2025 Jan]. Available from: https://www.mayoclinic.org/diseases-conditions/infant-jaundice/symptoms-causes/syc-20373865.
4. Centers for Disease Control and Prevention. Hepatitis and jaundice [Internet]. Atlanta (GA): CDC; 2024 [cited 2025 Jan]. Available from: https://www.cdc.gov/hepatitis/about/index.html.
5. StatPearls Publishing. Jaundice. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK544252/.
6. European Association for the Study of the Liver. EASL clinical practice guidelines on the management of liver diseases in pregnancy. J Hepatol. 2023;79(3):768–828. doi: 10.1016/j.jhep.2023.03.006.
7. American Liver Foundation. Understanding liver diseases [Internet]. New York (NY): American Liver Foundation; 2024 [cited 2026 Feb 28]. Available from: https://liverfoundation.org/about-your-liver/.
8. Xiao-Ning Wu, Feng Xue, Nan Zhang, et al. Global burden of liver cirrhosis and other chronic liver diseases caused by specific etiologies from 1990 to 2021. BMC Gastroenterol. 2025;25:641. doi: 10.1186/s12876-025-04264-5. Available from: https://link.springer.com/article/10.1186/s12876-025-04264-5.
9. Fargo MV, Grogan SP, Saguil A. Evaluation of jaundice in adults. Am Fam Physician. 2017;95(3):164–168. PMID: 28145671.
10. Singh A, Gupta S. Obstructive jaundice: Diagnosis and management. Int J Surg Sci. 2024;8(1):45–52.
11. United Nations Children's Fund (UNICEF). Newborn mortality [Internet]. New York (NY): UNICEF; 2024 [cited 2026 Feb 28]. Available from: https://data.unicef.org/topic/child-survival/neonatal-mortality/.
12. Kumar P, Clark M. Kumar and Clark's clinical medicine. 10th ed. London: Elsevier; 2024.
13. Chatterjee S. Textbook of medical biochemistry. 7th ed. New Delhi: Jaypee Brothers Medical Publishers; 2023.
14. British Liver Trust. Alcohol and liver disease [Internet]. London: British Liver Trust; 2024 [cited 2025 Jan]. Available from: https://britishlivertrust.org.uk/information-and-support/risks-and-causes/alcohol/.
15. World Health Organization. Global hepatitis report 2024. Geneva: World Health Organization; 2024. Available from: https://www.who.int/publications/i/item/9789240091672.

16. Jameson JL, Fauci AS, Kasper DL, Hauser SL, Loscalzo J, editors. Harrison's principles of internal medicine. 21st ed. New York: McGraw-Hill Education; 2022.
17. Brunton LL, Hilal-Dandan R, Knollmann BC, editors. Goodman & Gilman's the pharmacological basis of therapeutics. 14th ed. New York: McGraw-Hill Education; 2023.
18. Kumar V, Abbas AK, Aster JC. Robbins and Cotran pathologic basis of disease. 10th ed. Philadelphia: Elsevier; 2020.
19. Feldman M, Friedman LS, Brandt LJ, editors. Sleisenger and Fordtran's gastrointestinal and liver disease. 11th ed. Philadelphia: Elsevier; 2021.
20. Li J, Chen S, Wang X, Zhang Y, Liu H, Patel K, et al. Current and emerging therapeutic landscape for metabolic dysfunction-associated steatohepatitis. Lancet Gastroenterol Hepatol. 2025;10(5):321–330. doi: 10.1016/S2468-1253(25)00260-2. Available from: https://www.thelancet.com/journals/langas/article/PIIS2468-1253(25)00260-2/abstract.
21. Goel YS, Prajapati A. Brief overview of jaundice and its current treatment options. Int J Pharmaceutics Drug Anal. 2021;11(3):556. doi: 10.47957/ijpda.v11i3.556.
22. Bhadoria AS, Saxena G, Pandey P, et al. Preventive hepatology at AIIMS Rishikesh: Delivering comprehensive and integrated care for liver diseases in Northern state of India. J Family Med Prim Care. 2024;13(1):28–35. doi: 10.4103/jfmpc.jfmpc_1536_23.
23. Ralston SH, Penman ID, Strachan MWJ, Hobson RP, editors. Davidson's principles and practice of medicine. 24th ed. Edinburgh: Elsevier; 2022.
24. Zipes DP, Libby P, Bonow RO, Mann DL, Tomaselli GF, editors. Braunwald's heart disease: A textbook of cardiovascular medicine. 12th ed. Philadelphia: Elsevier; 2022.
25. Ramírez-Mejía MM, Castillo-Castañeda SM, Pal SC, Qi X, Méndez-Sánchez N. The multifaceted role of bilirubin in liver disease: A literature review. J Clin Transl Hepatol. 2024;12(11):939–948. Available from: https://doi.org/10.14218/JCTH.2024.00156.
26. Solé-Navais P, Juodakis J, Ytterberg K, Wu X, Bradfield JP, Vaudel M, LaBella AL, Helgeland Ø, Flatley C, Geller F, Finel M, Zhao M, Lazarus P, Hakonarson H, Magnus P, Andreassen OA, Njølstad PR, Grant SFA, Feenstra B, Muglia LJ, Johansson S, Zhang G, Jacobsson B. Genome-wide analyses of neonatal jaundice reveal a marked departure from adult bilirubin metabolism. Nat Commun. 2024;15:7550. doi: 10.1038/s41467-024-51947-w. Available from: https://www.nature.com/articles/s41467-024-51947-w.
27. Patel A, Vagha JD, Meshram RJ, Taksande A, Khandelwal R, Jain A, et al. Illuminating progress: A comprehensive review of the evolution of phototherapy for neonatal hyperbilirubinemia. Cureus. 2024 Mar 5;16(3):e55608. doi: 10.7759/cureus.55608. Available from: https://pubmed.ncbi.nlm.nih.gov/38586621/.
28. Kumbhar S, Musale M, Jamsa A. Bilirubin metabolism: Cellular and molecular mechanisms. Egypt J Intern Med. 2024;36:34. Available from: https://link.springer.com/article/10.1186/s43162-024-00298-5.
29. Lewis SL, Bucher L, Heitkemper MM, Harding MM. Lewis's medical-surgical nursing. 11th ed. St. Louis: Elsevier; 2023.
30. Hinkle JL, Cheever KH. Brunner & Suddarth's textbook of medical-surgical nursing. 15th ed. Philadelphia: Wolters Kluwer; 2022.

