Although the tasks in different scenarios have their own focuses, the daily workload of nursing staff is generally heavy. They need to undertake multiple key tasks: verifying the patient's previous medication history, identifying potential medication safety hazards, checking and questioning questionable medical orders, collaborating with other relevant departments, explaining the specific dosage and timing of medication to patients and their families, closely monitoring the patient's physical reactions and various drug adverse reactions, and promptly answering patients' various medication-related questions. Through these meticulous tasks, the safety of drug use is effectively guaranteed, and individualized treatment plans can be better implemented in clinical practice (Li et al., 2025).

This study aims to examine the specific responsibilities of nursing staff in medication reconciliation, medication education, and support for medication adherence. Clarifying these roles more precisely is not only closely related to patient outcomes but also directly affects the efficiency of clinical team collaboration. By adopting a continuous tracking and evaluation model that spans inpatient care and outpatient follow-up, and by integrating verification processes with educational interventions, it is expected that medication errors can be reduced, patient adherence improved, and disease control outcomes strengthened. However, evidence at the institutional level remains inconsistent, and real-world implementation is often constrained by factors such as uneven training and inadequate support systems. A careful re-examination of the role of nursing staff can help guide capacity building, workforce allocation, and the optimization of multidisciplinary collaboration models, while also informing improvements in nursing education. More importantly, this approach will contribute to fully recognizing and leveraging the professional contributions of frontline nursing staff, thereby enhancing overall medication safety and promoting the quality of patient-centered nursing care.

2 The Conceptual Framework of Drug Validation and Its Significance in Clinical Practice

2.1 The meaning and key contents of drug validation

Drug verification, also known as prescription review or medication check, specifically refers to a systematic verification of drug names, dosages, administration routes, frequencies of administration, and patient basic information during the preparation stage before the patient starts taking medication. The core purpose of this process is to ensure that all information is consistent with the current valid medical orders, and to conduct a comprehensive assessment of the safety, appropriateness, and feasibility of the prescription. In the current era of widespread digital healthcare, drug verification work is generally carried out through electronic prescription systems or dedicated verification modules. This operation is not merely a simple mechanical verification, but rather a clinical decision-making process that requires professional analysis and judgment (Chan et al., 2025).

Specifically, drug validation mainly encompasses the following key aspects:

Verify the consistency between the medication and the doctor's orders: this includes the name of the drug, concentration, form, route of administration, single dose, frequency of administration, and treatment duration, ensuring that it is completely in line with the original doctor's orders.

Confirm patient information and condition: Verify the patient's identity, and simultaneously refer to their diagnosis, age, weight, renal function and other relevant indicators and test results;

Assessing treatment risks: Analyze potential risks such as dosage errors, medication mistakes, repeated dosing, contraindications, and drug interactions;

Documentation and Communication: Comprehensively document the verification results and promptly communicate and confirm with the prescribing doctor (Chan et al., 2025).

From the perspective of human factors engineering, if a structured double-checking mechanism can be established, clear standard operating procedures can be formulated, "verification pause points" can be set at key stages, and mutual verification among teams can be encouraged, it will help reduce the workload of medical staff, minimize external interference, and thereby lower the medication risks caused by human cognitive biases.