

ORIGINAL ARTICLE

Exploring the Utility of ChatGPT in Nursing Care Plan Development: A Qualitative Evaluation of Standardized Nursing Classifications Alignment

Hemşirelik Bakım Planlarının Geliştirilmesinde ChatGPT'nin Kullanımı: Standart Hemşirelik Sınıflamalarına Uyumun Niteliksel Değerlendirmesi

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Abstract

Introduction: Generative artificial intelligence tools, such as ChatGPT, are being increasingly explored for their potential use in nursing education, particularly in clinical documentation and care planning. This study aimed to evaluate the alignment of ChatGPT-generated nursing care plans with standardized nursing classifications and to assess the educational utility of AI-assisted care planning in nursing student learning.

Methods: A mixed-methods design was employed, combining quantitative analysis of care plan quality using a 3-point Likert scale with a qualitative expert review of nursing diagnoses and interventions based on alignment with NANDA-I nursing diagnoses and nursing interventions classification. Ten students used GPT-3.5 to generate ten care plans based on patient data. The development of prompts was through iterative testing.

Results: Among the 30 nursing diagnoses evaluated, 43.3% were entirely appropriate, 40% partially appropriate, and 16.7% inappropriate. Nursing interventions demonstrated slightly better performance, with 50% being entirely appropriate, 36.7% partially appropriate, and 13.3% inappropriate. ChatGPT could generate nursing diagnoses and interventions but often misclassified priorities or used vague language.

Discussion and Conclusion: ChatGPT can support nursing education when used as a supplementary tool; however, expert supervision is necessary to ensure safe and contextually valid care planning.

Keywords: Artificial intelligence; ChatGPT; Nursing care plan; Nursing; Nursing diagnosis; Nursing interventions

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Open Artificial Intelligence (Open AI) announced a chat model architecture called a Generative Pretrained Transformer (ChatGPT). ChatGPT, based on GPT-3.5 architecture, is widely accessible and has demonstrated potential in various educational and healthcare contexts. While the more recent and sophisticated GPT-4 version was available for a fee at the time of this study, users could access the GPT-3.5 version without charge. ChatGPT is an app that is expanding quickly.^[1] ChatGPT offers query functions that respond to users' text inputs, answer annotated questions, and provide basic definitions and assumptions.^[2]

As an AI-based chatbot, ChatGPT has garnered increasing attention in nursing education research due to several key advantages: broad accessibility, immediate response capabilities, and the potential to support problem-based learning approaches.^[3–5] Allowing students to use technology and answer their questions may help them improve their digital skills and boost their confidence. ChatGPT's provision of course material access and quiz generation encourage student engagement and analytical thinking. These features help nursing students strengthen their conceptual understanding and develop greater confidence in their professional capabilities.^[5]

The nursing process represents a fundamental component of nursing education. Effective patient care delivery requires systematic identification and documentation of patient problems, clinical signs, and presenting symptoms.

^[6] The development of appropriate nursing diagnoses requires the utilization of critical thinking skills, as nurses must undertake a comprehensive evaluation of patient conditions and clinical presentations. While ChatGPT has been demonstrated to assist in organizing patient data and information management, the diagnostic process remains a complex clinical skill that requires human expertise and judgment. Accurate nursing diagnoses serve as the foundation for identifying patient problems and symptoms, which subsequently guides the selection of evidence-based nursing interventions.

^[7] This systematic approach supports evidence-based clinical decision-making processes. However, despite increasing interest in AI applications within healthcare settings, limited research has examined the clinical validity of AI-generated nursing care plans, particularly in terms of their consistency with evidence-based practices and established classification systems, such as NANDA-I International Nursing Diagnoses Definitions & Classification.

ChatGPT can provide quick access to information and may help with learning and decision-making. However, like all AI tools, it can make mistakes, especially with newer generative AI systems.^[8] When AI produces incorrect information, this creates problems for users who rely on these tools. Therefore, educators and clinicians must carefully review AI outputs and employ additional verification methods to ensure the information is accurate and reliable.

The aim of this study was to evaluate the alignment of ChatGPT-generated nursing care plans with standardized nursing classifications and to assess the educational utility of AI-assisted care planning in nursing student learning.

Materials and Methods

Study Place and Design

This study was conducted in December 2023 at the university hospital in Türkiye. It used an explanatory sequential mixed-methods design within a descriptive case study framework. Quantitative data were collected initially and later enriched through qualitative evaluations.

The qualitative component consisted of content analysis of expert ratings and evaluation of student interactions with ChatGPT. The quantitative component included an assessment of the congruence between ChatGPT-generated nursing diagnoses and interventions and NANDA-I nursing diagnoses and Nursing Interventions Classification (NIC) standards, using a 3-point Likert scale, as well as an analysis of inter-rater agreement using Cohen's κ coefficient.

Type of Research

This study employed an explanatory sequential mixed-methods design, beginning with a descriptive case study framework and qualitative evaluation.

Population and Sample

Purposive sampling was employed to select participants who could provide rich information specific to our research questions. The study included 10 nursing students who were completing their clinical practicum in the endocrine service as part of their Internal Medicine course. This approach allowed us to gain a deeper understanding of how ChatGPT could support nursing care plan development for endocrine system disorders. The study included 10 nursing students who were completing their clinical practicum in the endocrine service as part of their Internal Medicine course.

This study employed a purposive sample of 10 nursing students participating in their endocrine clinical rotation, following established methodological guidelines

4-Step Guide for Completing the Nursing Care Plan Assignment

Step 1: Create a ChatGPT account (Instructions for creating a free account at

<https://chat.openai.com>)

Step 2: Anonymize patient data (Guidelines for removing personal identifiers and including only clinically relevant information)

Step 3: Submit standard queries to ChatGPT (Main prompts to use: "According to the patient data presented, what are the three most likely priority nursing diagnoses in NANDA?" and "What NIC interventions do you propose?")

Step 4: Evaluate responses and complete the care plan (Check compliance with NANDA-I and NIC standards and ask additional questions if necessary)

Figure 1. 4-step guide for completing the nursing care plan assignment.

for exploratory qualitative research.^[9,10] This sample size enabled in-depth analysis of individual students' experiences with AI-assisted care planning while still providing sufficient diversity of clinical scenarios. The selection criteria ensured that participants had completed theoretical coursework on nursing processes and endocrine disorders before engaging with the AI tool.

Data Collection

Data were collected from 10 individual patients seen between December 1 and 31, 2023, in the endocrinology unit of a university hospital. Each of the 10 nursing students participating in the study was assigned one patient case to work with. This period was selected to ensure that students had already completed theoretical coursework on the endocrine system and nursing process, equipping them with the necessary background to evaluate AI-generated outputs.

All patient data were fully anonymized by removing personal identifiers (e.g., name, date of birth, medical record number) in line with institutional protocols. Local ethical regulations did not require additional approval for using fully de-identified data in educational research. Demographic and clinical details—such as age, gender, comorbidities, and medications—were included to provide sufficient clinical context.

Data collection was carried out in three phases over two weeks:

Preparation (2 days): Students received training on the use of ChatGPT, AI ethics, and critical evaluation techniques. They were instructed not to input any personal identifiers into the system.

ChatGPT Interaction Protocol for Nursing Care Plan Development

1. **Start:** Anonymization of patient data
2. **ChatGPT Input:** Entry of anonymized patient data into the system
3. **Initial Query:** Request for nursing diagnoses and interventions
4. **Evaluation:** Assessment of ChatGPT responses for alignment with NANDA-I guidelines
5. **Decision Point:** Are responses aligned? (Yes/No)
 - If "No": Ask additional clarifying questions and return to step 3
 - If "Yes": Complete the nursing care plan
6. **Final Step:** Submission of completed care plan to the research team

Figure 2. ChatGPT interaction protocol for nursing care plan development.

Implementation (3 days): Students used standardized prompts to generate nursing care plans via ChatGPT. They could request clarification as needed. Researchers did not interfere with preserving independent student-AI interaction.

Evaluation (1 week): Expert reviewers assessed the AI-generated care plans using predetermined criteria. Students also submitted reflective journals describing their experiences.

All students had completed courses on the nursing process and endocrine conditions before participation. While familiar with care plan development, they had no prior experience using ChatGPT.

Data Collection Tools

The participants engaged with ChatGPT following a standardized interaction protocol developed by the research team. This protocol, as shown in Figure 1, included (1) a systematic approach for identifying and entering patient data, (2) standardized primary prompts for requesting nursing diagnoses and interventions, (3) criteria for evaluating ChatGPT outputs against NANDA-I nursing diagnoses guidelines, and (4) procedures for submitting follow-up prompts when clarification was needed. This structured approach ensured methodological consistency while allowing appropriate flexibility to address case-specific nuances. As shown in Figure 2, participants first entered anonymized patient data and requested nursing diagnoses and interventions from ChatGPT. Upon receiving responses, participants evaluated whether the information aligned with NANDA Nursing Diagnosis guidelines. If inconsistencies were identified, participants could pose additional clarifying

questions to ChatGPT. Once satisfied with the responses, participants submitted the completed nursing care plans to the research team for further evaluation.

Evaluation of Reliability, Quality, and Readability

The quality of ChatGPT-generated nursing care plans was assessed using a validated care plan checklist and reviewed by three senior nursing educators. The 3-point Likert scale rated outputs based on diagnostic accuracy (NANDA-I nursing diagnoses), prioritization, and relevance of intervention (NIC). Scores were 3 (appropriate), 2 (partially appropriate), and 1 (inappropriate). Inter-rater reliability was high ($\kappa=0.85$).

Additionally, two experienced researchers (internal medicine and nursing education) independently evaluated ten cases for consistency, clarity, and clinical validity. Through expert discussion and consensus, they assessed the overall reliability and quality of the ChatGPT responses.

Data Analyses

A 3-point Likert scale (1=inappropriate, 2=partially appropriate, 3=entirely appropriate) was used to rate the nursing diagnoses and interventions generated by ChatGPT. Scoring was based on diagnostic accuracy, prioritization, and relevance to NIC standards. Two independent experts assessed the care plans, and a discussion resolved discrepancies. Inter-rater reliability was strong, with a Cohen's κ of 0.825.

Ethical Considerations

The principles of the Declaration of Helsinki were followed in this study. All student participants were informed about the purpose, method, and their right to withdraw at any time and provided written informed consent. Patient data used for educational purposes was anonymized and evaluated in accordance with institutional ethical standards. ChatGPT (GPT-3.5, OpenAI) was used only to create nursing care plans, and no artificial intelligence tools were used in writing or editing the article. The authors carried out the entire analysis and writing process. Approval was obtained from the Süleyman Demirel University ethics committee prior to the study. (date: 08.11.2023, no: 69/4)

Results

Two independent researchers evaluated the reliability of texts created using randomly selected nursing diagnoses. The interrater agreement level (Cohen κ : 0.825) was positive, indicating a high level of consistency in evaluating the texts.

Quantitative analysis of this study revealed significant patterns in care plans generated by ChatGPT. Among the 30 nursing diagnoses evaluated, 13 (43.3%) were rated as entirely appropriate, 12 (40%) as partially appropriate, and 5 (16.7%) as inappropriate. Nursing interventions showed slightly better performance: 15 (50%) were rated as entirely appropriate, 11 (36.7%) as partially appropriate, and 4 (13.3%) as inappropriate. Nursing interventions showed slightly better performance: 15 (50%) were rated as entirely appropriate, 11 (36.7%) as partially appropriate, and 4 (13.3%) as inappropriate.

CASE 1 (Diabetes Mellitus, Hyperthyroid, Rheumatoid Arthritis)

Question Input by the Student to ChatGPT

A 65-year-old female, 70 kg, was diagnosed with diabetes, hyperthyroid disorders, rheumatoid arthritis, and multiple past surgeries, including ear, tonsillectomy, appendectomy, herniated disc, and cataract operations. A stent is present in her heart. She has good social support but limited financial resources. The patient does not smoke or consume alcohol. Currently admitted for treatment of a diabetic foot ulcer. Post-admission, she showed no signs of infection or other complications. Plans were made for possible surgical intervention if there was no improvement in the ulcer condition. Lab results: WBC: 12.4, RBC: 3.58, HGB: 10.2, HCT: 31.1, CRP: 46.72, Glucose: 226.11, Uric acid: 6.9, BUN: 33, Creatinine: 1.89, AST: 49.5, ALT: 47.28, GGT: 64.85, Total bilirubin: 6.2, Direct bilirubin: 0.49, Calcium: 7.73.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 2 (Hypertension)

Question Input by the Student to ChatGPT

A 77-year-old female, 65 kg, with a history of hypertension, venous thromboembolism, and an appendectomy. She uses dental prostheses, glasses, and hearing aids. The patient has a supportive family but is on a fixed income. She does not smoke and stopped drinking alcohol five years ago. Currently, no significant complications have been reported, and her condition remains stable, with plans for discharge under continued outpatient monitoring.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 3 (Vitamin D Deficiency, Malignant Lung Neoplasm, Neuromuscular Dysfunction)

Question Input by the Student to ChatGPT

A 49-year-old male, 76 kg, has vitamin D deficiency, malignant lung neoplasm, and neuromuscular dysfunction of the bladder. He has a supportive family and adequate financial resources. The patient is a non-smoker and has not consumed alcohol for over a decade. His condition is currently stable, but he is being closely monitored for any potential complications. Sleep is limited to 4.5 hours per night, and diet is restricted to liquids. No specific improvement in mobility or other recovery details was provided due to the complexity of his condition.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 4 (Liver Cirrhosis)

Question Input by the Student to ChatGPT

A 79-year-old male with liver cirrhosis since 2010, 68 kg. He has a history of healthcare in France, including regular ascites drainage, and is now receiving similar care in Türkiye. He has partial hearing and vision loss and mobility restricted by ascites. Social support is strong, and financial resources are adequate. The patient does not smoke and has not consumed alcohol since diagnosis. His condition showed slow improvement with ongoing complications of hepatorenal syndrome and tachycardia. Lab results: BUN: 62, Creatinine: 2.3, Alkaline Phosphatase: 92.36, AST: 38.46, ALT: 31.27, LDH: 215.25, GGT: 41.49, Total Protein: 5.27, Albumin: 2.82, Total Bilirubin: 1.65, Direct Bilirubin: 0.39, Calcium: 8.09, Phosphorus: 4, Uric acid: 8.35, Sodium: 134, Potassium: 4.37, Chloride: 110.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 5 (Type 1 Diabetes)

Question Input by the Student to ChatGPT

A 44-year-old male, 80 kg, with Type 1 diabetes, heart failure, coronary artery disease, and renal failure. He has strong social support and financial stability. He is a non-smoker and has no history of alcohol use. Currently experiencing complications, including swallowing difficulties and significant weight loss (6 kg over 20 days). His condition is under review, with symptoms of gastroesophageal reflux,

gastritis, and irritable bowel syndrome being managed. Plans are in place for nutritional support and possibly adjusting his diabetes management regimen. No detailed lab results were provided.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 6 (Hypertension)

Question Input by the Student to ChatGPT

A 61-year-old female patient, 42 kg, diagnosed with hypertension, has a diagnosis of renal malignant neoplasm, chronic kidney failure, and gastroenteritis. She was admitted to the hospital four months ago because of jaundice and fatigue. A liver biopsy resulted in the placement of a stent. Two months ago, she was hospitalized again for abdominal swelling and fever symptoms. Over the past week, she has been experiencing severe diarrhea. The elevated levels of CRP, uric acid, creatinine, and urea indicate active diarrhea. The patient reports no pain but presents with edema in the feet to a degree of +2 and itching in the abdominal area. Monitoring fluid intake and output was monitored +1250 cc.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 7 (Splenomegaly)

Question Input by the Student to ChatGPT

A 77-year-old male patient presented to the hospital two months ago with complaints of abdominal pain. He was diagnosed with gallstones and splenomegaly due to persistent pain and has been under clinical observation since then. He has been hospitalized for the past two months and has lost 7 kilograms. The patient reports pain intensity of 7 out of 10. His blood sugar levels are monitored four times daily.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 8 (Cirrhosis, Vitamin D deficiency)

Question Input by the Student to ChatGPT

A 74-year-old female patient with cirrhosis and vitamin D deficiency is hospitalized. She was previously investigated for abdominal distension, resulting in a diagnosis of

cirrhosis. One week ago, she was admitted to the hospital because of loss of consciousness, spending three days in intensive care before being transferred to the clinic. She also has a history of diabetes, hypertension, and a cerebral vascular accident. Her glucose level is 157, creatinine is low, ammonia levels are high, and CRP levels are elevated. The patient requires assistance to walk, experiences weakness, muscle wasting, edema of the legs to a depth of 2 degrees, and is bedridden due to ascites drainage from the abdomen. Fluid intake and output monitoring showed oral intake of 450 cc and output of 2570 cc. The patient reported a dull pain in the lower back, with a pain score of 3.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 9 (Diabetes Mellitus, Hypertension)

Question Input by the Student to ChatGPT

An 87-year-old female patient residing in a nursing home presents with decreased mobility because of circulatory disorders and Parkinson's disease. Non-compliance with diabetes and hypertension diets has led to three episodes of gastrointestinal bleeding. She was admitted to the hospital due to hematochezia, resulting in admission to the gastroenterology service for the management of gastrointestinal bleeding. Her fasting glucose level is 129 mg/dL, and she exhibits elevated creatinine, BUN, and uric acid levels. The patient is on a soft and liquid diet, requires assistance with mobility, and presents with pruritus and erythema on her skin. She uses a walker for toileting, reports a pain score of 7 out of 10, and is immobilized.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

CASE 10 (Hypertension)

Question Input by the Student to ChatGPT

A 62-year-old female patient has been experiencing dysphagia for the past year. She visited the hospital two months ago and was diagnosed with an esophageal tumor. Due to its proximity to the vocal cords, surgical intervention was not feasible. Initially, the patient had difficulty swallowing solid foods but reported struggling with liquid intake two months ago. The patient exhibits elevated uric acid and BUN levels, low lipase levels, high

amylase levels, muscle weakness, and difficulty swallowing. She experienced severe pain, rated 10 out of 10, in her feet and has pink ulcers in her mouth.

ChatGPT Response

A detailed nursing care plan for the patient is shown in Appendix 1.

Discussion

This case-based analysis developed optimal prompt strategies for ChatGPT through iterative refinement to elicit nursing diagnoses and interventions. The findings offer insights into the potential and limitations of AI in nursing education.

The quantitative analysis of this study revealed significant patterns in care plans generated by ChatGPT. The evaluation of nursing diagnoses and interventions demonstrated that AI achieved moderate success, with diagnostic accuracy being higher than prioritization skills. These findings suggest that while ChatGPT is competent in identifying relevant nursing diagnoses, it is less proficient in ranking them according to clinical urgency. The dual assessment approach adopted in this study, which evaluates diagnostic accuracy using standardized scales and assesses clinical appropriateness through expert review, provides comprehensive insights into ChatGPT's capabilities and limitations in nursing education. This methodology provides a critical framework for assessing reliability and validity, which are essential for integrating AI technologies into healthcare services. The findings suggest that AI-assisted care planning can be a valuable learning tool in nursing education, provided it is accompanied by expert nursing supervision in clinical decision-making processes. The results highlight the potential of AI technology as a supportive instrument in nursing education while emphasizing the continued need for professional oversight in clinical practice.

Despite providing technically accurate information in many cases, ChatGPT demonstrated notable limitations. In Case 1, the system incorrectly prioritized "Poor circulation" over "Ineffective tissue perfusion: peripheral" despite the patient's immediate concern being a diabetic foot ulcer requiring targeted interventions. For Case 4 (liver cirrhosis), ChatGPT failed to identify the "Risk for confused thought processes" related to hepatic encephalopathy despite elevated ammonia levels indicated in lab results. In Case 8, ChatGPT's nursing intervention for "Excess Fluid Volume" was vaguely described as "Managing edema formation" without specific measurable actions, making clinical implementation difficult.

The study found that the quality of input significantly affected the quality of output. Students who included detailed physical examination data in their ChatGPT queries received more accurate and clinically relevant care plan suggestions. In Case 6, the student provided specific information about foot edema ("++") and fluid intake/output monitoring ("1250 cc"), which resulted in correctly identifying "Excess Fluid Volume" as a priority diagnosis with appropriate interventions.

Unlike previous research that has focused primarily on technical capabilities or theoretical educational applications of AI,^[11,12] this study bridges the gap by providing empirical evidence on how nursing students interact with AI tools to develop professionally relevant skills. ChatGPT struggles with such domains, requiring uniquely human skills such as empathy and contextual critical thinking.^[13] In Case 9 (elderly patient with GI bleeding), the system generated technically correct interventions. However, it failed to incorporate important psychosocial aspects of care for an elderly nursing home resident experiencing pain and decreased mobility. To address this empathy gap, it is recommended that structured debriefing sessions be implemented after AI-assisted care planning exercises. The purpose of these sessions is to enable students to reflect on the emotional dimensions that AI may overlook.

The identified prioritization errors and ambiguous language raise important concerns about patient safety. We recommend a three-tiered verification process for AI-generated care plans: (1) initial AI generation of care plan options, (2) student critical evaluation based on standardized criteria, and (3) expert clinician final review before implementation. Nursing programs should develop AI literacy modules that train students to identify common AI errors in nursing documentation, enhancing their critical evaluation skills when using these tools.

In Case 7, the ChatGPT-generated care plan accurately identified "Chronic Pain" as a primary nursing diagnosis; however, expert reviewers noted that the interventions lacked the necessary specificity for clinical implementation, failing to suggest concrete non-pharmacological pain management techniques suitable for a patient with splenomegaly and abdominal pain. The recurring pattern of technically correct but clinically insufficient outputs across multiple cases highlights a fundamental challenge in AI-assisted nursing care planning. This study's systematic evaluation of ChatGPT-generated care plans against established nursing frameworks (NANDA-I nursing diagnoses and NIC) addresses a significant knowledge gap regarding the

effectiveness of generative AI systems in replicating the complex clinical reasoning required in nursing practice. The findings provide evidence-based insights into specific areas where AI demonstrates competency and where human clinical judgment remains essential.

The case study methodology demonstrates practical applications of ChatGPT in nursing process planning, offering educators concrete strategies for incorporating AI as a supplementary tool while maintaining essential human supervision to ensure safe and contextually appropriate care planning. Based on these findings, practical applications of ChatGPT in nursing education can be optimized through structured implementation strategies. The case study methodology demonstrates that while AI can support nursing process planning, successful integration requires careful attention to both technological capabilities and educational outcomes. Several solution-oriented approaches are proposed to address AI's limitations in nursing education: (1) developing companion tools focusing on therapeutic communication simulation alongside technical content generation; (2) creating hybrid learning environments where AI supports knowledge acquisition while human instructors facilitate empathy development; and (3) implementing reflective practice assignments comparing AI-generated care plans with assessments of patients' emotional and psychosocial needs.^[14]

Studies have shown that while ChatGPT can be useful in nursing care planning, it cannot replace clinical judgment, decision-making, or human-centered communication.^[15-17] This limitation suggests that nursing education should focus on developing students' competencies in human interaction and communication through simulations, case studies, and role-playing activities alongside AI integration.

Conclusion

ChatGPT shows promise in supporting individualized nursing care planning by helping students align interventions with patients' specific needs. This study provides initial evidence of the potential educational and clinical value of generative AI in nursing education. However, further research is needed to validate its accuracy, safety, and integration into real-world practice. Future studies should compare AI-generated care plans with those created by students and experienced nurses, assess the educational impact on learners' clinical reasoning, and explore long-term effects on competency development. Findings will inform safe, effective, and pedagogically sound strategies for integrating AI tools into nursing curricula.

Ethics Committee Approval: The Süleyman Demirel University Ethics Committee granted approval for this study (date: 08.11.2023, number: 69/4).

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- The editing of the English text: AI was used only for limited grammar checking of individual sentences (approximately 5–10 sentences) to ensure clarity and proper syntax. The primary editing was performed by qualified English language professionals at our affiliated institution.
- The writing of the manuscript: No AI tools were used for writing the manuscript. All sections of the manuscript were written entirely by the research team without artificial intelligence assistance.
- The preparation study methods: No AI tools were used for preparing the study methodology. ChatGPT (GPT-3.5) was utilized by student participants during the data collection phase to generate nursing care plans, which served as the primary data source for this research, as described in the methodology section.

Authorship Contributions: Concept: AC, DO; Design: AC Supervision: AC Resource: AC, DO; Data Collection or Processing: AC Analysis or Interpretation: AC, DO; Literature Search: AC, DO; Writing: AC, DO; Critical Reviews: AC.

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Appendix 1. A detailed nursing care plan by ChatGPT for cases**NANDA-I nursing diagnoses*** **NIC******Case 1**

- | | |
|---------------------------------|---|
| Poor circulation | <ul style="list-style-type: none"> • Regular foot examinations • Exercises to increase blood circulation • Monitor blood pressure |
| Metabolic control disorder | <ul style="list-style-type: none"> • Diabetes management training • Regular blood sugar control • Dietary regulations |
| Risk of postoperative situation | <ul style="list-style-type: none"> • Continuous monitoring in the postoperative period • Infection control • Pain management • Mobilization support |

Case 2

- | | |
|---|--|
| Ineffective peripheral tissue perfusion | <ul style="list-style-type: none"> • Monitor circulation, promote mobility to increase circulation of the legs, provide proper foot care to prevent varicose veins • Encouraging leg movements with the patient and recommending regular leg exercises • Monitor circulatory status and report abnormal findings • Keeping the legs elevated or recommending the use of compression garments to prevent varicose veins • Regular leg care and skin evaluation |
| Lack of independence | <ul style="list-style-type: none"> • Creating appropriate exercise programs with the patient, providing support in daily activities, and encouraging mobilization. Creating individual exercise programs with the patient • Recommend support devices to increase ambulation depending on patient strength • Teaching strategies to increase independence in daily activities • Maintaining and increasing muscle strength with in-bed exercises |
| Risk of falls | <ul style="list-style-type: none"> • Making environmental arrangements to reduce the risk of falls in the patient room • Providing support for safe mobilization • Teaching fall prevention strategies • Making environmental arrangements in the patient room to reduce the risk of falling • Discussing and implementing fall prevention strategies with the patient • Walking with the patient when necessary to support safe mobilization • Providing education to patients and family members about reducing the risk of falling |

Case 3

- | | |
|-------------------------------|--|
| Vitamin D deficiency | <ul style="list-style-type: none"> • Educating the patient about going out in the sun, explaining healthy sunbathing times and providing information about protective measures. • Encouraging regular intake of vitamin D supplements and creating an appropriate dosage supplement plan • Monitor serum vitamin D levels and follow up with regular checks |
| Inability to clear the airway | <ul style="list-style-type: none"> • Directing breathing exercises and helping the patient improve breathing techniques • Evaluating and applying pharmacological and non-pharmacological methods to ensure pain management • Monitor oxygen saturation regularly and plan oxygen therapy if necessary |
| Urinary incontinence | <ul style="list-style-type: none"> • Teaching pelvic floor exercises regularly and ensuring that they are implemented correctly by the patient • Increasing patient comfort and safety by providing guidance in urinary product selection • Monitoring urinary frequency and amount, organizing the treatment plan and evaluating urinary habits if necessary |

Case 4

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|------------------------------|--|
| Fluid volume excess | <ul style="list-style-type: none"> • Monitor intake and output closely, noting any decreases in urinary output and positive fluid balance • Promote a low-sodium diet and salt substitutes • Foley catheter use and urine output should be monitored |
| Poor nutrition | <ul style="list-style-type: none"> • Liver protection diet should be continued • Protein and albumin supplements should be reviewed • Daily weight monitoring should be done |
| Lack of knowledge about pain | <ul style="list-style-type: none"> • The pain level reported by the patient should be evaluated • Appropriate analgesics should be used to reduce pain due to ascites accumulation. • Relaxing positions and activities should be recommended during mobilization |

Appendix 1 (cont). A detailed nursing care plan by ChatGPT for cases**NANDA-I nursing diagnoses* NIC******Case 5**

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|---------------------|---|
| Fluid volume excess | <ul style="list-style-type: none"> • Taking a nutritional history to evaluate the patient's nutritional intake • Weight monitoring and nutritional assessment to determine nutritional needs Preparation of an appropriate nutrition plan by the dietitian and providing education to the patient |
| Risk of vomiting | <ul style="list-style-type: none"> • Evaluating and recording the patient's vomiting pattern • Monitor whether medications and other treatments increase vomiting • Providing education to patients and their relatives on identifying the symptoms of vomiting and what to do in emergency situations |
| Aspiration risk | <ul style="list-style-type: none"> • Place the client in a sitting or upright position before, during, and after mealtimes • Assessing swallowing ability and risk factors for dysphagia • Feeding clients with nasogastric (NG) or gastrostomy tubes |

Case 6

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|-------------------------|---|
| Excess fluid volume | <ul style="list-style-type: none"> • Monitor intake and output closely • Assess for the presence and location of edema formation • Diet and fluid restriction |
| Diarrhea | <ul style="list-style-type: none"> • Assessing and monitoring fluids and electrolytes • Determine hydration status by assessing input and output • Assess skin integrity |
| Impaired skin integrity | <ul style="list-style-type: none"> • Assess the skin for pruritus (itching) • Observe for signs of itching • Monitor the client's skin care practices, noting the type of soap or other cleansing agents used, the temperature of the water, and the frequency of skin cleansing |

Case 7

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| Chronic pain | <ul style="list-style-type: none"> • Allow the client to maintain a diary of pain ratings, review this routinely • Implement nonpharmacological interventions when pain is relatively well-controlled with pharmacological interventions • Suggesting position changes to reduce pain |
| Imbalanced nutrition:
Less than body
requirements | <ul style="list-style-type: none"> • Assess the patient's nutritional status • Assess the patient's eating pattern • Offer high protein supplements based on individual needs and capabilities |
| Risk for infection | <ul style="list-style-type: none"> • Assess for the presence, existence, and history of the common causes of infection • Monitor and report any signs and symptoms of infection • Maintain strict asepsis for dressing changes, wound care, intravenous therapy, and catheter handling |

Case 8

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| Excess fluid volume | <ul style="list-style-type: none"> • Monitor intake and output closely • Fluid restriction / Managing edema formation |
| Risk of deterioration of
skin integrity | <ul style="list-style-type: none"> • Assess the site of impaired tissue integrity and its condition • Assess the characteristics of the wound • Turn and position the client at least every two hours |
| Fatigue | <ul style="list-style-type: none"> • Assess the client's nutritional ingestion for adequate energy sources • Assess the client's typical level of exercise and physical movement • Aid the client to develop habits to promote effective rest/sleep patterns |

Case 9

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|-------------------------------|---|
| Bleeding risk | <ul style="list-style-type: none"> • Monitor signs that can be associated with a risk for bleeding • Evaluate the client's use of anticoagulants and NSAIDs that can affect hemostasis • Monitor the client's vital signs |
| Impaired physical
mobility | <ul style="list-style-type: none"> • Evaluate the client's ability to perform activities of daily living (ADL) efficiently • Teaching and providing support in the use of assistive devices • Providing a safe environment for the client |
| Chronic pain | <ul style="list-style-type: none"> • Allow the client to maintain a diary of pain ratings, review this routinely • Implement nonpharmacological interventions when pain is relatively well-controlled with pharmacological • Suggest appropriate positions and activities to reduce pain |

Appendix 1 (cont). A detailed nursing care plan by ChatGPT for cases**NANDA-I nursing diagnoses*** **NIC****

Case 10

Impaired swallowing	• Assessing the ability to swallow • Providing training on positioning and techniques during feeding • Taking precautions to reduce the risk of aspiration
Chronic pain	• Allow the client to maintain a diary of pain ratings, review this routinely • Implement nonpharmacological interventions when pain is relatively well-controlled with pharmacological • Suggest appropriate positions and activities to reduce pain
Risk of imbalanced nutrition	• Assess nutritional status and create appropriate nutrition plans • Providing nutritional supplements • Applying appropriate nutritional techniques and dietary recommendations for swallowing difficulties

*: NANDA-I International Nursing Diagnoses Definitions & Classification; **: Nursing Interventions Classification (NIC).