

The Practical Research of 4C Teaching Method Combined with Gibbs' Reflection Cycle in Orthopedic Practice Nursing Students

Jianglin Hu

Department of Orthopedics, Yichang Central People's Hospital (The First Clinical Medical College of Three Gorges University), Yichang 443000, Hubei, China

Abstract: Objective: To explore the application effect of 4C teaching method combined with Gibbs' reflective cycle in the teaching of orthopedic nursing students. Methods: a total of 104 nursing students who completed clinical practice in the Department of orthopedics in our hospital from July 2024 to February 2025 were selected in this study. They were randomly divided into two groups, 52 in each group. The control group adopted traditional teaching methods, while the observation group adopted 4C teaching method combined with Gibbs' reflective circular teaching mode. After the internship, the effects of the two groups were compared. Results: The observation group demonstrated higher assessment scores than the control group; superior self-directed learning abilities compared to the control group; higher teaching evaluation scores than the control group; and greater overall satisfaction among nursing students than the control group, $P < 0.05$. Conclusion: 4C teaching method combined with Gibbs reflection cycle can effectively improve the professional knowledge and practical operation ability of orthopedic nursing students, cultivate their self-directed learning ability, and improve the teaching effect and nursing students' learning satisfaction.

Keywords: 4C teaching method; Gibbs' reflective cycle; department of orthopedics; clinical teaching

1. Introduction

Orthopedic clinical nursing is characterized by diverse pathologies, urgent emergency care, and specialized rehabilitation, demanding high-level comprehensive competencies from nursing staff[1]. Internships serve as a critical phase for nursing students to translate theoretical knowledge into clinical skills, with teaching quality directly impacting nursing talent development and clinical safety. Traditional orthopedic nursing education primarily relies on instructor lectures and demonstrations, leaving students in a passive learning role. This approach lacks active critical thinking and reflective practice, making it difficult for students to adapt to complex clinical demands[2].

With evolving nursing paradigms, reforming orthopedic clinical education is imperative. The 4C teaching method emphasizes knowledge integration and practical application, enhancing nursing students' learning initiative. The Gibbs Reflection Cycle facilitates structured reflection, helping students transform practical experience into professional competence[3,4]. This study integrates the 4C teaching method with the Gibbs Reflection Cycle to construct an integrated "theory-practice-reflection-summary" teaching model, which was applied to the clinical training of orthopedic nursing students.

2. Data and methods

2.1 General information

A total of 104 nursing students were selected in this study, who completed clinical practice in the Department of orthopedics in our hospital from July 2024 to February 2025. They were randomly divided into two groups, 52 in each group. The general data of the two groups of nursing students were compared, $P > 0.05$, See Table 1.

Table 1. Comparison of basic data of two groups of nursing students

Project		Observation group (n=52)	Control group (n=52)	t/X ²	P
Gender	male	6 (11.54)	7 (13.46)	0.088	0.767
	female	46 (88.46)	45 (86.54)		
Average age (years)		21.86±1.02	21.79±0.98	0.357	0.722

2.2 Teaching methods

The control group employed traditional orthopedic clinical teaching: upon admission to the department, instructors

conducted orientation sessions clarifying internship requirements and work protocols. Instruction primarily consisted of lectures and demonstrations, featuring centralized lectures on common disease management and live demonstrations of procedures such as fracture immobilization, rehabilitation care, and wound dressing changes. Nursing students observed and practiced under instructor supervision with immediate feedback. Routine ward rounds were conducted during the internship, with students shadowing instructors to complete clinical tasks, followed by a unified exit assessment.

The observation group implemented a teaching model combining the 4C teaching method with Gibbs' reflective cycle: (1) Formed a specialized teaching team comprising head nurses and registered nurses with over three years of experience. After unified training, they developed teaching plans. (2) In the connection phase, clinical questions were posed based on real orthopedic cases, linking foundational and specialized knowledge to guide students in identifying and documenting issues. (3) Conceptual phase: Systematically explain core theories and guidelines around the problem, organize group discussions to structure knowledge frameworks and address questions. (4) Practical exercise phase: Students participate in vital sign monitoring, postoperative functional exercises, etc., documenting real-time issues and reflections. Initial Gibbs reflection conducted post-practice. (5) Summary Phase: Weekly wrap-up sessions are held where students complete in-depth reflections using the six-step Gibbs method. Instructors provide feedback and develop improvement plans. (6) Establishing a Continuous Reflection Loop: Students maintain reflection journals, participate in monthly reflection exchanges, and engage in a teaching cycle of practice-reflection-improvement-repractice.

2.3 Observation indexes

(1) Assessment Scores: A unified theoretical and practical assessment will be conducted after the internship, each scored out of 100 points. Higher scores indicate stronger competency.

(2) Self-Directed Learning Ability: Evaluated using the SRSSDL scale, with total scores ranging from 60 to 300 points. Higher scores indicate stronger self-directed learning ability. Cronbach's α coefficient is 0.967.

(3) Instructional Evaluation: Measured using the Software Usability Test Scale. Employing a 5-point Likert scale, higher scores indicate better evaluation. Cronbach's α coefficient: 0.793.

(4) Student Satisfaction: Assessed via department-developed questionnaire with four response levels: Very Satisfied, Satisfied, Fair, and Dissatisfied.

2.4 Statistical methods

Statistical analysis of the obtained data was performed using SPSS 26.0 software. Count data were analyzed using the X^2 test, while continuous data were analyzed using the t-test. Differences were considered statistically significant at $P < 0.05$.

3. Results

3.1 Assessment results

The observation group achieved significantly higher scores than the control group ($P < 0.05$), as shown in Table 2.

Table 2. Comparison of Assessment Scores Between Groups ($\bar{x} \pm s$, points)

Group	Number of cases	Theoretical achievements	Operational performance
Observation group	52	96.37 $\pm$ 5.74	95.48 $\pm$ 6.37
Control group	52	84.06 $\pm$ 4.23	89.45 $\pm$ 5.89
t		12.450	9.492
P		0.000	0.000

3.2 Self directed learning ability

The observation group scored higher than the control group, $P < 0.05$, as shown in Table 3.

Table 3. Comparison of SRSSDL Scores Between Groups ($\bar{x} \pm s$, points)

Group	Number of cases	Learning consciousness	Learning behavior	Learning strategy	Interpersonal relationship	Learning evaluation
Observation group	52	48.53 $\pm$ 5.14	51.14 $\pm$ 3.68	50.21 $\pm$ 4.37	51.98 $\pm$ 3.62	51.06 $\pm$ 4.23
Control group	52	44.62 $\pm$ 6.03	48.89 $\pm$ 5.17	46.20 $\pm$ 4.51	46.03 $\pm$ 4.37	46.97 $\pm$ 5.49
t		3.558	2.557	4.605	7.561	4.256
P		0.001	0.012	0.000	0.000	0.000

3.3 Teaching evaluation

The observation group scored higher than the control group, $P < 0.05$, as shown in Table 4.

Table 4. Comparison of teaching evaluations between the two groups ($\bar{x} \pm s$, points)

Group	Number of cases	Using reflection to improve ability	Reflective learning is easier	Complete the reflection process independently	Using reflection to deal with problems
Observation group	52	4.72±0.28	4.71±0.35	4.58±0.46	4.13±0.72
Control group	52	3.05±0.18	3.01±0.14	2.89±0.16	3.18±0.12
t		36.178	35.520	25.023	9.385
P		0.000	0.000	0.000	0.000

3.4 Satisfaction of nursing students

The observation group showed higher satisfaction than the control group, $P < 0.05$, as shown in Table 5.

Table 5. Comparison of satisfaction between the two groups[n (%)]

Group	Number of cases	Extremely satisfied	Satisfaction	Commonly	Dissatisfied	Satisfaction
Observation group	52	33 (62.46)	18 (34.62)	1 (1.92)	0 (0.00)	51 (98.08)
Control group	52	19 (36.54)	21 (40.38)	10 (19.23)	2 (3.85)	40 (76.92)
X ²						10.637
P						0.001

4. Discussion

4.1 Improving Student Protection Assessment Scores

Orthopedic nursing demands high proficiency in both theory and practice. Traditional teaching, primarily based on one-way instruction, hinders the integration of knowledge and practice. The 4C teaching method creates a complete learning cycle through case association, concept clarification, practical exercises, and consolidation. The Gibbs Reflection Cycle helps nursing students review practice and pursue continuous improvement[5]. Combining these approaches addresses traditional teaching shortcomings, effectively enhancing students' theoretical knowledge and practical skills, leading to significantly improved assessment scores—consistent with relevant research findings[6].

4.2 Cultivating Self-Directed Learning Competencies

Self-directed learning competence is pivotal for nursing professionals' career development. The 4C teaching method centers on nursing students, stimulating learning initiative; the Gibbs Reflection Cycle reinforces self-examination and learning planning, while group discussions enhance collaboration skills. This model transforms students from passive to active learners, gradually fostering habits of independent study, self-assessment, and continuous improvement, significantly elevating self-directed learning competence.

4.3 Advantages in Teaching Evaluation and Satisfaction

The 4C teaching method and Gibbs' reflective cycle standardize the reflection process, reducing learning difficulty. Nursing students can achieve continuous progress through practice-reflection cycles, with a marked increase in their sense of accomplishment. Simultaneously, interactive teaching, personalized guidance, and a positive learning environment better meet student needs, effectively improving teaching evaluations and satisfaction, consistent with findings from similar studies[7].

4.4 Limitations and Prospects

This study applied the 4C teaching method and Gibbs' reflective cycle to orthopedic nursing students during clinical rotations, yielding positive outcomes. However, limitations exist: the single-center, small-sample study lacks sufficient representativeness; it evaluated only short-term teaching indicators without tracking long-term career development; and it failed to incorporate specialized orthopedic subspecialties into differentiated designs, indicating room for enhanced targeting.

Future improvements can be made in three areas: expanding the sample size and conducting multicenter studies to validate generalizability; optimizing teaching based on subspecialties such as joints and spine; and integrating virtual simulation and online platforms to establish blended learning, thereby refining orthopedic nursing education programs.

5. Conclusion

The 4C Teaching Method combined with the Gibbs Reflection Cycle demonstrates significant effectiveness in teaching nursing students during orthopedic rotations. It effectively improves students' theoretical and practical performance, enhances their self-directed learning abilities, and elevates both teaching evaluations and student satisfaction.

References

- [1] Xu Yanzhi, Zhu Yi. Application effect of mind map combined with PBL teaching mode in nursing practice teaching in orthopedic ward [J]. Health Vocational Education, 2026,44 (05): 98-101.
- [2] Zhang Y, Liao Q, Zhou L, et al. Effectiveness of a 3-Class Scenario-Based Pedagogy in Orthopaedic Nursing Practicum: A Quasi-Experimental Study[J].Journal of Contemporary Medical Practice, 2025,7 (9): 208-211.
- [3] Shen Yalin, Tang Liping, Wang Min, et al. Evaluation of the application effect of "4C" teaching method in the practice of nursing undergraduates [J]. Nursing Research, 2022,36 (07): 1276-1280.
- [4] Liu Qingzhi, Zhao Yishu, Wang Mei, et al. Application effect evaluation of Gibbs' reflective cycle in clinical teaching of nursing in Department of Gastroenterology [J]. China Nursing Education, 2025,22 (09): 1097-1102.
- [5] Huang Wanjing, Lu Xuemei, Lu Xiangyan, et al. Study on the application effect of "4C" teaching method in the teaching of ophthalmic nursing students [J]. Western Quality Education, 2023,9 (21): 182-186.
- [6] Tian Chunying, Zhang Xuefei, Chen Hong, et al. Research on the effect of anchored teaching combined with Gibbs' reflective cycle in the teaching of emergency and critical care nursing [J]. Medical Education Management, 2025,11 (01): 67-73.
- [7] Chu Yanxiang, Deng Yan, Xiong Huan. Application of bloom goal teaching combined with mini CEX teaching method in clinical nursing practice [J]. Journal of Nursing, 2025,40 (24): 70-73.