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Exploration and Practice of a New Teaching Model for Diabetes Health Education

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Abstract

This paper aims to explore a new teaching model in which clinical interns take the primary role in conducting diabetes health education, assessing its practical value in enhancing patient education outcomes and the comprehensive abilities of interns. By constructing an integrated intern teaching system encompassing "theoretical learning—skill training—practice leadership—supervision and feedback", interns, under the guidance of instructors, independently or collaboratively complete the design, implementation, and evaluation of diabetes health education courses. Multi-dimensional indicators such as questionnaires, skill assessments, and patient feedback were used to compare and analyze the effects before and after the implementation of the new model. This model significantly improved the interns' communication skills, ability to integrate professional knowledge, and sense of professional achievement. Simultaneously, the novel and diverse educational formats significantly increased the participation rate, knowledge acquisition rate, and adherence to self-management behaviors among diabetic patients. Conclusion: The intern-led diabetes health education model is an effective innovative practice of "teaching benefits teachers and students alike". It not only provides patients with high-quality, dynamic health education services but also opens a new path for cultivating medical talents with excellent humanistic qualities and clinical practical abilities, demonstrating significant promotional value.

Keywords

Diabetes, Health Education, Intern Training, Teaching Innovation

1. Introduction

Diabetes, as a common chronic non-communicable disease, relies on long-term patient self-monitoring and behavioral changes for effective management. There-

fore, systematic and personalized health education has become the cornerstone of comprehensive diabetes treatment [1]. However, traditional health education models are mostly undertaken by senior nurses or doctors, often becoming perfunctory due to heavy clinical workloads, lacking innovation in content and form, which leads to low patient participation and limited effectiveness.

At the same time, clinical internships are a critical stage in the transition from medical student to qualified medical professional. Traditional intern teaching often focuses on passive observation and task execution, leaving interns with insufficient opportunities for independent thinking and comprehensive practice, resulting in deficiencies in the cultivation of their communication skills, patient management abilities, and professional identity [2].

Based on the above background, the endocrinology department of our hospital began experimenting in 2022 with using diabetes health education as a core platform for intern training, exploring an innovative model of "promoting learning through teaching, where teaching benefits teachers and students alike" [3]. The purpose of this study is to systematically describe the construction and implementation process of this model and evaluate its dual benefits for both patient education and intern development.

2. Construction of the Intern-Led Diabetes Health Education Model

The core concept of this model is "student-centered, patient-oriented, and competency-output targeted". Through a multi-level, closed-loop system architecture, it transforms interns from passive recipients into active educators and innovators. This system is jointly constituted by four layers: the Conceptual Layer, the Support Layer, the Operational Layer, and the Evaluation Layer.

2.1. Conceptual Layer: Laying the Foundation

Dual Objectives of "Teaching Benefits Teachers and Students Alike": Clearly defining that the model aims to simultaneously enhance the quality of patient health education and the comprehensive professional competencies of interns; the two are complementary and indispensable.

Empowerment and Delegation: Trusting and granting interns sufficient autonomy, allowing them to "learn by doing" and take responsibility in real clinical scenarios, thereby stimulating their intrinsic motivation and creativity.

Patient-Centered: The design and implementation of all educational activities must ultimately focus on meeting the individualized needs of patients and improving their health outcomes.

2.2. Support Layer: Building the Support System

2.2.1. Institutional and Resource Support

Establishment of an "Intern Health Education Project Management Team": Composed of the department head, head nurse, teaching secretary, and senior instruc-

tors, responsible for overall planning, coordination, and resource allocation of the project.

Development of Standardized Operating Procedures: Compilation of the "Intern Health Education Guide Manual", clarifying tasks, responsibilities, quality standards, and contingency plans for each stage [4].

Creation of a Diverse Educational Resource Bank:

Theory Bank: Provides the latest diabetes prevention and treatment guidelines, authoritative textbook chapters, classic literature, and online courses.

Material Bank: Accumulates resources, including food models, injection tools, foot screening tools, educational posters, high-quality videos/animations, etc.

Case Bank: Collects typical and complex patient cases for intern study and discussion.

2.2.2. Teaching Team Development

Specialized Training for Instructors: Training instructors in areas such as "how to guide health education", "feedback and motivation techniques", and "educational theory and methods" to unify teaching concepts and approaches.

Establishment of a "Dual-Mentor System": Assigns each group of interns one clinical physician mentor (responsible for depth of professional knowledge and medical accuracy control) and one nursing/health education specialist mentor (responsible for communication skills, educational methods, and process guidance).

2.3. Operational Layer: Detailed Four-Stage Closed-Loop Process

Stage 1: Systematic Theory and Skill Preparation—"From Knowing to Doing"

Modularized Core Knowledge Learning: Diabetes knowledge is broken down into seven modules: "Basic Knowledge", "Diet and Nutrition", "Exercise Therapy", "Medication Management", "Monitoring Techniques", "Complication Prevention and Control", and "Psychological Adjustment". Completion is achieved through a combination of centralized lectures, workshops, and online learning.

Core Skills Simulation Training:

Communication Skills Workshop: Learn to use methods such as the "Teach-Back" method, empathetic listening, open-ended questioning, etc.

Science Communication Expression Training: Conduct activities such as "Explain a Key Point in Three Minutes", requiring interns to translate professional terminology into easily understandable language.

Instructional Design and Media Tool Application: Train in skills such as PPT beautification, short video editing, and health education flyer design.

Scenario Simulation and Role-Playing: Simulate responding to common patient questions (e.g., "Is insulin addictive?"), nonadherent behaviors, and even resistant attitudes.

Patient Support Groups and Interaction Protocol: Additionally, interns were trained to facilitate "Glycemic Management Trio" support groups. These small groups, comprising patients, family members, and interns, used a dedicated hos-

pital-approved social media platform (WeChat) as the primary communication channel. The protocol required interns to initiate bi-weekly themed discussions, share educational materials, and respond to patient queries within 24 hours, fostering continuous peer support and guidance.

Stage 2: Collaborative Design of Personalized Education Plans—"From Doing to Mastering"

Needs Assessment: Under the guidance of instructors, interns complete the "Patient Health Education Needs Assessment Form" by reviewing medical records and interviewing patients and their families.

Formation of "Health Education Project Groups": Interns are divided into groups of 3 - 4 based on patient demographics (e.g., elderly group, youth group, pregnancy group) or educational themes (e.g., "Insulin Basics", "Food Masters").

Co-creation and Approval of Plans:

Each group, based on assessment results, drafts a "Health Education Course Design Plan", including content such as course objectives, target audience, main content, teaching methods (e.g., role-playing, debate, hands-on workshop), teaching aids preparation, schedule, and evaluation methods [5].

Plans must be submitted to the Project Management Team and instructors for review to ensure scientific rigor, safety, engagement, and feasibility. Implementation proceeds only after approval.

Stage 3: Supervised Practice Leadership and Process Management—"From Mastering to Implementing"

"Lead Actor on Stage" and "Supervisor Backstage": Interns act as the "lead actors", fully responsible for hosting, explaining, and interacting during the sessions; instructors act as "directors" and "safety officers", observing and recording from the sidelines, and intervening gently only in cases of fundamental errors or loss of control.

Diverse Practice Scenarios:

Bedside One-on-One Guidance: Provide individualized coaching for newly admitted patients or patients with special conditions.

Small Group Education Workshops: Conduct themed activities for 5 - 10 patients and family members in demonstration rooms or designated areas.

Ward Collective Science Popularization Lectures: Held regularly each month for a broader patient population.

Process Recording: Use the "Health Education Process Record Form", where interns record participating patients, educational content, patient reactions, and self-reflections.

Stage 4: Structured Feedback and Iterative Optimization—"From Implementing to Excelling"

Immediate Debriefing Sessions: Within 24 hours after each session, hold a debriefing attended by all participating interns and instructors. Use the "STAR" feedback method:

S: What was the situation?

T: What was your task?

A: What actions did you take? What was the effect?

R: What was the final result? What could be improved?

Multi-dimensional Effect Evaluation:

Patient Side: Evaluated through anonymous satisfaction questionnaires, on-site "Teach-Back" tests, and short-term behavior change follow-ups (e.g., telephone follow-up on injection technique mastery one week later).

Intern Side: Instructors score interns using the "Intern Health Education Competency Assessment Scale" across dimensions such as professional knowledge, communication skills, teaching techniques, teamwork, and innovation.

Outcome Consolidation and Legacy: Incorporate excellent health education plans, courseware, videos, and other materials into the department's resource bank for subsequent interns to learn from and reference, forming a continuously improving knowledge management system [6].

3. Practical Outcomes and Analysis

To evaluate the effectiveness of this model, we collected and analyzed data from a total period of 12 months before and after the model's implementation (specifically, the 12-month period preceding the intervention in 2022 served as the pre-implementation baseline, and the 12 months following full implementation constituted the post-implementation evaluation period).

3.1. Effectiveness in Intern Training

Significant Improvement in Comprehensive Abilities: Through structured assessments and standardized questionnaires administered pre- and post-implementation, it was found that interns participating in the project scored significantly higher than interns under the traditional teaching model in areas such as in-depth understanding of professional knowledge, doctor-patient communication skills, teamwork spirit, and on-the-spot adaptability. Quantitative data were collected using a combination of the "Intern Health Education Competency Assessment Scale" (completed by instructors), self-assessment questionnaires (completed by interns), and direct observation of performance in simulated and real patient education scenarios.

Enhanced Professional Identity and Sense of Achievement: Interns reported that by independently conducting health education, they experienced for the first time the value of "being needed" as healthcare workers, greatly enhancing their sense of professional mission and achievement [7].

Pronounced Effect of "Teaching Benefits Teachers and Students Alike": In order to "teach well", interns had to proactively and deeply "learn well". This role reversal greatly stimulated their intrinsic motivation for self-directed learning.

3.2. Effectiveness in Diabetes Health Education

Increased Patient Participation and Satisfaction: The novel and lively educational formats introduced by interns attracted more patients and family members to par-

ticipate. Patient feedback indicated that the "young teachers" were more patient, more interesting, and easier to approach in their explanations [8].

Improved Patient Knowledge Acquisition and Behavioral Adherence: Comparative data showed that patients who participated in the intern-led health education courses had significantly higher scores on core diabetes knowledge tests and improved adherence to self-management behaviors (such as regular blood glucose monitoring and reasonable diet). Glycemic control outcomes were also assessed, with success defined as achieving specific clinical targets: HbA1c < 7.0% for most non-pregnant adults, fasting blood glucose between 4.4 - 7.2 mmol/L, and postprandial blood glucose < 10.0 mmol/L, in alignment with standard clinical guidelines.

Enriched Educational Formats and Alleviated Clinical Pressure: This model injected a continuous stream of fresh ideas into the department's health education, alleviating some of the workload pressure on senior medical staff and forming a positive educational ecosystem.

4. Discussion and Prospects

The practice in this study demonstrates that pushing interns to the forefront of diabetes health education is an innovative strategy that benefits both parties.

4.1. The Key to Its Success

Successful Role Transition: The shift of interns from passive "learners" to active "educators" is the core element that stimulates their potential.

Systematic Support System: From training and design to practice and feedback, a complete support closed-loop is formed, ensuring the quality and safety of practice.

Injection of Innovative Elements: The combination of young interns' perspectives and emerging communication methods effectively counteracts the "aesthetic fatigue" of traditional health education.

Of course, this model also faced some challenges during implementation, such as the need for instructors to invest more effort and relatively high initial competency requirements for interns. It is important to acknowledge that the pre-post study design over an extended period (2022-2023 for this specific analysis) has limitations. While the data show significant improvements associated with the intervention, other factors such as concurrent advancements in diabetes medications, general improvements in standard care protocols, or broader hospital-wide initiatives during the same period could also have contributed to the observed positive outcomes in patient metrics. Future studies with control groups would help to isolate the specific effect of the intern-led education model more precisely.

4.2. Replicability and Resource Considerations

To successfully replicate this model, institutions should consider several key resource requirements:

Staff Time: Significant dedicated time from clinical instructors for training, supervision, and feedback is crucial.

Structured Training Materials: Development of comprehensive training packages, including the guide manual, resource banks, and assessment tools.

Technological Infrastructure: Access to and basic proficiency with communication platforms (e.g., WeChat for support groups), multimedia tools for creating educational content, and, potentially, a Learning Management System (LMS) for online module delivery.

Community and Partnership Engagement: While not heavily utilized in this initial implementation, partnerships with community centers could be explored for broader outreach in future adaptations, requiring additional coordination efforts.

As the next steps, we plan to:

Develop standardized training course packages for intern health education.

Explore blended education models that combine online and offline methods to expand educational coverage.

Establish long-term tracking mechanisms to assess the impact of this model on the long-term career development of interns.

5. Conclusion

The innovative model of "Intern Training—Diabetes Health Education" skillfully integrates clinical teaching with patient service, serving as a vivid practice of the "teaching benefits teachers and students alike" concept. It not only brings vitality and effectiveness to diabetes health education, significantly improving patients' self-management abilities, but also provides a valuable platform for cultivating the next generation of medical talents with profound professional knowledge, excellent communication skills, and a high degree of humanistic care. This model possesses high feasibility and promotional value and is worthy of reference and application in broader clinical teaching fields.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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