Study on Construction and Application of Virtual Simulation Experiment Teaching Platform for Placental Abruption

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Abstract: Placental abruption is a serious obstetric complication, which poses a serious threat to the life of mother and child. A high degree of clinical judgment and operational skills are required by medical staff in handling such cases. However, traditional teaching methods often cannot provide enough response to real experience, cases of placental abruption in clinical practice is relatively rare, causes students lacking the ability to deal with. With the development of virtual simulation technology, the construction of virtual simulation experimental teaching platform for placental abruption has become an effective way to solve this problem.
***Keywords*:** Placental abruption; Virtual simulation experimental teaching platform; Construct analysis; Application analysis

1. Introduction

Based on the virtual simulation experiment teaching platform, this paper aims to build a virtual simulation experiment teaching platform that can simulate the real situation of placental abruption, provide rich teaching resources, and have instant feedback function, so as to improve students' professional skills and clinical response ability. The platform includes practice training, knowledge mastery assessment, evaluation feedback and other parts. Based on this, this paper aims to improve students' professional theoretical knowledge, operational skills and humanistic care ability pass this platform, so as to lay a solid foundation for future study.

2. Definition of placental abruption

Placental abruption is a phenomenon in which the placenta in its normal position is partially or completely detached from the uterine wall after 20 weeks of gestation or during labor and before the delivery of the fetus. This is one of the most common cause of middle-late pregnancy hemorrhage, is also a kind of serious complications of pregnancy. Placental abruption can lead to fetal blood supply is affected, serious when can cause fetal and maternal death diffuse intravascular coagulation and other serious consequences. Once detected, it requires prompt treatment to protect the health of both the mother and the fetus.

3. Construction of virtual simulation experimental teaching platform for placental abruption

3.1 Technical support for platform construction

Virtual simulation technology is an important technical support for the construction of placental abruption virtual simulation experimental teaching platform. Using advanced computer graphics, human-computer interaction and artificial intelligence, the technology can simulate highly realistic virtual environments and scenarios. In the construction of the platform, the virtual simulation technology can simulate the real situation of placental abruption, including the physiological reaction of pregnant women, the state of the fetus, and the response measures of medical staff. pass this technology, students can practice repeatedly in a virtual environment to deepen their understanding and mastery of the knowledge and skills of placental abruption care, thereby improving their clinical coping ability and practical skills. 3D modeling technology is an indispensable technical support for the construction of placental abruption virtual simulation experiment teaching platform. pass 3D modeling technology, virtual models of pregnant women, fetuses, placenta and uterus can be accurately constructed, and the real scenarios can be highly restored. These models not only have a high sense of reality and three-dimensional, but also can simulate various physiological changes and reactions in the body of pregnant women during placental abruption. Students can interact with these models and perform various nursing operations in the virtual environment, so as to deepen their understanding and mastery of placental abruption nursing knowledge. 3D modeling technology provides the basis for

the construction of the platform, which makes the teaching more intuitive, vivid and effective.

3.2 The process of platform construction

In the process of constructing the placental abruption virtual simulation experimental teaching platform, it is necessary to establish a professional research team. The team should include medical education experts, obstetrics and gynecology clinicians, information technology experts and virtual simulation technology developers. After the establishment of the team, the expert group discussion method was adopted to gather the wisdom and experience of experts in various fields to jointly discuss the construction objectives, functional requirements, teaching content and teaching methods of the platform. pass many in-depth discussions and integration of opinions, a unified construction protocol and teaching pass concept have been formed, laying a solid foundation for the smooth construction of the platform. Therefore, pass this process to ensure the platform content scientific and practical, but also improve the teaching quality and effect of the platform.

The construction of virtual simulation experiment teaching platform for placental abruption should start from three aspects: characteristics of design of simulation teaching, teaching practice activities and expected results. The teaching design emphasizes the authenticity of situational simulation to ensure that students can learn in a highly simulated environment. The teaching practice focuses on interaction, and students can experience the coping process of placental abruption through role play and simulation operation. The aim is to pursue effectiveness in terms of expected results, aiming at learning platform, students can master the nursing knowledge and skills of placental abruption, and improve the clinical coping ability. The whole construction process is closely focused on these three aspects to ensure the practicability and teaching value of the platform.

4. Function analysis of virtual simulation experiment teaching platform for placental abruption

4.1 Practice and training

The placental abruption virtual simulation experimental teaching platform shows powerful functions in practice training. The platform pass simulating a real placental abruption situation. Students can perform role play on the platform to simulate the whole process from admission to nursing care, including the key links such as condition assessment, emergency rescue measures and postoperative care. This kind of simulation exercise not only helps to consolidate students' theoretical knowledge, but also improves students' clinical thinking and coping ability. Therefore, pass repeated practice, students can become more familiar with the process of placental abruption care, laying a solid foundation for future clinical practice and career development.

4.2 Assessment of knowledge mastery

The placental abruption virtual simulation experiment teaching platform plays an important role in the assessment of knowledge mastery. pass built-in assessment module, the platform can comprehensively evaluate the performance of students in the simulation experiment. These assessment modules not only cover the basic theoretical knowledge of placental abruption, but also include practical nursing skills and humanistic care content. After completing the simulation experiment, students need to accept the online assessment of the platform to test their mastery of placental abruption related knowledge. The platform uses an intelligent evaluation system, which can record students' operation process in real time and give detailed feedback. pass systematic analysis, students can clearly understand their shortcomings in which aspects, so as to make targeted improvements. At the same time, the platform will also generate detailed assessment report to provide teachers with the overall performance and learning progress of students, and help teachers better guide students for follow-up learning. In addition, the platform also has a special module for knowledge mastery assessment, pass simulation of nursing operations in real situations, to test whether students can flexibly application of theoretical knowledge in practice. This kind of assessment method not only helps to improve students' professional skills, but also cultivates students' clinical thinking and coping ability. Therefore, the virtual simulation experiment teaching platform for placenta abruption has significant advantages in the assessment of knowledge mastery. Intelligent assessment system and comprehensive assessment content can help students better grasp relevant knowledge and improve their professional quality and comprehensive ability.

4.3 Evaluation feedback

The placental abruption virtual simulation experiment teaching platform has key functions in evaluation and feedback, which is very important for improving teaching quality and learning effect. The platform pass built-in evaluation system, can be real-time record and analysis students in the simulation experiment operation process. According to the preset Standard, the evaluation system accurately scores each step of the student's operation and generates a detailed feedback

report. The feedback not only points out students' mistakes or shortcomings in the operation, but also provides specific suggestions for improvement, which helps students to clarify their learning direction. In addition, the platform also supports teachers to evaluate students' performance. Teachers can give a more comprehensive and specific evaluation according to the performance of students in the simulation experiment, combined with the feedback report. This evaluation method not only pays attention to students' operational skills, but also pays attention to students' clinical thinking and humanistic care ability, which is helpful to cultivate students' comprehensive quality. The platform also has students' mutual evaluation and self-evaluation, encouraging students to learn from each other, evaluate each other, and self-reflection and self-improvement. This diversified evaluation method is helpful to form a positive learning atmosphere and stimulate students' learning motivation. Therefore, the evaluation and feedback function of the teaching platform of placenta abruption virtual simulation experiment provides a strong guarantee for the improvement of teaching quality and learning effect by real-time record and analysis of student operations, providing detailed feedback and report, and supporting various evaluation methods such as teacher evaluation, student mutual evaluation and self-evaluation.

5. Application analysis of virtual simulation experiment teaching platform for placental abruption

The platform pass high-precision 3D modeling and realistic scenarios design, thereby deepening their understanding and memory of the relevant knowledge. This highly simulated learning environment not only improves students' learning interest, but also enhances students' sense of participation and immersion. In class, teachers can use the platform to carry out simulation experiments and guide students to perform role play and simulation operations. In the virtual environment, students can personally experience the coping process of placental abruption, including critical aspects such as disease assessment, emergency dispose, and postoperative care. This practical learning method is helpful to consolidate students' theoretical knowledge and improve their clinical thinking and coping ability. In addition, the platform also provides a wealth of teaching resources and interactive tools to support teachers to carry out flexible and diverse teaching activities, further enriching the content and form of classroom teaching. Therefore, the placental abruption virtual simulation experiment teaching platform plays an important role in assisting classroom teaching, creating a realistic and immersive learning environment for students, and helping to improve the quality of teaching and learning effect.

6. Conclusion

In conclusion, the platform can provide an efficient, safe and controllable learning environment for students, which is helpful to enrich the experimental teaching resources and improve the comprehensive quality and clinical coping ability of students. In the future, We will continue to improve the function of the platform, optimize the teaching design, promote its wide application in medical education, and contribute to the protection of maternal and child safety.

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