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Original Article

Designing and validation of proposing evidence-based nursing care guidelines in patients undergoing coronary angiography

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Abstract

Background and aims: Evidence-based Clinical Practice Guidelines (CPGs) are essential tools to improve the quality of nursing care. The present study aimed to design and validate proposed evidence-based nursing care guidelines in patients undergoing coronary angiography.

Methods: This developmental study was performed in the angiography and post-cardiac care unit (CCU) of Vali-e-Asr hospital in Fasa in 2019. Evidence-based nursing care guidelines were designed based on the Stetler model. Ten specialized professors were interviewed in three phases to assess the content and face validity of the guidelines using an expert panel; ten specialized professors were interviewed in three phases. The application of the guidelines was also examined by a focus group discussion with ten clinical nurses.

Results: In this study, eight evidence-based nursing care guidelines were designed and proposed for patients undergoing angiography.

Conclusion: The development of evidence-based nursing care guidelines in patients undergoing angiography will provide more benefits, increase nurses' access to up-to-date information, and ultimately increase the quality of nursing care.

Keywords: Guideline, Nursing care, Evidence-based, Coronary angiography

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Introduction

Today, cardiovascular diseases (CVDs) are one of the most important causes of death in human societies (1). In Iran also, CVDs have been reported as the most important cause of death (2,3). Coronary artery disease is the most common heart disease (4).

Various invasive and non-invasive methods, such as angiography and cardiac catheterization (1,3), are used to determine the severity and extent of coronary artery disease (5-7). About two million cardiac patients undergo cardiac catheterization in the United States every year, and the number is increasing daily (5,7). In Iran, there are about 16-18 thousand heart patients (8). Despite its numerous benefits, coronary artery angiography can cause patient problems (8,9). This diagnostic method may cause early and late complications in patients (10). Myocardial infarction (MI), cerebrovascular attack (CVA), arrhythmia, anxiety, stress, renal failure (RF), vascular complications, and death may occur due to angiography (10,11). Moreover, the likelihood of complications can cause stress and anxiety for patients (4,7,12). The incidence rate of vascular complications has been reported to be between 0.7% and 28% in various studies (13-15). Therefore, it is necessary to have nursing care for patients undergoing angiography to prevent, identify, and reduce complications (16). The final purpose of nursing care is to provide high-quality care (17).

One of the most effective methods for improving nursing care quality is creating, improving, and evaluating care guidelines (18). Nursing care guidelines are systematically developed statements that help clinical nurses make the right decisions about healthcare in specific clinical circumstances (18,19). The clinical practice guidelines improve the quality of services (19,20). Clinical practice guidelines are helpful if they are evidence-based and can affect the health and cost-effectiveness of the system (21). However, they are accepted and are more effective if supported by strong evidence and research (22).

Consequently, if patient care is based on scientific research, it can significantly improve care outcomes (23,24). Evidence-based nursing care tries to apply the best research evidence with clinical expertise and skills and take the patient's needs and health status into account (17,22). Due to their essential and vital role in patient care, nurses should be aware of the latest developments in clinical care and keep up to date with the latest medical information (17,25).

The literature review in Iran showed that caring for

patients undergoing coronary angiography differs across different hospitals, or only one part of the care is taken into account (6-9). Due to the lack of guidelines in this field and the necessity of caring for patients based on the best evidence, the present study aims to design and validate evidence-based nursing care guidelines in patients undergoing coronary angiography.

Methods

This developmental study was performed using an evidence-based practice approach and the Stettler model (in the nursing process framework) in the angiography unit and post-cardiac care unit (CCU) of Vali-e-Asr hospital in Fasa in 2019. This method is called the development of guidelines so that after comprehensive studies, the guideline is designed based on new resources and articles and the target group's needs (26). The Stettler model is an initial model for applying research in nursing and facilitating evidence-based practice. This model includes five phases preparation, validation, comparative evaluation, application, and evaluation (27).

Preparation

In the preparation phase, the existing guidelines on nursing care among the patients undergoing angiography in the angiography unit and post-CCU, as well as nursing diagnoses and nurses' opinions, were collected from reference books and articles (27). The clinical question framework, i.e., population, intervention, comparison, and outcome (PICO), were applied to collect the diagnoses from the scientific and reference books and published articles.

The eligibility criteria for study selection based on the PICO model were as follows:

1) Population: all patients undergoing coronary angiography via transfemoral approach.
2) Intervention: All protocols that were used for reducing complications after coronary angiography.
3) Comparison: routine care vs. new interventions.
4) Outcome: Pain, urinary retentions, fear, anxiety, bleeding, vomiting.

The Persian and English articles conducted on nursing care among patients undergoing angiography between 2013 and 2018 were selected. Searches were done in ProQuest, PubMed, Google Scholar, Elsevier, SID, and Cochrane databases. They were prioritized using the following key terms: guidelines, evidence-based nursing care, and patients undergoing angiography based on the evidence-based medicine pyramid. Based on the inclusion mentioned above criteria, 108 out of the 203 articles were selected (Figure 1).

Validation

In the validation phase, new guidelines for patients undergoing angiography were designed based on evidence-based methods and within the nursing process framework (27).

An expert panel determined the content and face validity of the guidelines in nursing and heart disease. After applying the necessary comments and corrections, the content of the guidelines was validated by a panel of experts. The panel members reviewed the designed guideline using the standard quality of care guideline checklist (28). Each item with a content validity ratio above 80 remained. Items with a content validity ratio between 70-80 were revised, and a decision was made based on expert panel comments. Items with a content validity ratio lower than 70 were deleted. They have been used to examine the implementation ability of guidelines, innovation, reliability, flexibility, the extent of the impact on the care process, and the measurability of guidelines. In this phase, ten professors specialized in cardiovascular nursing participated in three different universities. Seven professors had PhDs (with 12-17 years of clinical work experience), and three had Master's degrees (with 7-15 years of clinical work experience).

Comparative evaluation

This phase determined whether the guidelines were practical and examined their benefits and risks (27). This phase was performed via focus group discussion and participation of nurses in the angiography unit and post-CCU. In the comparative evaluation phase, the designed guideline was given to 10 nurses responsible for providing direct care in the angiography unit and post-CCU. These nurses had at least one year of clinical experience in the angiography unit and post-CCU. In terms of education, nine nurses had Bachelor's degrees, and one had a Master's degree. Their work experience ranged from 8-10 years.

Then, the interventions' applicability was discussed during three four-hour sessions. Initially, the individuals' consent to participate in the study was obtained. They also agreed to record their voice with a tape recorder. In addition, the participants clearly stated their concerns, and the applicability of the guidelines was discussed based on the conditions and facilities of the unit. At the end of each session, the recorded material was transcribed, and the conclusion was made based on the members' opinions and was approved by the faculty members.

In order to evaluate the quality of the designed nursing care guidelines, the use was made of a checklist introduced by Nezamzadeh et al (29) based on the framework of the nursing process, Appraisal of Guideline Research and Evaluation (AGREE), and Guideline Implementability Appraisal (GLIA). AGREE with 23 items and GLIA with six areas have been used to evaluate the quality of care guidelines since 2003. They have been used to examine the implementation ability of guidelines, innovation, reliability, flexibility, the extent of the impact on the care process, and the measurability of guidelines. The checklist used in the present study contained two sections and 26 yes/no items (11 questions to examine the identity of the guideline and 15 questions to examine its quality). The intra-class correlation coefficient (ICC) was obtained

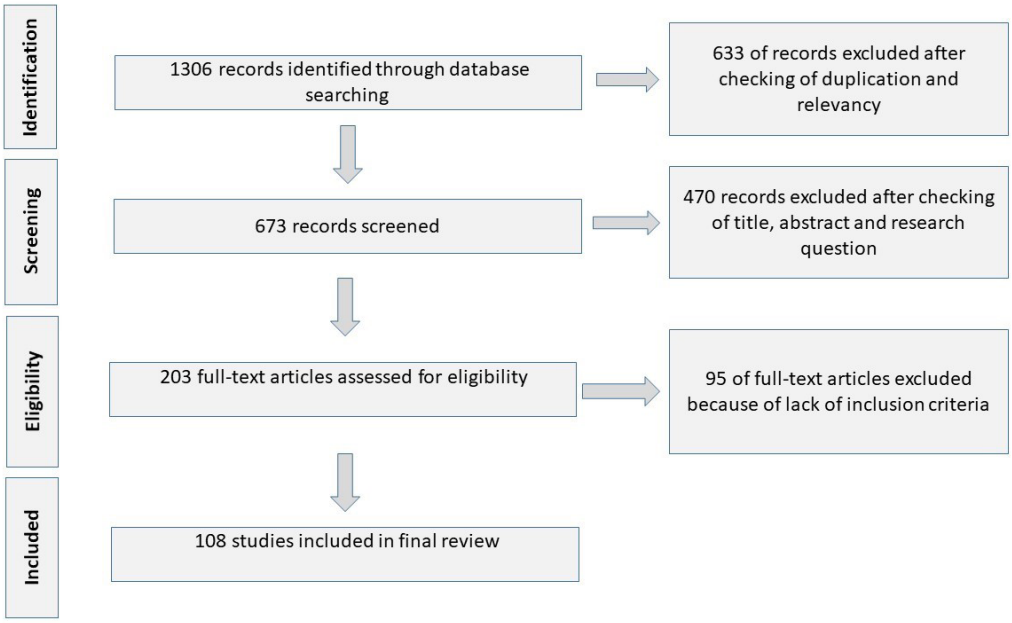

Figure 1. Flow chart of the study

as 0.78 (28). In order to evaluate the quality of care guidelines, logic 33 was used, and the final scores were ranked in three levels; i.e., poor (0-33%), average (34-66%), and good (67-100%).

Application

Based on the nurses' opinions, the final guidelines were implemented by determining the identity code (27). At this stage, the designed guideline was handed over to the university and affiliated hospitals' directors of nursing to decide on its use in clinical practice.

Evaluation

The study mentioned above examined the effect of the changes on the quality of care (27). In that study, this was not possible due to time constraints, and consequently, it was recommended for future research.

Results

The results of this study led to the proposal of eight specific guidelines for patients undergoing angiography (Supplementary file 1).

The designed proposed guideline consisted of two sections:

1. Identity section of the guideline: It included the purpose, nursing diagnosis, target group, methods, names of specialists, inclusion and exclusion criteria for the selection of evidence, rules, resources, and validity date. The specific nursing diagnoses while caring for patients under angiography were as follows: Risk for ineffective renal perfusion, risk for anaphylactic shock, risk for bleeding, nausea and vomiting, risk for peripheral neurovascular dysfunction, pain, fear and anxiety, urinary retention.
2. Designed guideline section: This guideline was based on the nursing process and consisted of the following sections: nursing diagnosis, signs, symptoms, and nursing practices. One of the nursing diagnoses has been presented in Box 1.

Discussion

This study aimed to design and validate evidence-based nursing care proposing guidelines based on the latest evidence and research available in patients undergoing coronary angiography. In this regard, Nezamzadeh et al studied patients with angina pectoris (29). Moradi et al evaluated mechanically ventilated patients in an intensive care unit (ICU) (36). Azizi et al examined insomnia and constipation in psychiatric patients (37). Kameli et al studied nausea and vomiting amongst patients undergoing chemotherapy (38). Ghanbari et al assessed patients with diabetic foot ulcers (39) so that they could design evidence-based nursing care guidelines based on the Stettler model. Hewitt-Taylor also developed ICU nursing care guidelines (17).

The present study's designed guidelines were based on an evidence-based process. Nezamzadeh et al improved the quality of care implementation from medium to good by providing evidence-based care (29). Woolery et al also conducted an evidence-based study to determine the main interventions for patients with constipation in the psychiatric ward (40). Furthermore, Drew et al presented guidelines designed by the best resources for caring for heart patients in hospitals to create quality assurance (41).

The current study used AGREE and GLIA tools to evaluate the quality of nursing care guidelines (42). The same tool was used for evaluating clinical practice guidelines on prostate cancer in the United States (43) and in the national evidence-based guideline for preventing healthcare-associated infections in NHS hospitals in

Box 1. An example of derived nursing diagnosis and its components

Nursing Diagnosis
Urinary retention can be attributed to the following:
- Sandbag
- Catheterization
- Extreme fear and absolute bed rest

Evaluation criteria:
Discomfort in urination, urinary retention

Nursing interventions:
1. Patients' assessment in terms of discomfort, burning, and urinary retention at 15-minute intervals in one hour (15, 30-32)
2. Patient's pain assessment and pain control (32)
3. patients' cultural assessment (expert group)
4. I&O control (33)
5. Early discharge from bed after 2-4 hours (30,31,34)
6. Reducing the duration of patients' supine position and proper positioning, such as raising the height of the headboard (30,32,35)
7. Reducing the duration of keeping sandbag over the catheter insertion site (15)
8. Placing hot water bags on the suprapubic, massaging, and hearing the sound of water (32)
9. Relaxation training (expert group)
10. The doctors prescribe urinary bladder catheterization if urinary retention persists (expert group)

England (44). For evaluating clinical nursing practice guidelines in multiple injury patients admitted to the trauma ward in Thailand (45).

Several studies have indicated that these guidelines could improve the quality of care. In this context, Zamani Babgohari et al improved the quality of nursing care by teaching evidence-based nursing guidelines (46). Additionally, Yusefzadeh et al demonstrated that training and implementing evidence-based guidelines based on the nursing process in patients with angina pectoris increased the quality of nursing standards (47). Considine and McGillivray also improved the quality of nursing care among patients with acute stroke and its prognosis using an evidence-based approach (48). Besides, Mottahedian Tabrizi et al reported the effect of programmed nursing care on reducing hemodialysis complications (49). By implementing the protocol in 579 patients with acute infarction, Ting et al stated that implementing the standardized protocol could reduce the time for diagnosis and improve the quality of care (50). Gibler et al believed that the practical clinical implementation of the guidelines was helpful for patients with unstable angina and MI in the emergency department (51).

Overall, designing, implementing, and evaluating the evidence-based practice guidelines is recommended due to their influential role in improving patient care quality and reducing hospital stay costs and length.

Considering the lack of evidence-based nursing guidelines in the wards, designing this guideline based on valid evidence is one of this study's most important strengths, which helps provide high-quality and up-to-date nursing care. One of the possible limitations of this study is the selection of nurses from one hospital to check the ability to implementation of the current guideline.

Conclusion

Due to the incompleteness of the care guidelines in the hospital under review, not all aspects of nursing care were considered for the patients undergoing angiography. The critical role of evidence-based care in improving the quality of nursing care has provided a situation in which nurses perform based on scientific resources, reducing the length of hospital stay and costs. Therefore, evidence-based nursing care guidelines will lead to more benefits, increase nurses' access to up-to-date information, and ultimately increase the quality of nursing care.

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Authors' Contribution

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Competing Interests

The authors declare that they have no conflicts of interest regarding the publication of the present study.

Ethical Approval

This study was approved by the Ethics Committee of Fasa University of Medical Sciences, Fasa, Iran (Ethics code: IR.FUMS.REC.1396.281).

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Supplementary Files

Supplementary file 1. A prepared guideline.

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