

✧ ORIGINAL ARTICLE ✧

# *Implementation of evidence-based nursing practice for diabetic patients: An Iranian experience*

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## **Implementation of evidence-based nursing practice for diabetic patients: An Iranian experience**

Evidence-based nursing is recognized as an indicator of quality in nursing practice, a basis for accountability and the gold standard of professional nursing care. The aim of this study was to explore nurses' experiences and perceptions about evidence-based nursing practice in giving care to patients with diabetic foot ulcers. A qualitative research design was adopted, and content analysis was used to analyse data. Semistructured interviews were held with 19 bachelor-degree nurses working in a teaching hospital in an urban area of Iran. During data analysis, two main themes developed: 'structural backgrounds of the organization' and 'empowerment'. Accordingly, it was concluded that successful implementation of evidence-based nursing requires the reconfiguration of the administrative structure in the hospital. In addition, it requires the support of nurse leaders to facilitate the implementation of evidence-based nursing in the practice.

**Key words:** diabetic foot ulcer, evidence-based nursing practice, Iran, nurses, qualitative content analysis.

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## INTRODUCTION

One of the most common complications of diabetes mellitus is diabetic foot ulcer (DFU). It is frequently accompanied with infection, which can lead to limb amputation.<sup>1</sup> The prevalence of DFU in the United States is 4%,<sup>2</sup> and it amounts to 3% in Iran among patients with diabetes.<sup>3</sup> The rate of lower limb amputation in Iran is reported to be 30% among diabetic population.<sup>4</sup> Early diagnosis of diabetes and providing appropriate care play a basic role in the prevention of DFU. Therefore, scientific approaches such as evidence-based nursing (EBN) play a crucial role in making nurses capable of providing appropriate care to patients.<sup>5</sup>

### Background in Iran

Nurses are able to provide high-quality care through combining their technical skills with professional knowledge based on scientific evidence. A brief look at the Iranian studies of nursing practice shows that the Iranian health-care services suffer from a low quality of nursing care.<sup>6</sup> Moreover, nurses experience uncertainty in clinical practice,<sup>7</sup> and many personal and organizational factors hinder the transference of knowledge into clinical practice.<sup>8,9</sup> Evidence-based practice (EBP) is an approach that potentially handles clinical issues effectively and can lead to better care.<sup>10</sup> Because diabetic foot disease is the main cause of non-traumatic amputation of lower extremities, early recognition and management of foot complications could prevent amputations and other adverse outcomes.<sup>11</sup> Awareness of foot problems in diabetic patients, combined with prompt treatment of minor injuries, can decrease the occurrence of DFU.<sup>12</sup> The aim of this study was to explore nurses' experiences and perceptions about EBN practice in providing care to patients with DFU.

## METHODS

This study is one part of a larger mixed-methods study entitled: Implementation and Evaluation of EBN in Patients with Diabetic Foot Ulcer Based on the Iowa Model. This model incorporates research utilization based on a quality assurance model, focusing on organizational processes using a multidisciplinary approach. The key to these models is the search for and the critique of relevant evidence-based research literature for incorporation or use in an individual or group practice.<sup>13</sup>

The aim of the quantitative part is to assess the effects of EBP on the knowledge, attitude and practice of nurses who

take care of patients with DFU. Briefly, in the quantitative element, nurses in the study were provided with access to the computer and Internet to implement EBN. Nurses were taught about the EBN approach in relation to the management of patients with DFU through three workshops. Learning activities and assignment for each group in the workshop consisted of developing a clinical question using the problem, intervention, comparison and outcome format, searching for evidence, and reading and critiquing articles based on the Consolidated Standards of Reporting Trials (CONSORT) scale. The reports of randomized control trials that use CONSORT are easier to read, interpret and evaluate for relevancy to clinical practice.<sup>14</sup>

The nurses' performance after education in the ward was investigated by assessing their skills in the management of care provided to patients with DFU. Every trained nurse was expected to assess patients with DFUs and to identify their problems. In order to assess the practice of nurses in monitoring DFU, a checklist adopted from National and Regional Clinical Guideline in Iran<sup>15</sup> was used by the research team. It included five sections (taking patient history with 10 questions; assessing foot neuropathy with nine questions; vascular problems with six questions; and characteristics of ulcer and patient educational needs with five questions). There were two possible answers: 'assess the patient' and 'don't assess the patient'. The range of scores was 0–35. The results of their assessments were monitored and documented in their notes. Every item that was assessed and documented in the nurses' notes was then evaluated based on the clinical guideline, by reference to a checklist that had been developed and scored by the main researcher. The results of the quantitative study showed that the EBN strategy improved knowledge, attitude and practice of nurses. In the second part of this study, a qualitative design was used to collect data related to the experiences and perceptions of nurses about the implementation of EBN. The present paper reports the results of the second part of this study.

### Design

Using a qualitative design with semistructured interviews with nurses, their experiences and perception about EBN for DFU patients were assessed. After acquisition of qualitative data, content analysis was used to analyse them.

### Participants

Nineteen baccalaureate nurses working in an endocrinology ward of a university hospital in Tehran, Iran were

selected by using a purposive sampling method. The majority of the participants ( $n = 17$ ) were female and all of them ( $n = 19$ ) were holding baccalaureate degree. They had an average age of 27.53 (SD = 6.41) years. Most of them ( $n = 14$ ) had the experience of working as a nurse for less than 5 years, and a majority of them ( $n = 13$ ) worked in rotational shifts. None of the nurses had previously participated in any EBN workshops, and many of them ( $n = 12$ ) had not participated in any classes related to diabetic foot care. Most of them had not passed any courses on computers ( $n = 10$ ) and searched for articles using Internet databases ( $n = 17$ ) or research methodology ( $n = 18$ ).

### Data collection

Audio tape-recorded, face-to-face and semistructured interviews lasting between 28 and 60 min were held in quiet locations in the endocrinology ward in which participants felt comfortable. The first author conducted the interviews in Persian. The interviews covered the nurses' experiences and perceptions about EBN and strategies employed to implement it in nursing practice. The major focus of the interviewers' questions included: Will you please share with me your experiences about using EBN practice with DFU patients? What is your perception about EBN in DFU?

In addition, probing questions were asked to follow the participants' thoughts and bring clarification to their responses during the interviews. Data collection and analysis proceeded concurrently, and once the themes were identified and data saturation was achieved, the interviews were discontinued.<sup>16</sup>

### Ethical approval

The Ethics Committee of Endocrinology and Metabolism Research Center (Code: E -00127), affiliated with Tehran University of Medical Sciences, approved the study and confirmed its ethical considerations. The information sheet provided a detailed explanation of the purpose of study. All participants were assured of strict confidentiality, and they were briefed about their right to withdraw at any time without giving a reason. Written informed consent was gained from participants who willingly agreed to participate in the study.

### Data analysis

A content analysis approach was used to analyse the data. The following steps were taken to analyse the data:

1. Interviews were transcribed verbatim and read several times in order to obtain the sense of the whole.
2. The text was divided into meaning units, which were then condensed. The condensed meaning units were abstracted and labelled with codes.
3. Codes were sorted into subcategories and categories based on the comparison of their similarities and differences.
4. Finally, the relevant themes, as the expression of the latent content of the text, were identified.<sup>17</sup>

### Trustworthiness

The credibility of the data was established through peer checking. The data were coded and categorized independently by the authors, and then the final themes were compared. In the case of encountering disagreement, discussions and clarifications continued until a consensus was achieved. In addition, a summary of the interviews was returned to five participants as member checking, and it was confirmed that the researcher was representing their ideas in a realistic manner. Prolonged engagement in the field and persistent observation by the researcher improved the credibility of this study. The dependability of the data analysis was estimated by audit trail. It aimed to monitor the degree to which the data changed over time and the alterations made in the researchers' decisions during the analysis process.<sup>17</sup>

### FINDINGS

During data analysis, two main themes were developed: 'structural backgrounds of the organization' and 'empowerment'. The first theme consisted of three main categories: 'executive rules and regulations', 'human resources' and 'equipment'. The second theme consisted of three categories: 'empowering the nurse', 'empowering the patient' and 'empowering the profession'. Each theme is explained below using the participants' direct quotations.

#### Structural backgrounds of the organization

Nurses as specialized professionals must be held accountable for the quality of care. In this respect, organizational support for the implementation of EBN in clinical practice is necessary. Most of the nurses stated that job atmosphere should be supportive for nurses in legal, moral and professional terms. Implementation of EBN requires constant observation of main executives such as high-rank managers.

### *Executive rules and regulations*

Most of the participants stated that the main requirement for the execution of EBN was the presence of regulations to support the implementation of EBN, and in this respect, management support was deemed as essential.

*Implementation of EBN needs to be substantiated by the rule or legislation. (Participant 7)*

*It should be considered in nurses' job description from the beginning of the employment. (Participant 2)*

Participants expressed that there was limited professional and organizational support for the implementation of EBN in clinical practice and that the Iranian health-care system did not support the use of research results in clinical practice. Participants admitted that vague job description and unclear job status of nurses in clinical environment as well as a lack of strategic policies regarding clinical problems explained why EBN was not taken seriously.

*Implementation of evidence-based nursing needs the support of high-rank managers. (Participant 4)*

*Our job descriptions are unclear in the hospital. I mean that I have to do the job of a secretary, answer phone calls, do accounting, answer patients companions' questions, and at the same time, do my own nursing tasks. I am too fed up to go and to check on a diabetic foot and to work based on the evidence. (Participant 10)*

### *Human resources*

The shortage of human resources and spending too much time with too many patients in work shifts were the main causes of developing routine-based practice, which hindered the implementation of EBN in practice.

*The number of nursing staff must be increased. I should keep working routinely to get everything done. (Participant 2)*

Participants complained about shortcomings in their hospital concerning nurses' education because of lack of educational facilities and the reason for the insufficient implementation of EBN. Promotion of nurses' knowledge, improving their problem-solving skills and enabling them to utilize their knowledge in clinical practice were emphasized by the nurses.

*Implementing EBN can only happen when the nurse has sufficient information about the patient and feels accountable for his/her work. (Participant 16)*

*Gaining independence to implement EBN requires the nurse to be knowledgeable. (Participant 18)*

### *Equipment*

One of the prerequisites for implementing EBN mentioned by participants was the provision of facilities and appliances to ease the process of EBN.

*To implement EBN, we [nurses] need an equipped workforce, plus appliances and facilities like computers with Internet access and up-to-date textbooks, scientific journals and clinical guidelines. (Participant 6)*

### **Empowerment**

Empowerment was defined as obtaining up-to-date information from various scientific sources and combining them with experiences to update nurses' professional approach to patient care. This theme consisted of three main categories: 'empowering the nurse', 'empowering the patient' and 'empowering the profession'.

#### *Empowering the nurse*

The nurses' ability to identify the best evidence to be used in practice was one factor that was expected to enhance their ability to work with computers and search scientific sources. Training courses were suggested to be held to update and promote nurses' abilities in decision-making and improve their self-confidence in patient care.

*'Nurses should be trained to search articles in electronic databases in order to find which method is better suited for dressing the ulcer of patients with diabetic foot and which method would be more effective'. (Participant 11)*

Other aspects pertinent to nurses' empowerment were their ability to assess the patients and to devise a specific care plan while considering all the patient needs.

*'When a patient is admitted, we [nurses] assess the condition of his/her foot ulcer, and we use certain procedures as necessary'. (Participant 18)*

Providing a desirable care environment combined with clinical knowledge and experiences of nurses as the results of implementing EBN would result in nurses' job satisfaction.

*'This approach changed the way I looked at nursing. Now I love to be a nurse, and the nursing process does not follow its traditional trend anymore'. (Participant 17)*

#### *Empowering the patient*

One of the advantages attributed to EBN was making the patients capable of self-care, which is expected to increase their satisfaction with provided care and to decrease the duration of hospitalization.

*'If nurses work based on EBN, the patient will be empowered with the provided care by herself (himself), and therefore feel more satisfied, his/her expenses would be decreased and the hospitalization duration will be shortened.' (Participant 15)*

#### *Empowering the profession*

The gap between research and practice was a major issue in nurses' discussion in this study. Overcoming this problem was believed to lead to professional authority and, accordingly, help nurses gain professional independence. Through professional independence, nurses should gain the power of synergy in the nursing profession, which should then result in providing patient care according to nursing standards.

*Professional independence provides the nurse with the possibility to use his/her professional knowledge in clinical decision-making. (Participant 18)*

*A nurse that uses EBN in clinical practice is a patient-oriented nurse who links research results to practice and by so doing reaches independence. (Participant 4)*

## DISCUSSION

This study explored the experiences with and perceptions of Iranian nurses on EBN. The main requirements for implementing EBN as the structural background in the organization were regulations, supports given by managers, job description, human resources and necessary equipments.

Hess states that nurses must structure their work within imposed rules, which have a profound effect on their practice.<sup>18</sup> A supportive environment must be provided for implementing EBN in clinical settings because of some workplace challenges. As a requisite for implementing EBN in clinical settings, there is a need to change the management process. Nursing managers should seek the best ways by which they can promote the quality of clinical services and increase accountability towards patients.<sup>19</sup>

The results of the Adib Hajbageri study in Iran confirm that lack of support from managers, weak teamwork and disregarding the scientific value of nurses' work by some high-rank managers prevent the implementation of EBN.<sup>20</sup>

Job description and job status were recognized to be requisites for implementing EBN. Nursing profession can use research findings in clinical situations; however, what actually leads to an improvement in nursing practice has been its association with job description.<sup>21</sup> Nursing managers play a crucial role in providing organizational support, developing research practice and presenting clinical solutions.<sup>22,23</sup> Leach declared that the shift towards EBN allows health-care professionals to move from the traditional style of care delivery to a situation where decisions are guided and justified by the best available evidence.<sup>24</sup>

In the human resource category, participants declared that shortage of nurses, lack of time and heavy workload were barriers to the implementation of EBN. The results of study in Iran showed that human resources were facilitators to the utilization of research in practice.<sup>25</sup>

The findings of this study show that educational preparation of nurses is a requirement for EBN. Other research findings indicate that research utilization in clinical settings is limited because of lack of management support, time inadequacy alongside work overload, and lack of skill and knowledge to do research.<sup>9,26</sup> In some studies, the greatest barriers were organizational and nurse-related characteristics, such as lack of authority to change, insufficient time, and limited research knowledge and awareness.<sup>27</sup> Previous research has shown that educational interventions are effective in improving cognitive and technical EBN.<sup>28</sup> In other studies, sufficient time and staff were suggested as major facilitators in the organization.<sup>22</sup> Understanding barriers of EBP could help facilitate research use and moving towards broader application of EBP.<sup>27</sup> The findings of Bjerrum *et al.* indicated that a short-term training programme enhances nurses' skills in clinical practice.<sup>29</sup>

Empowerment was the second theme developed in this study. To be empowered, nurses needed to learn the skills of working with computers, searching for scientific articles and critiquing them, staying up to date and providing patient-oriented care plans in order to be able to implement EBN. In all professional systems, having the ability to work with computers is considered a requirement for nurses in order to find the best answer to clinical practice

questions.<sup>30,31</sup> EBN is a prominent approach to practice, and there are a number of powerful assumptions behind EBP in nursing.<sup>32,33</sup>

Nurses in this study stated that lack of authority hindered them from practising in clinical settings based on EBN. Similarly, other studies indicate that nurses do not have the authority to use their knowledge in practice and bring creativity and originality to their own practice.<sup>9,25,34</sup> It seems that having no authority to practice independently can lead to uncertainty in clinical practice.<sup>7,23</sup>

Nurses' empowerment would also result in job satisfaction.<sup>35</sup> Du Toit *et al.* reported that proper training of mid-level ophthalmic personnel provides the opportunity for the semi-specialized personnel to play their roles as specialized nurses and brings about high-quality care.<sup>21</sup> This indicates that nurses can deal with patients as unique individuals and provide health care with safety and quality with the implementation of EBP.<sup>36</sup>

As another category of the second theme, EBN would empower the patient, which could be reflected in decreasing the duration of hospitalization, increasing patients' satisfaction with nursing care and providing patients' self-care. Meeting patients' needs and requirements is the basis of high-quality care.<sup>37</sup> Empowered patients will experience increased satisfaction, improved quality of life, and decreased anxiety and side effects. All of these would then result in increased participation in health-care programmes, independence in daily activity<sup>38</sup> and reduced readmissions to the hospital.<sup>39</sup>

Professional empowerment was another result of implementing EBN in nursing practice, which could be reflected in the acquisition of professional authority, professional independence and power. Nursing power is a broad construct including being able to act independently.<sup>40</sup> Nurses with a powerful practice commit to continuous learning through skill development and following EBP.<sup>41</sup> Having power allows nurses to guide nursing practice and to function as professionals.<sup>42</sup>

## CONCLUSION

The significance of the present study lies in the fact that enhanced awareness and increased understanding about EBN can be important precursors in improving nursing work environment and the quality of care provided to patients. The decision to implement EBN is not a simple one, but it is a good idea for improving quality of care.

Successful implementation of EBN requires reconfiguration of the organizational structure in hospitals. In addition, it requires the support of authorities in nursing to facilitate the implementation of EBN.

Although this study provides a rich description of the experiences and perceptions of Iranian nurses on EBN, further studies are needed to be carried out by other health-care professionals to depict a more complete picture of EBN in clinical practice.

## Implications for nursing practice and education

Although the benefits of this approach have been already proven, EBN entails a change within management process, patient care and nursing education that requires reconfiguration of hospital operations as well as willingness and support of the staff and leadership to accept change. The present study introduced an approach for clinical managers by adapting the rules of implementing EBN and development of evidence-based clinical guidelines according to cultural, social, health and clinical setting needs. Committee formation of EBN in hospital is another measure that can facilitate training and implementing this approach in clinical settings.

## Implications for future research

The results of this study might have yielded unique outcomes and might be applicable in other countries as well. In addition, in order to remove the barriers and strengthen the facilitators of EBN in clinical settings, carrying out a study with action research methodology is recommended.

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## APPENDIX I

### Checklist of DFU patients based on clinical guideline

#### *Part one: Taking patient history*

Items	Assess	Don't assess
History of disease		
History of disease in the family		
History of cigarette smoking and so on		
History of ulcer and infection in foot		
History of vision disorder		
History of kidney disorder		
History of heart disorder		
Type of diet		
Type of oral drug		
Type of injection drug		

#### *Part two: Assessment of neuropathy problems*

Items	Assess	Don't assess
Sensation of tingling, numbness and needles in foot		
Waking at night due to pain		
Dryness of skin		
Redness of skin		
Callus formation		
Lack of nail growth		
Stiffness and swelling in foot		
Sensation of coldness or warmth in foot		
Sensation of pain and temperature		

#### *Part three: Assessment of vascular problems*

Items	Assess	Don't assess
Hair loss in legs		
Abnormal gait and intermittent claudicating		
Muscle atrophy of foot		
Foot temperature		
Dorsal pedal pulse		
Posterior tibia pulse		

#### *Part four: Assessment of characteristics of ulcer*

Items	Assess	Don't assess
Fungal infection of the feet and between toes		
Wound exudates and odour (infection)		
Type of ulcer (superficial or deep)		
Extent of ulcer (contact probe to bone)		
Care of ulcer (debridement, culture, dressing)		

#### *Part five: Assessment of patient educational needs*

Items for education	Educate	Don't educate
Daily care of foot		
Food and drug diet (oral, injection)		
Weight control		
Periodic examinations of kidney, heart and eye		
Appropriate sports		