

## Original Article

# Assessment of Nurses' Knowledge and Practices in Diabetic Foot Ulcer Care at Al-Zawia Medical Center – Libya.

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## Abstract

**Background:** Diabetic foot ulcers are one of the most common diabetic complications found today. These ulcers can often lead to infection, gangrene, limb amputation, and even death. **Objectives:** This study aimed to assess the level of nurses' knowledge and practices concerning the care of diabetic foot ulcer patients. **Material and Methodology:** This was a hospital-based design study among one hundred (100) consented working nurses at Al-Zawia Medical Center, Western Libya, both gender (49 males and 51 females) were recruited during the period from December 2024, to April 2025, demographic data were collected by validated structured questionnaire, and analyzed, frequency and percentage calculated by known medical statistician. **Results:** The study indicated that half of the nurses were aged between 18 and 28 years, (51% of the participants were female, and most of them had a Nursing Certificate (39%). The study revealed that the participants gained a moderate level of knowledge among the nurses at Al Zawia Medical Center- Libya. However, regarding experiences and training, results were found that (56%) had less than 5 years of experience and (43%) did not receive training of diabetic foot care, highlighting knowledge gap, particularly in duration and quality of training. **Conclusion:** The findings of this study revealed that the majority of nurses working in different wards at Al-Zawia Medical Center, with various educational levels, short periods of experience and practice, have a moderate levels of knowledge concerning diabetic foot care, and generally, there is specific gaps, particularly in continuous training, knowledge, quality, and adequate period of practice.

**Key words:** Diabetic Foot Ulcer, Nurses' Knowledge, Zawia, Libya.

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## INTRODUCTION:

Foot ulcers among diabetics are one of the most common complications seen today. These ulcers may often lead to serious problems, such as infection, gangrene, limb amputation, and death. Studies revealed that the risk of amputation on the lower limb represents about 50% during the first 2 years and 50% for the mortality rate during the first 3 years after a lower limb amputation. Therefore, there is an increasing demand for nursing intervention in the care of diabetic foot ulcer patients.[1] Globally, the estimation of Diabetes Mellitus aged 20-79 years is 463 million adults in 2019, and will rise to 700 million by the year 2045 [2]. Nurses' knowledge plays an important role in screening, proper treatment, leading, and prevention of diabetic foot ulcer.[3] Globally, evidence highlights the importance of nursing knowledge and practices in managing diabetic foot ulcers effectively, where studies have shown that well-trained nurses can significantly minimize the occurrence of foot ulcers and prevent complications (infections, amputations) through timely interventions and patient education [4]. It is reported that ulcers affect up to 15.0% of diabetic patients in developing countries [5]. A poorly managed diabetes mellitus with a history of peripheral arterial disease leads to a higher risk of microvascular complications in diabetic foot ulcer patients [6]. Diabetic foot problems, besides losing work due to the patients' income, also deteriorate their educational continuations, damage social relations, and disturb patients psychologically, and indirectly affect their environments [7]. The diabetic foot ulcers care and treatment completely depend on the knowledge and skills of the nurses as the primary healthcare providers. Insufficient nursing support in many research studies is linked to a lack of awareness concerning diabetic foot care [8]. All diabetics should be checked for peripheral neuropathy. Early recognition and treatment of diabetic foot ulcer patients will decrease complications and healthcare expenses [9]. The International Diabetes Federation believes that rather than treating diabetic foot ulcers, a greater emphasis should be placed on their prevention, by applying screening and clinical examination that creates a risk score for the development of diabetic

foot ulcers to avoid the foot ulcer. Necessary training for expertise (such as doctors or registered nurses) to improve competencies [10]. Therefore, the objective of this study was to assess the level of nurses' knowledge and practices concerning the care of diabetic foot ulcer patients.

## MATERIAL AND METHOD:

### Study design and setting:

This was a hospital-based design study conducted at Al-Zawia Medical Center, related to the main governmental hospital, to assess the knowledge and practices of nurses regarding diabetic foot ulcer care. The medical center covers various services for patients, even those in different wards.

### Study population and period:

The study included one hundred nurses, both genders (49 males and 51 females), who were recruited for this study, and the sample was selected randomly, during the period from December 2024 to April 2025.

### Data collection:

Demographic data and other variables listed (age, gender, educational qualification level, years of experience, etc.) of the volunteer nurses were collected by a structured questionnaire that was distributed prior to nursing shifts to minimize disruptions in the patient care unit. The questionnaires contain very obvious and straightforward inquiries that need to be answered by nurses.

### Ethical consideration:

The ethical approval was taken from the Faculty of Nursing, Zawia University. Participants were briefed about the objectives of the research, and participation was entirely voluntary. Nurses who agreed to be a part of the study were verbally informed about the study, informed consent was taken from them before collecting the data, and nurses on extended leave or unwilling to participate were excluded from the study. Information was used anonymously.

### Statistical analysis:

Descriptive statistics were applied to describe all the categorical variables (frequency distributions and percentages) to summarize demographic characteristics and to evaluate the knowledge of nurses regarding diabetic foot ulcer care.

## RESULT:

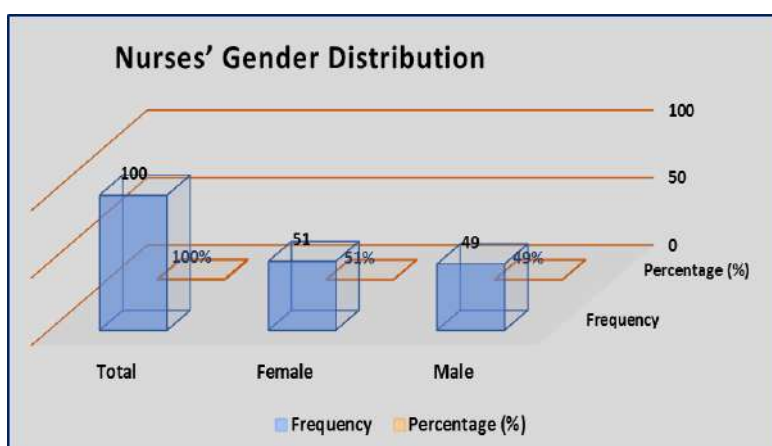


Figure 1 shows the distribution of the participants according

Figure (1): It is shown that female nurses made up 51% of the participants, while male nurses accounted for 49%. This slight difference indicates a nearly equal representation of both genders in the study.

Table 1 shows the distribution of the participants by age group. A total of 54 individuals (54%) belong to the 18-28 years age group, 32 individuals (32%) fall within the 29-39 years range, and 14 individuals (14%) are aged 40 years and above.

Table 1 shows the distribution of participants by age group.

Age group	Frequency	Percentage (%)
18-28 years	54	54%
29-39 years	32	32%
>40 years	14	14%
Total	100	100%

Table 2: shows the distribution of the participants according to their nursing educational qualifications level. The majority (39%) of

participants hold a Nursing Certificate, and the least (3%) have a Master's in Nursing.

Table 2: According to their nursing education level

Qualification level	Frequency	Percentage
Nurse Certificate	39	39%
Governmental Nursing Diploma	28	28%
Private Nursing Diploma	14	14%
Bachelor Degree	16	16%
Master Nursing degree	3	3%
Total	100	100%

Respondents (56%) reported 1 to 5 years of nursing experience, making this the most represented group among the participants. The second most common category was 6 to 10 years of experience

(32%), while only 12% of the nurses had more than 11 years of experience.

Table 3 illustrates the distribution of the nursing staff according to years of experience, a majority of

Years of experience in nursing	Frequency	Percentage (%)
1 to 5 years	56	56%
6 to 10 years	32	32%
More than 11 years	12	12%
<b>Total</b>	<b>100</b>	<b>100%</b>

Table 4 shows that experience in training of nurses on diabetic foot surgery 53% observed replies maintain foot surgery practice, while 47%

Replies with no answer; this indicates lower practice skills in foot surgery.

Table 4: Training of Diabetic Surgery

Experience in practice within the diabetic foot surgery	Frequency	Percentage
<b>Yes:</b>	53	53%
<b>No:</b>	47	47%
<b>Total</b>	<b>100</b>	<b>100%</b>

Table 5 revealed that, according to awareness and providing health education after receiving training 57% answered "Yes" and 43% answered "No". This table presents the distribution of the participants based on whether they have received

training on the prevention and care of diabetic foot-wear, a location diabetic treatment clinic units, and maintain regular blood glucose control, since beginning work at Al Zawia Medical Center, but their answers are not the same as the first one.

Nursing personnel awareness		Frequency	percent	Total
The needs for proper foot-wear	Yes	58	58%	<b>100</b>
	No	42	42%	
Location of a diabetic treatment clinic units	Yes	55	55%	<b>100</b>
	No	45	45%	
Aware by maintain regular B sugar control	Yes	79	79%	<b>100</b>
	No	21	21%	
Provided health education after receiving training	Yes	57	57%	<b>100</b>
	No	43	43%	

Table 5: According to awareness and providing health education after receiving Training

## DISCUSSION:

This study assessed the knowledge and practices of nursing staff regarding diabetic foot ulcer (DFU) care in Al Zawia Medical Center, Libya. Nurses on the healthcare team have contact with patients for 24 hours and thus play an important role in educating patients [11]. Nurses can improve the

quality of life of a diabetic individual by assisting in the preparation and implementation of education programs that help patients develop self-care behaviors related to diabetic foot care. In addition, they can prevent or delay the formation of diabetic foot problems by identifying risk groups in the community [12]. The findings in this study revealed that, in relation to gender, the highest percentage of

the study participants, 51(51%), were female (Fig. 1). In this study the majority of the study sample age 54(54%) were between (18-28) year, 32 individuals (32%) fall within the 29-39 years range, and 14 individuals (14%) were in age 40 years and above (Table, 1), these collective results give rise to the majority of moderate age group (18 – 39 years) in the study 86(86%), were youngest. Previously, a higher percentage in the age range between (23- 28) years 41(82%) was reported by (Salim k, et al, 2024 [1]. On the other hand, the highest percentage of the participants 39(39%) were nursing certificate, followed by governmental nursing diploma 28 (28%), bachelor degree 16 (16%), private nursing diploma 14 (14%) and master degree 3 (3%) respectively (Table, 2), as clearly seen the variation in graduation levels and institutions that confer the degree, which may be one of the influencing factor in getting an excellent practice knowledge during training courses. In past research (Salim k, et al, 2024) [1], they found that the highest percentage of education among nurses is a diploma, 26(52%). In this study, there are low nursing qualifications distributed among participants, with a strong skew toward lower-level qualifications (e.g., nursing certificate and diploma levels). Globally, nursing education on diabetic foot care varies significantly, with many countries lacking structured programs (Dung et al.2025) [8]. Our study showed that the distribution of nurses according to years of experience within diabetic foot surgery, a majority of respondents (56%) reported (1 to 5 years) of nursing experience, making this the most represented group in the sample (Table 3). As many previous studies have reported a higher percentage in the same year range [1, 13]. The second most common category was 6 to 10 years of experience (32%). This study is similar to the results of a previous study done by Sadiquallah, Saddique, H., Jabeen, R. 2024) [4], while only 12% of the nurses had more than 11 years of experience. As mentioned before, nurses with advanced qualifications and more than five years of experience demonstrated better competency levels. This aligns with findings from Jeffcoate et al [13], who reported that continuous professional development and hands-on training significantly enhance nursing competencies in diabetic foot care. Concerning years of experience, only 44% of the nurses have good skills in diabetic foot care, while the majority 56% have less experience. Nurses' knowledge and experience in wound care and dressing is a method of increasing competence, skills, and confidence in practice [14].

In our study, 58 (58%) of the participants were answered yes we know the proper foot care such as feet before wearing diabetic shoes, while 42 (42%) did not, and this is a low percentage than the Egyptian [1], where they advise the patient to wear wool socks in the winter and silk socks in the summer. In this study, 55 (55%) of nurses were aware of the location of a diabetic treatment clinic, while 45(45%) did not (Table 5). Slightly more than half of nurses were aware of the appropriate diabetes treatment clinic, which is essential to support the healing. 79 (79%) of the nurses were aware that controlling blood glucose and regular check-up, while 21 (21%) reported not receiving it, indicating that slightly more than three quarters of the participants received training concerning laboratory investigation for fallow-up that will help and prevent diabetic foot problems and complications, like Controlling blood pressure and cholesterol levels which plays an important role in healing diabetic foot ulcers. This supports the findings of our study: nurses are usually well-trained to provide self-management healthcare advice to diabetic foot ulcer patients about various medical conditions. In contrast, Kaya and Karaca, in their study on the evaluation of nurses on diabetic foot care, reported that only 18.6% of nurses in the study teach patients about blood sugar control [1, 15]. In addition that 57 (57%) of the nurses were provided health education for diabetic foot ulcer patients after receiving training as impaired blood flow, and skin changes can prevent foot ulcers that often lead to gangrene and limb amputation, whereas 43 (43%) did not trained, therefore, active response for participation of nurses should occur during diabetic foot care [16 ].

This may be attributed to the fact that nurses do not have enough knowledge about foot examinations, or they do not have enough time to do foot examinations, or their job position is neither fixed nor temporary at the diabetic unit. However, it is possible for nurses to examine patients' feet quickly using the standardized forms developed for diabetic foot evaluation after sufficient training. Moreover, the knowledge level of nurses was moderate, but they did not provide patients with adequate education on this subject or examine their feet. This suggests that nurses' awareness of diabetic foot management should be increased and that they should apply their theoretical information in the clinical field [7].

## CONCLUSION:

The findings of this study revealed that the majority of nurses working in different wards at Al-Zawia Medical Center, with various educational levels, short periods of experience and practice, have moderate levels of knowledge concerning diabetic foot care. Generally, there are specific gaps, particularly in continuous training, knowledge, quality, and adequate period of practice. In addition to the above, unify the curriculum of nursing

educational degrees to be adopted by such institutions.

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## Conflict of interest:

The authors declare that there is no conflict of interest related to this manuscript.

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