

Effect of Interventional Education on the Practice of Special Diabetic Foot Care among Nurses in Rivers State

Article by Lilly-West B. R

Department of Nursing Sciences, School of Nursing, Texila American University, Guyana

E-mail: buloala2002@yahoo.com

Abstract

There has been a near absent practice of specialized diabetic foot care observed in health institutions in Rivers State, Nigeria. The study assessed the practice of diabetic foot care among 100 nurses in the University of Port Harcourt Teaching Hospital and the Rivers State Hospitals Management Board Hospitals (which include General Hospitals from all the local government areas) in Rivers state, Nigeria before and after interventional training. A one-day hands-on training workshop on diabetic foot care, adopted from the National Institute for Healthcare Excellence (NICE), was implemented to train one hundred (100) nursing practitioners. A structured questionnaire on different aspects of diabetic foot care was interviewer-administered to the nurses and scored accordingly before and after the training. Practice of foot inspection, palpation, footwear assessment and assessment of patient's capacity for self-care was found to be significantly low prior to training. An improvement in practice of the different aspects of diabetic foot care among the nurses after the intervention was observed. This buttresses the need for formal training of nursing practitioners on diabetic foot care for improvement of the quality of diabetes care in Rivers State, Nigeria

Keywords: *Diabetes, Diabetic foot, Nurses, Rivers state.*

Introduction

Diabetic foot ulcers are common and serious complications of diabetes accounting for many hospital admissions and are recognized as a major cause of amputation (Ekore et al., 2010; Bakker et al., 2012). Specifically, foot problems are responsible for 85% of non-traumatic lower extremity amputations among diabetic population (Abu-Qamar, 2014). It is estimated that 15% of those with diabetes encounter foot ulcers during their lifetime and this percentage is subject to reach 25%. (5) diabetes-related foot problems represent a challenging health and social issue, because treating such poorly healed wounds consume substantial proportion of hospital resources, and put heavy burden on patients, their families and the community as a whole.

Nurses on the healthcare team have contact with patients for 24 hours and thus play an important role in educating patients (Waheida et al., 2015). Nurses can improve the quality of life of a diabetic client 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 formation of diabetic foot problems by identifying risk groups in the community (Bakker et al., 2012; Aalaa, 2012). This study will determine the practice level of nurses' in diabetic foot care and carryout interventional measures to close out the gaps identified in their practice.

Nurses have an effective role in prevention of foot ulcers and lower limb amputation by educational interventions, screening high-risk people and providing health care (ADA, 2010; Bakker and Schaper, 2012). In Nigeria, there are still gaps in major specialized diabetes services at this higher level of care, including insulin pumps and insulin pump clinics, biothesiometry (vibration perception thresholds for peripheral neuropathy), Doppler studies with vascular ultrasound, Harris mats (foot imprinter to identify high-pressure points with potential for ulceration), pedography (Ekore, 2010; Oseni and Adejumo, 2014). Subsequently the practices of diabetic foot care are limited causing a high rate of mortality and poor

treatment outcomes (Jinadasa and Jeewantha, 2011). Interventional education has been reported to improve knowledge and practice of diabetic foot care among healthcare professionals and patients alike (Abu-Qamar, 2014; Stolt et al., 2015).

Materials and methods

Study area

The study was carried out in the University of Port Harcourt Teaching Hospital (a tertiary health institution), and all the General Hospitals under the Rivers State Hospitals Management Board (secondary health institutions).

Study sample

A total of 100 registered nurses in the medical and endocrinology clinics who were directly involved in care of diabetic patients for more than 1 year in the hospitals were purposively selected for the study. Participation was voluntary and informed consent was obtained from all nurses, while approval to carry out the study was obtained from the Research Ethics Committees of both the University of Port Harcourt Teaching Hospital and the Rivers State Hospitals Management Board.

Interventional education and training

After initial interview and observation of foot care practice by the participants, the nurses were trained on specialized diabetic foot care using the National Institute for Health and Care Excellence (NICE) diabetic foot care protocol (NICE, 2014). In the training session, the participants were given materials on diabetic foot care and prevention of diabetic foot ulcer, and also allowed to ask questions.

Data collection

A 52-item structured questionnaire on specialized diabetic foot care as prepared by Abdullah et al., (2013) was used to assess knowledge prior to and after the interventional training. The questionnaire contained three sections including: Section A: Sociodemographic information of the nurses. Section B: Academic qualifications, years of experience and type of diabetes training received by the nurses. Section C contained yes or no responses tailored questions on the knowledge of diabetic foot care in general foot care, Palpation, Auscultation, Footwear Assessment and Assessment of patient's self-care capacity. Each correct answer in the knowledge domain carried 1 mark while wrong or don't know carried 0 mark. This gave a total score range of 0 – 22 for knowledge section

Data analysis

The data generated was entered into and analyzed using the Epi Info 7 software. Completed questionnaire items were analyzed using frequency counts, percentages, means and standard deviation. T-test was used to compare the scores in knowledge before and after training. The four-point Likert scale was used to assess the practice among the nurses and a grand mean of 2.5 was considered acceptable.

Results

Table 1 shows the socio-demographic distribution of the study subjects. The mean age of the Nurses was 44.9 ± 8.9 years. Among the nurses, 6 (6.0%) were between 20 – 30 years, 34 (34.0%), were between 31 – 40 years, 30 (30.0%) were between 41 – 50 years, 27 (27.0%) were between 51 – 60 years and 3 (3.0) were above 60 years. Academic qualifications included; 5 (5.0%) Basic Diplomas, 51 (51.0%) Higher Diplomas, 36 (36.0%) Bachelor's Degree, 6 (6.0%) Master's Degrees and 2 (2.0%) PhD. Distribution of the years of practice shows that 6 (6.0%) had <5 years of practice, 21 (21.0%) had experience between 11 – 20 years and 31 – 40 years respectively, 22 (22.0%) had experience between 6 – 10 years and 30 (30.0%) had experience between 21 – 30 years.

Table 1. Socio-demographic Information

Variable	Frequency (n =100)
Mean Age (\pm SD)	44.9 \pm 8.9years
Age Group (years)	
20 – 30	6 (6.0)
31 – 40	34 (34.0)
41 – 50	30 (30.0)
51 – 60	27 (27.0)
>60	3 (3.0)
Academic Qualification	
Basic Diploma (RN)	5 (5.0)
Higher Diploma (RN, RM)	51 (51.0)
Bachelor's Degree	36 (36.0)
Masters	6 (6.0)
PhD	2 (2.0)
Years of Practice	
<5 years	6 (6.0)
6 – 10 years	22 (22.0)
11 – 20 years	21 (21.0)
21 – 30 years	30 (30.0)
31 – 40 years	21 (21.0)

RN: Registered Nurse, RM: Registered Midwife

Table 2 shows the practice of diabetic foot care among the nurses before the intervention training workshop. A Likert mean less than 2.5 indicating unacceptable practice was observed in all sections except in checking for pain (2.8), checking for sores, cut or blisters (3.0), checking for infection between the toes (2.5) and checking for previous foot ulcer (2.57). Table 3 shows the practice of Diabetic foot care after the interventional training workshop. A Likert mean above 2.5 was observed in all sections. Figure 1 is a bar chart comparing the differences in practice of different sections of diabetic foot care among the nurses before and after interventional training.

Table 1. Practice of diabetic foot care before workshop

Practice	Frequency (n)				Likert Mean
	Never	Rarely	Sometimes	Always	
Foot inspection					
1. Checked for pain	15	15	45	25	2.80*
2. Checked for sores, cut or blister	10	15	40	35	3.00*
3. Checked for Infection between the toes	5	40	49	6	2.56*
4. Checked for nail disorders	41	49	5	5	1.74
5. Checked for previous foot ulcer	21	20	40	19	2.57*
Palpation of the foot					
6. Palpation of the affected foot?	95	5	0	0	1.05
7. Checked for temperature of the foot	80	20	0	0	1.20
8. Checked for pulse of the foot	69	21	5	5	1.46

9. Checked or capillary refill	79	21	0	0	1.21
12. Auscultation of the foot	89	11	0	0	1.11
Assessment of patient's footwear					
13. Assessed the shoe style	25	55	10	10	2.05
14. Assessed the shoe size (oversize/undersize/adequate)	75	19	4	2	1.33
15. Assessed the patient's heel	36	25	21	18	2.21
16. Assessed patient's ability to care for foot (self care)	88	10	2	0	1.14
17. Sensory assessment of the foot	90	10	0	0	1.10
18. Motor assessment of the foot	90	10	0	0	1.10
19. Reflex assessment of the foot	98	2	0	0	1.02

**Criterion mean above ≥ 2.5 indicating acceptance of the rate of practice*

Table 2. Practice of diabetic foot care after workshop

Practice	Frequency (n)				Likert Mean
	Never	Rarely	Sometimes	Always	
Foot inspection					
1. Checked for pain	15	15	45	25	3.35*
2. Checked for sores, cut or blister	10	15	40	35	3.69*
3. Checked for Infection between the toes	5	40	49	6	3.77*
4. Checked for nail disorders	41	49	5	5	3.78*
5. Checked for previous foot ulcer	21	20	40	19	3.78*
Palpation of the foot					
6. Palpation of the affected foot?	95	5	0	0	3.16*
7. Checked for temperature of the foot	80	20	0	0	2.20*
8. Checked for pulse of the foot	69	21	5	5	3.75*
9. Checked or capillary refill	79	21	0	0	3.70*
12. Auscultation of the foot	89	11	0	0	3.46*
Assessment of patient's footwear					
13. Assessed the shoe style	25	55	10	10	3.76*
14. Assessed the shoe size (oversize/undersize/adequate)	75	19	4	2	3.71*
15. Assessed the patient's heel	36	25	21	18	3.67*
16. Assessed patient's ability to care for foot (self care)	88	10	2	0	3.89*
17. Sensory assessment of the foot	90	10	0	0	3.58*
18. Motor assessment of the foot	90	10	0	0	3.85*
19. Reflex assessment of the foot	98	2	0	0	3.82*

**Criterion mean above ≥ 2.5 indicating acceptance of the rate of practice*

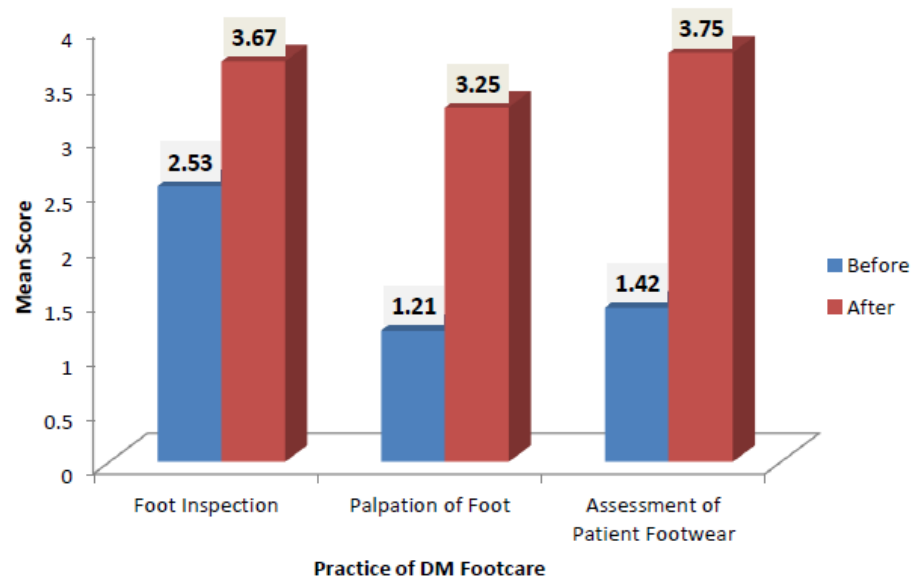


Figure 1. Comparison of Mean Scores on Practice DM Foot care

Discussion

Specialized diabetic foot care is quite important in the prevention of amputation and maintenance of a good quality of life among diabetic patients. Diabetic foot ulcers are the leading cause of amputation among diabetics worldwide. In Nigeria, the prevalence of diabetes seems to be on the rise especially in urban cities, hence the need for improved care of diabetics cannot be overemphasized. Though specialized diabetic foot care requires a multidisciplinary approach, the role of the nurse is a vital part of specialized diabetic foot care as the nurses tend to spend more time with the patients assessing the state of the feet and administering nursing care to the patients. The study was carried out to assess the knowledge of specialized diabetic foot care among the nursing practitioners.

Beneficial effects of wound care training in improving nurses' knowledge in relation to wound care have been observed in many studies (Dowsett, 2009; Saleh, Qaddumi, & Anthony, 2012; Nuru, Zewdu, Amsalu, & Mehretie, 2015). Better education and specific training in relation to wound management could optimize wound care and enhance healing, helping to reduce not only the burden on the patient and the family, but also the cost of care (Dugdall & Watson, 2009). A study comparing the pre- and post-training knowledge on wound care practices of nurses has shown that knowledge can be improved by structured educational interventions (Dowsett, 2009).

The practice of special diabetic foot care among the nurses was acceptable in terms of checking for pain, sores, infection and checking for previous foot ulcers. However, there was a generally poor practice palpation, capillary refill checking, auscultation, assessment of footwear and sensory assessment of the foot. Prior to this study there was a paucity of local research and information on the current practice of diabetic foot care among health care professionals, with many of the research showing the knowledge of diabetic foot care among healthcare professionals (including nurses). The poor practice of specialized diabetic foot care among the nurses sampled in this study could be attributed to several factors including; inadequate knowledge and capacity, near lack of prerequisite tools/equipment needed for the such practices (monofilament, ABI pressure machines etc.) as reported in previous studies (Shaïd et al., 2014; Lam et al., 2014; Nuru et al., 2015). Inadequate knowledge of nurses in many aspects of specialized diabetic foot care as observed in this study have been reportedly associated with poor and inadequate practice and ineffective diabetic foot care (Hasnain & Sheikh, 2009; Desalu et al., 2011; Lam et al., 2014).

Subsequently after intervention in this study training, there was a significant change in the practice of diabetic foot care with significant improvements in the average practice scores of the different aspects of

diabetic foot care by the nurses. This could be attributed to the hand-on training and educational methods employed during the interventional workshops organized for the nurses. There is sufficient evidence to support the use of clinically integrated teaching over stand-alone education. While stand-alone teaching improved knowledge, there were no improvements in skills, attitudes or behaviours, whereas clinically integrated teaching showed improvements in knowledge, skills, attitude and behaviour (Raza et al., 2009; Bluestone et al., 2013). Liaw et al. (2008) reported that using interactive small group workshops to disseminate locally adapted guidelines among health workers was associated with improvement in general practitioners' knowledge and confidence to manage the conditions discussed. Berkhof et al., (2010) reported that sufficient evidence from 12 systematic reviews to recommend training programmes last at least 1 day, are learner-centred and focus on practicing skills. The best training strategies within the programmes included role-play, feedback and small group discussions. Training programmes should include active, practice-oriented strategies. Oral presentations on communication skills, modelling and written information should only be used as supportive strategies all of which was employed in the course of the interventional workshop for the nurses in this study.

Conclusion

The study showed there was a significant improvement in the knowledge and practice after hands-on educational training. Combining theory and practice in training programs not only increases nurses' knowledge, but also improves their skills in diabetic foot care.

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