
Assessment of Services Provided to Patient with Diabetic Septic Foot Attending Family Health Centers for Dressing in Omdurman Locality, 2016

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Abstract

Background: Diabetes mellitus is emerging as a public health problem worldwide. Diabetic septic foot (DSF) is one of the many complications of diabetes. Thus, becoming a socioeconomic burden on the community and health system. Due to scarcity of resources and inadequate training, services provided to DSF patients are suboptimal, especially in developing countries.

Objective: This study was designed to assess services provided to DSF patients attending referred family health centers for wound dressing in the Omdurman locality, from April to May 2016. Specific objectives include assessing infrastructure of service, investigating the process in delivering the service to the patients and of course patient satisfaction with the service provided.

Methodology: An observational cross-sectional facility-based study was carried out in all referred family health centers in Omdurman. Check lists and structured questionnaires were formulated by observing the practice of health care providers' as well as providing a face to face approach when interviewing patients. Statistical analysis was done for the results using SPSS.

Results: The necessary tools, equipment and instruments were found available in all the 19 centers, yet are reports of the lack of monofilament light source, tuning forks and a doppler ultrasound. Guidelines and protocols for foot care were lacking in all centers. While only 2 doctors were trained, not a single nurse from the workforce was found to be formally trained. Most of the centers provide general laboratory investigations but failed to equip the HbA1C test. The Study reported that 141 (90.3%) of patients were not assessed for neuropathy or vascularity, about 258 patients 96.3% received referral to other hospitals for further care, and about 192 patients 61.6% were not advised in regards to suitable footwear, in 167 patients 63.1% nurses performed poor debridement of their wounds and about 163 patients 60.8% received poor foot care education by nurses. Almost all the patients (a staggering 99%) were prescribed antibiotics without conducting culture and sensitivity test. Despite this, 97% of patients reported very satisfactory results of the services.

Conclusion: Services provided to diabetic septic foot patients in family health centers are suboptimal. Efforts to improve the situation are highly recommended. This can be obtained by providing the necessary tests, equipment and instruments for work up, by developing and distributing protocols and guidelines to HCPs, by training HCPs and finally by providing education on foot care to all patients at risk.

Keywords: DSF; Service; Family health centers

Introduction

Diabetes mellitus, the new epidemic, is one of non-communicable diseases that are started to rise globally. The prevalence of diabetes (among all age groups) was estimated to be 2.8% in 2000 and

expected to reach 4.4% in 2030, expectantly rising from 171 million in 2000, to 366 million in 2030. It is reached double that in urban area in developing countries (1). Diabetes mellitus has many complications. Diabetic septic foot is a common yet severe one of these complications. It is the main cause of hospital admission and prolong hospital stays among diabetic patients. It is considered as major public health problem and associated with substantial morbidity and mortality. DSF is serious complication if not treated promptly and properly, it will progress and lead to a tragic foot amputation. About 85% of non-traumatic lower limb amputation is due to diabetic foot ulcer. The risk to develop foot ulcer during one's lifetime is estimated to be 15% (2).

Despite these staggering figures care and the service provided to DSF patients in many developing countries is hindered due to the limited resources and untrained health care providers. In a study in Armenia it was found that there are no specialized units for foot disease care, there is a lack of equipment and a scarcity of surgeons specialized in foot care (3). Many strategies for prevention and treatment of diabetic foot disease are evolving but still facing many challenges and barriers, including poor access to services, scarcity of resources and cost of treatment. In last decade the rate of lower limb loss has decreased in US due to the improvement of coordination in the multidisciplinary care approach. This has reformed the health care system and in turn gave better access to care (4). According to the International Working Group on Diabetic Foot (IWGDF) records, it is estimated that there is certified podiatrist working in only 35 countries. That means, approximately, a shocking 180 countries are without any podiatry services. 80% of DM patients are in the developing countries which lack the podiatry services. However, some countries showed improvement of successful foot care training; these countries are India, Tanzania, Egypt and Pakistan which involved step-by-step program. The IWGDF encourage all countries to train podiatrists at any level of university for the sake of short term and long-term objectives (5). In Sudan limited public centers qualified and specialized in diabetic foot care include Jaber Abu Aiz, which located in the Khartoum locality with limitation of accessibility to other areas. It is considered as the only governmental multidisciplinary tertiary care center for diabetic patients who provide care for 150 patients per day (6). Other public health centers and public facilities have suboptimal foot care due to lack of resources and untrained health providers in diabetic foot care management. Proper management of DSF at early stages prevents and minimizes lower limb amputation by up to 50-70% according to many studies (7). This study was designed to assess services provided to DSF patients attending referred family health centers for dressing, no more studies were done in this area.

Methodology

Study design

This is descriptive cross-sectional facility-based study carried out in the period from April- May 2016.

Study Area

Omdurman is considered by many as the backbone of capital of Sudan, Khartoum. It consists of 3 localities, the Omdurman locality, Umbanda locality and the Korari locality. It has borders from the north by Kurdufan state, from the south by the White River state and the Khartoum locality, from the east by the Nile River state and the Bahari locality. Omdurman has a population of 2655582, and is covered by 85 public health centers, 19 of which are referred family health centers which house many different specialties.

Study setting

Referred family health centers provided service to around 60,000 to 65,000 of the population, covering an area diameter of 5000 km². The main service provided is family health consultations from consultants of various fields (mainly physicians, surgeons, pediatric physicians and obstetricians). They also provide psychiatric services, social services, nutrition therapy, routine investigations

and other diagnostic services (e.g. x-ray, ultrasound), premarital counseling, training of health care providers and have data base storages.

Study population

Sample size

Family health centers: All the referred family health centers were included (19 centers).

Health care providers: All health care providers providing care for patients during time of data collection were included which were doctors and nurses.

Patients: The number of patients during period of which the study was undertaken were 268 patients. Specialized centers were excluded. Recently employed health care providers and patients with malignant ulcers were also excluded from those refused to participate in study.

Variables

Structure attributes: necessary instruments and equipment of wound dressing rooms, laboratory investigations, x-ray, drugs and a professionally trained staff of doctors and nurses for providing care. Process of delivering services i.e. dressing, debridement, culture and sensitivity taking health education of patient. Patient's socio demographic characters and patient satisfaction with the service provided.

Data collection tools /methods

A check list assessment tool was modified from the WHO for assessing infrastructure and observing practice of health care providers (doctors and nurses) by using a structured questionnaire. It was categorized in terms of excellent, good and poor practice in comparison to guidelines and protocols adopted by Jaber Abu Aizcenter which is the only governmental specialized center recognized in multidisciplinary care for diabetic patients in Sudan. Patient satisfaction was assessed using structured questionnaires completed through a face to face interview categorized in terms of unsatisfactory, just satisfied and highly satisfied with the services provided. Data analysis was done using statistical package of social science (SPSS version 17) results presented by using tables expressed in percentages.

Results

This is cross-sectional study carried out in the 19 referred family health centers in the Omdurman area localities (Omdurman, Umbada and Karrari) during the period from April-May 2016. Numbers of participants in the study were 268 DSF patients. 2 subjects refused to participate and 2 severely ill patients were excluded from study.

Regarding infrastructure of facilities most of them were found to have the necessary routine equipment and instruments but lacked instruments for assessment of diabetic foot mainly monofilament light and tuning forks and Doppler in all 19 centers. Functioning x-ray machine was founded in 15 centers and working laboratory services in the 19 centers. From reviewing laboratory investigations, there were routine investigations in all centers; however there is a deficit of HbA1C tests in all centers.

With regards to the staff providing the service, the number of health care providers in the 17 centers had a total of 9 surgeons and 7 physicians' educators in 12 centers, and total of 22 nurses in the dressing room in all health centers. None of nurses who provided dressing for patients were trained in diabetic foot care and only 2 doctors were trained in foot care. Essential drugs were available in almost all centers but some were low in stock on insulin and parental antibiotics.

Protocols and guidelines for diabetic foot care were absent in all centers. Education materials (i.e. posters) were available in 10 centers. Application of infection control measures, i.e. safety boxes, soap and sanitizer dispensers were available in 19 centers and gloves and sterile dressing in 17 centers.

Medical waste disposal according to state guidelines were applied in 11 centers. General environment was moderate in most centers.

By reviewing the practice of health care providers about 88% of doctors greeted patients well. None of the patients were assessed correctly regarding signs and staging of wounds and infection. Almost 10% and 2.6% respectively were assessed for neuropathy clinically and by instruments. Only 7.5% assessed for vascularity clinically, none by instruments. Around 90.3% received referral to some related care. Almost 99% prescribed antibiotics not based on culture or sensitivity. About 63.1% of the nurses performed poor wound debridement and 60.8% provided poor foot care education.

Regarding the socio demographic characters of patients about 87.3% were male, most in the age group of 41-60 years. About 98.8% live in Khartoum, while 73.5% attended primary school. Nearly 21.6% had a governmental position, about 20.1% were physical workers, and 21.3% are freelance workers. 84.7% had health insurance. Most of them had diabetes for duration of 6 to 10 years. With regards to patient satisfaction 97% of patients were highly satisfied with the service provided and 3% are just satisfied with the service provided.

Discussion

Diabetic septic foot is regarded as a heavy burden on public health in many developing countries. The lack of equipment compounded with the abundance of untrained medical health professionals and the ill synchronicity of the multidisciplinary specialized foot care team has left Sudan extremely susceptible to carrying that burden. In addition, patients present in late stages adding stress to the system. This itself is due to many factors such as poor education and knowledge on basic foot care, low socioeconomic status. Thus, diabetic septic foot is challenge we are yet to overcome.

The aim of this study carried out from April-May 2016, was to assess the service provided to patients with diabetic septic foot in various family health centers in the Omdurman area locality. Data was collected by using check-list format to review the infrastructure of the service. The practice of health care providers was observed by using a structured questionnaire. Patient satisfaction was assessed also. It was found that almost all of the centers had the necessary requirements; a physical building, the instruments and equipment needed for the service. Despite this there were no special DSF units and lacked the specific instruments for assessment of diabetic foot (e.g. monofilament light and a doppler ultrasound). This may be explained by the fact that it is primary care not tertiary care. This is in line with another study conducted in south Ghana (8). The study revealed that they too lacked in the provision of the HbA1c test, which is necessary for monitoring glycemic control of diabetes and lacked KFT in some centers. A similar in study conducted in Al Jazira state, Sudan showed the HbA1c test and KFT worker below standard (9). This gap in the service leads to problems for the work force that rely on the results of these tests for diagnosis. Thus leading to these tests is available in private labs which are costly adding to the vicious cycle.

The shortage of surgeons and physicians in two thirds of the centers, specifically those in the rural centers may be explained by the low attendance of patients in those specific centers. Poor performance of health care providers was recorded here also, like all other developing countries, especially in Africa which show explicit shortage of resources, scarcity of materials and suboptimal training of HCPs.

Effective management applied is still poor and inadequate. This reflects poor regulation and coordination between health centers administration and the higher health authority at the level of FMOH and SSMOH. A similar study was done in Irish where the management was reviewed and lead to positive response (10). The quality department was lacking in most of the facilities which is crucial for the safety and effectiveness of service and if a favorable outcome of the service is to come about, it therefore requires continuous monitoring to detect weaknesses and gaps in the system. Although the results show subpar services provided to patients, most still expressed satisfaction of service. This may be explained by the fact that most had health insurance and easy accessibility of the service, which is similar to study done in Scotland (11).

Conclusion

Although the routine equipment and instruments were provided, specific instruments needed for the service of diabetic septic foot care were not. Basic tests such as Hb1Ac are in short along with specialists and a trained workforce. There is poor practice, knowledge and management with regards to diabetic septic foot.

Recommendations

- Developing and distribution of national guideline and protocol for management of diabetic septic at all levels FMOH, SMOH, localities.
- Training of health care provider on these protocols and guidelines.
- Improving quality of care by providing necessary equipments and instruments.
- Strengthen the management system in these centers and developing quality department and strength referral system and coordination and developing multidisciplinary team.
- More researches.

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Table 1: Availability of equipment/staff in FHCs (19) in Omdurman locality.

Items	Frequency	Items	Frequency
Table trolley	19	Other instruments in FHCs	19
Scissors	19	Education material (poster)	10
Artery forceps	19	Technology(computer)	19
Toothed tissue forceps	18	Supply of oral antibiotic	19
Sterile dressing	19	Availability of parental antibiotics	15
Masks	19	Safety box	19
Gloves	19	Container for non-sharp objects	19
Sterile gauze	17	Soaps/ alcohol	19
Sharp blade/scalpel	19	Proper medical waste disposal	11
Sterilization equipments	19	Other equipment/instruments	
Sphygmomanometer	19	Education material (poster)	10
Stethoscope	19	X-ray	15
Referral cards for other	13	Laboratory	19
Guideline /protocols	0	Availability of emergency drugs	13
Monofilament	0	Suitable environment	
Tuning fork	0	Clean safe drinking water	15
Doppler	0	Chairs/seats	19
Staff at centers		Clean bath room	15
Educators	12	General cleanliness	
Surgeons	9	Good	8
Physicians	7	Moderate	9
Family doctors	17	Bad	2
Nurses	22		

Table 2: Availability of Laboratory investigation.

Item	Frequency
Urine general	19
CBC	19
Fasting blood sugar	19
Random blood sugar	19
GTT	14
HbA1c	0
Blood urea	17
Serum creatinine	15
Lipid profile	11
Total	19

Table 3: Performance of care providers towards patient with DSF (Doctors).

Item for assessment	Frequency	%
Health care provider welcomed the patient in good way	237	88
Patient were assessed correctly regarding grade of ulcer and sign of infection	52	20
Wounds were classified according to guideline	0	0
Patients were assessed for neuropathy clinically	27	10
Patients were assessed for neuropathy using instruments	7	2.6
Patients were assessed for vascularity clinically	20	7.5
Patients were assessed for vascularity using instruments	0	0
Patient were referred to related care	10	3.7
Antibiotics prescription was based on culture and sensitivity	3	1
Total	268	100.0

Table 4: Practice of nurses towards patients with DSF.

Welcoming of patients	Frequency	Percentage (%)
Debridement	10	3.7
Good way	230	85.8
Excellence	28	10.6
Debridement		
Not done	19	7.1
Poor	169	63.1
Appropriate	80	29.9
Foot care education		
Not done	15	5.6
Poor	163	60.8
Appropriate	11	4.1
Good	79	29.3
Dressing of wound		
Poorly done	13	4.85
Done properly	255	95.14
Total	268	100.0

Table 5: Patient's characteristics.

Gender	Frequency	Percent
Male	234	87.3
Female	34	12.7
Total	268	100.0
Ages		
18-40 Years	3	1.1
41-60 Years	144	53.7
>60 Years	121	45.1
Total	268	100.0
Residence		
Khartoum	254	94.8
Outside Khartoum	14	5.2
Total	268	100.0
Education		
Illiterate	39	14.6
Basic education	197	73.5
University and above	32	11.9
Work		
Government employees	58	21.6
Private employers	19	14.6
Workers	70	26.1
Free business work	127	47.3
Retired	14	5.2
Home wives	30	11.2
Total	268	100
Duration of diabetes, 5 years or less	32	11.9
6-10years	122	45.5
11-15 years	77	28.7
More than 15 years	37	13.8

Table 6: Overall patients' satisfaction.

Item	Frequency	Percent
Just satisfied	8	3.0
Highly satisfied	260	97.0
Total	268	100.0