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Research Article

Experiences of Type 2 Diabetes Mellitus Patients with Nonhealing Wounds in Ghana

—Lauren Barker

I traveled to Ghana, Africa in summer 2016 to study diabetic wounds at Komfo Anokye Teaching Hospital (KATH) in the city of Kumasi. While conducting my research I would walk through the overcrowded medical wards where some patients laid on mattresses on the floor because there were not enough hospital beds. Each day I passed by one patient, who I will call Immanuel. Immanuel relied on someone to carry him to a wheelchair because of a large wound on his thigh that left him unable to walk. He always smiled at me as I passed. One day I stopped to talk to Immanuel. Twi is the native language spoken by Ghanaians, so with a nursing student translating for me, I learned that he had no insurance to cover his medical bills and no family who came to visit him. I wanted to do something to help him, and he had one small request. He wanted some “Milo,” which is a drink mix similar to hot chocolate. The next morning I came back and brought Milo from the market to Immanuel. With this small gesture, I showed him that someone cared. The smile on his face that day was something I will never forget, and it will affect my future nursing practice as a reminder to demonstrate kindness and concern for every patient.

Ghana is transforming from a developing nation into a middle-income nation. This transformation has led to the development of chronic conditions commonly seen in developed Western countries, such as diabetes. A complication of diabetes, diabetic nonhealing wounds, is a growing problem in Ghana as well as in the United States. As a nursing student at the University of New Hampshire (UNH), I applied for a Summer Undergraduate Research Fellowship (SURF) Abroad grant to study how the lack of patient education and patient understanding of diabetes influence the development of diabetic wounds. I hope that sharing my experience and findings with my peers will show them how important diabetes education and prevention is in Ghana as well as in the United States.



Ghana (in red) is located on the west coast of Africa. Credit: Rei-artur pt en Rei-artur blog, LocationGhana, CC BY-SA 3.0.

Living Like a Ghanaian

In preparation for my travels, I consulted with Dr. Yaw Nsiah, who is a Ghanaian-American professor at Eastern Connecticut University. He gave me guidance and advice for what to expect in Ghana, where I would be staying with his relatives. Despite my conversations with Dr. Nsiah before I left the United States, I was surprised by the culture shock I felt once I arrived in Ghana. When I stepped off the bus following the long ride from the city of Accra, where my plane landed, to Kumasi, where I would be working, all eyes turned to me and stared because I was the only white person in sight. I quickly learned that “oburoni” is the word for white person in the local language of Twi, because both children and adults made this exclamation everywhere I went.



The author eating a traditional Ghanaian dish known as “gobe.”

Once I arrived in Ghana, the process of KATH Ethics Board approval of my research was lengthy, as I explain later. While I waited two weeks for approval, I was able to travel around Ghana with a group of students visiting from Eastern Connecticut University, who also stayed with Dr. Nsiah’s relatives. We traveled to national parks, where we went on a safari, and to swinging bridges in the jungle. We went to a few local community hospitals, which were very different from the large teaching hospital where I did my research. Once I received approval from the KATH Ethics Board, I began working at the hospital Monday through Friday from 8 a.m, until midafternoon. At first I was living in the village of Asamang, but using public transportation, it took two hours to get to the hospital. This was exhausting, so I began staying during the work week with a different member of Dr. Nsiah’s

family in a suburb of the city of Kumasi, which made my commute about an hour. On weekends I traveled and often went to church with my host family, who were Seventh-day Adventists. Although my research project was the focus of my trip, I was able to immerse myself in the culture and learned to live like a Ghanaian, including learning how to eat soup with my hands. This familiarity with the culture allowed me to connect with and better understand the experiences of the participants in my study, such as the difficulty of transportation to the hospital for medical treatment that some of them described.

T2DM and Nonhealing Wounds

Type 2 diabetes mellitus (T2DM) is a chronic disease that has become more prevalent in Ghana. T2DM accounts for over 90 percent of diabetes in sub-Saharan Africa, with T2DM increasing the risk of cardiovascular disease, renal failure, tuberculosis, pneumonia, and sepsis (Hall, Thomsen, Henriksen, and Lohse, 2011). The rise in T2DM in Ghana has been attributed to the Westernization of the diet, which is seen daily as vendors sell dense cake bread and fried fish to people waiting in traffic. The increased availability of this type of fast food in Ghana has led to a decrease in traditional meals prepared in the home, including staples such as light vegetable soup with rice, and an increase in consumption of fried, processed foods (Omari et al., 2013). Widespread access to electricity and

mobile devices has led to less physical activity and a more sedentary lifestyle, which has also contributed to an increase in T2DM. According to the International Diabetes Federation (2013), about 440,000 people, or 3.4 percent of adults between the ages of 20 and 79, have T2DM in Ghana. This number is projected to double within the next 20 years. Over 8,500 Ghanaians died as the result of this disease in 2013. In comparison, there were approximately 24 million Americans with T2DM in 2013, or 10.9 percent of the population between the ages of 20 and 79. There were over 190,000 deaths as a result of diabetes in the United States in 2013 (International Diabetes Federation, 2013).

Currently, the Ghanaian health system provides universal services for diabetes treatment. However, services for prevention, early diagnosis, prevention of secondary complications, and self-management education are less available to patients (International Diabetes Federation, 2013). The limited resources for prevention and education on diabetes management pose a problem for Ghanaians diagnosed with T2DM.

Many people with T2DM experience the complication of nonhealing wounds, commonly of the foot. Chronically elevated blood-sugar levels can lead to the development of diabetic peripheral neuropathy, which is nerve damage leading to numbness, loss of sensation, and sometimes pain in the affected extremity. The loss of sensation can prevent patients from noticing excessive heat or cold, pressure from a poorly fitting shoe, or an injury from an object. A blister, small cut, or other wound anywhere on the body can quickly become a wound that won't heal due to poor blood flow, which is also a result of chronically high blood-sugar levels (Rowe, 2017). Further, high blood-sugar levels inhibit the development of healthy tissue once a wound has formed, making the healing process difficult. Chronic diabetic wounds pose a serious risk for T2DM patients in Ghana. The wounds, once developed, are difficult to heal and can lead to infection and eventually amputation of the affected limb.

Patient Interviews at KATH

I worked with my UNH mentor, Dr. Gene Harkless, and my foreign mentor, Dr. Martin Agyei, to create a proposal for the SURF Abroad grant. Dr. Agyei is a well-respected dermatologist who works extensively with diabetic wounds in Ghana. After my SURF proposal was accepted, I submitted a proposal to the UNH Institutional Review Board (IRB), as my study involved human subjects. Once in Ghana, I also submitted a proposal to the review board at KATH. One of the hardest aspects of this experience was the ethics approval process in Ghana. Wi-fi access is difficult in Ghana, and Dr. Agyei was not clear on the necessary requirements for approval. I had to resubmit my proposal a few times before the ethics board granted me permission to complete my research.

While doing a literature review, I didn't find any published studies that described the Ghanaian T2DM patient's experience with diabetic nonhealing wounds. Therefore, I sought to describe the beliefs that



The author and her mentor in Ghana. Dr. Agyei

Ghanaian T2DM patients hold about their nonhealing wounds, examine the care-seeking reasons and behaviors of these patients, report the self-care activities these patients engage in to manage their nonhealing wounds, and describe the experience of patients as they manage their wounds. My aim was to seek twenty adults who would be willing to participate in semistructured interviews at the diabetic clinic at KATH. Inclusion criteria for the study were that the study participant had a diagnosis and duration of T2DM for at least two years, a current diabetic nonhealing wound that had not been amputated, and no known psychiatric disorder.

After beginning my research in the diabetic clinic, I realized that most of the patients were there only for routine prescription refill appointments. As a result, I expanded my research setting because patients with diabetic wounds receive treatment in other areas of the hospital as well as in the diabetes clinic. I interviewed patients on the inpatient medical and surgical wards as well as in the outpatient general and plastic surgery consulting rooms. Expanding my outreach allowed me to reach my target sample number.

I asked the patients demographic questions as well as questions on previous self-care and medical treatment for diabetes and diabetic wounds (for the actual interview see the Appendix). While conducting the interviews, I wrote down notes and nonverbatim responses from patients. Most of the patients spoke little English but spoke fluent Twi. As a result, I relied on nurses and nursing students to translate. A limitation to requiring a translator is that everyone interprets things differently, so some responses could have been misinterpreted. One word that I learned was “kafra,” which means, “I’m sorry.” I was able to connect and empathize with my patients by using this term.

Another challenge was that it was difficult to find an appropriate time and setting for the interviews. I was able to perform some interviews in a quiet, private space, but for others the only time I had with the patient was while they were getting the wound dressing changed in the consulting room or diabetic clinic. I addressed this issue by reviewing patient charts and approaching them before their appointment with the doctor.

After performing the interview, I observed or assisted with the dressing change of the wound and took pictures if the patient gave permission. I noted the medical treatment and followed up with the patient if they visited the consulting rooms again or were admitted to one of the wards. Along with assessing and treating diabetic wounds, I learned how to assess and treat other types of wounds, including burns and postsurgical wounds.

Preliminary Findings: Life with T2DM and Nonhealing Wounds in Ghana

In total, I interviewed thirty-two patients who met the criteria and whose wound treatment I was able to observe. Once back at UNH in fall 2016, I started my data analysis, beginning with entering the categorical and quantitative data into SPSS (a software program for quantitative data). Next, I began examining the qualitative data that I had gathered through open-ended questions. Some initial insights have emerged from both the quantitative and qualitative data.

First, the majority of the research participants did not have the resources to check their blood-sugar level apart from their clinic visits. This is a key problem, as close monitoring of blood sugars to keep them in normal range is often the most important step in promoting wound healing. In addition, a few patients had been admitted to the emergency department because their blood-sugar level was critically high.



The author performing a dressing change for a diabetic wound.

In addition to limited access to home glucose monitoring, there appears to be a lack of understanding about what causes diabetes. Some study participants mentioned a genetic link to diabetes but did not know any other factors contributing to diabetes, such as being overweight. Many understood that dietary changes such as avoiding sugar and starches and avoiding eating at night are all ways to manage diabetes, but few mentioned increasing exercise as a way to manage their disease.

This variability in understanding the cause and disease process of diabetes was also related to the third finding: Some of the study participants had delayed medical treatment or relied on herbal treatments first, due to financial reasons or lack of understanding about the severity of the wound. This delay could have increased the risk of their wound progressing and becoming more difficult to treat.

Professional and Personal Outcomes of This Experience

My findings contribute to a greater understanding of the way people with T2DM nonhealing wounds manage their illness and receive care in the Kumasi region of Ghana. This small, descriptive study may provide useful information about the lack of understanding patients have of diabetes and diabetic wound management. Health care providers may use this information to better support patients in self-management of diabetes and diabetic wounds. Based on my findings, I believe that patients need a better understanding of the risk factors for diabetes and of preventive measures, including dietary changes and exercise. I recommend that providers educate their patients on ways to prevent diabetic wounds, such as inspecting feet daily and wearing protective, closed-toed shoes. It is important that providers emphasize the need to seek medical evaluation right away if a wound develops. Patients also should be encouraged to have their blood sugar checked frequently. The needed frequency is different for each patient, but in the United States it is recommended that those with T2DM check their blood sugar at least daily, and more frequently for those taking insulin (Thompson, 2010).

Going forward, more research is needed in other regions of Ghana to compare the experiences of Ghanaians with diabetes and diabetic wounds to the experiences of the patients in this study done in Kumasi. Other research should look at the culture of health care in Ghana and whether this culture of health care influences the providers' ability to educate their patients. For example, is it standard practice simply to treat the patients instead of taking the time to teach them about their disease and its treatment? If so, how can that culture of care be changed?

With my work in Ghana, I realized how passionate I am about diabetes education as well as wound care. The experience also helped me reach my educational goals by serving as the basis for my senior honors thesis and my Undergraduate Research Conference presentation. In the future, I hope to become an adult-gerontological nurse practitioner and specialize in wound care. This experience in Ghana helped to solidify my goal to specialize in wound care. One of the many things I learned from my experience in Ghana was how a small act of kindness, such as bringing Immanuel his favorite drink, makes an important impact.

This once-in-a-lifetime opportunity would not have been possible without support and guidance from many individuals. First of all I would like to thank my UNH faculty mentor, Dr. Gene Harkless, one of the most well-connected and knowledgeable people I have ever met. Your patience and support of my dream to do research abroad were invaluable. Thank you to Dr. Martin Agyei, my mentor in Ghana, who found the time in his extremely busy life to support me in my research. Thank you to Dr. Yaw Nsiah and his family, who generously allowed me to stay with them while I was in Ghana. Thank you to my family for their unwavering love and support on this journey and in life. Thank you to everyone at the Hamel Center for Undergraduate Research who made this opportunity possible, including the generosity of the donors for the Summer Undergraduate Research Fellowship (SURF) Abroad grant I received, Mr. Dana Hamel and Mr. Ellis Woodward.

Appendix

Interview Guide

Demographic information

1. Age
2. Gender
3. Village name/ location
4. Education level
5. Household make-up
6. Occupation
7. Duration of T2DM
8. Type of wound—describe / measure / duration / complications
9. Other wound—describe / measure / duration / complications
10. Other T2DM complications—neuropathy / retinopathy / nephropathy?

Diabetes management

1. Treatment
 - Diet and diet education
 - Oral agents—specify when possible
 - Insulin—specify when possible

- How often blood sugar is tested
- Most recent fasting or random blood-sugar level
- Most recent blood pressure reading

Interview questions

1. Tell me about your diabetes. What do you believe is the cause and/or explanation of your diabetes/nonhealing wound? If you can, explain how you know this. Have you previously been educated about diabetes? Any family members with diabetes?
2. What has been the experience of having diabetes/a nonhealing wound?
3. What have been the consequences of having diabetes/a nonhealing wound? Positive? Negative?
4. Please explain how/why you sought care for your diabetes/nonhealing wound? Tell me more about the facilitators and barriers in seeking and receiving the care.
5. Please share with me how you manage your diabetes/nonhealing wound on a day-to-day basis. What are the self-care activities you do?
6. What do others do for you? Besides what is prescribed by the doctor, where else do you get/seek help? Traditional medicine? Spiritual healing? Any other treatments?
7. Please share with me any other thoughts/ideas about your diabetes/nonhealing wound that you believe are important.

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Author and Mentor Bios

We should all be thankful for people like nursing major **Lauren Barker**, who acknowledges that “wounds may not be everyone’s forte.” In summer 2016, Lauren devoted her energy to understanding and treating diabetic wounds in order to shed light on patient experiences in Ghana. A University Honors Program student from Kingston, New Hampshire, she planned her Summer Undergraduate Research Fellowship (SURF) work with the help of University of New Hampshire faculty mentor Dr. Gene Harkless and Ghanaian Dr. Martin Agyei. She is grateful for the special connections she made with fellow health-care workers in Ghana. Lauren learned the importance of being patient and flexible while conducting research, and even though the medical support she could provide her Ghanaian patients was limited, she learned the importance of being empathetic and listening to their unique experiences. Lauren will graduate in May 2017. She plans to gain experience working as a registered nurse in acute care before studying to become a nurse practitioner and specializing in wound care. She hopes that her *Inquiry* article will help inform readers, many of whom know someone with diabetes themselves, about the importance of proper diabetes education and treatment.

Gene Harkless DNSC, ARNP, is an associate professor and chair of the Department of Nursing at the University of New Hampshire. A family nurse practitioner who has taught at UNH since 1985, Dr. Harkless is a frequent mentor and enjoys working with students such as Lauren as they take on international endeavors. “For past recipients of a grant for international research, it has been life-changing. They create a whole new lens through which to see the world,” she said. “Students grow to understand their own academic abilities, to ask a question and search for answers and perspectives outside of expert text materials.”

Martin Agyei is a dermatologist at Komfo Anokye Teaching Hospital (KATH) in Kumasi, Ghana. He specializes in teaching and in research into skin manifestations among people with diabetes and people infected with HIV. He became involved in Lauren Barker’s project through his acquaintance with Professor Gene Harkless, Lauren’s UNH mentor. Dr. Agyei assisted Lauren in looking for patients she could interview who were at KATH for surgery related to diabetes or for glycemic controls for their diabetes. Dr. Agyei says that “Lauren was very serious about her research and very kind to her patients.” He and other medical staff at KATH enjoyed working with Lauren very much, truly appreciated her assistance with patient care, and hope that she might visit Ghana again. According to Dr. Agyei, Lauren’s “research has come to open our eyes to see some of the common causes for amputation among diabetics, many of which could be avoided through education.”