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# Causes and Concerns of Diabetic Subjects with Lower Limb Amputation(s) in Trinidad

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***Authors' contributions***

*This work was carried out in collaboration between all authors. Authors BSN, RR, AR, VS designed the study and written part of the article. Author NM analysed the data and written introduction part of the article. Author ASN written some part of the discussion and edited the article. All authors read and approved the final manuscript.*

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## ABSTRACT

**Aim:** This study seeks to examine the major causative factors for lower extremities amputation (LEA) amongst a Trinidadian diabetic patients as well as to analyse the resulting concerns of said patients.
**Study Setting and Design:** This study mainly comprised patients who were subject to or will be subject to lower limb amputations of differing degrees and were selected via a random stratified methodology. Questionnaire used was designed as to attain data on patient medical history as well as intrinsic and opinionated results.
**Methods:** This study comprised 35 patients who were subject to LEAs of differing degrees and

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these patients were selected via a random stratified methodology. After obtaining informed consent questionnaire were used to attain subjective and objective data as it pertains to the cause and effects of lower limb amputations. Statistical analysis was done using SPSS to test for distribution and correlations.

**Results:** A number of factors were taken into account and measured as it pertained to the cause of having an amputation. Our study noted that the major factors like diet, alcohol consumption and infection became the reason for amputation.

**Conclusions:** The data of this study showed that the patients are to ensure better self-care and preventative lifestyle changes are to be implemented as to prevent the need for amputations.

*Keywords: Causes and concerns; diabetes, lower extremities amputation.*

## 1. INTRODUCTION

Diabetes in itself accounts for over a million deaths annually with an additional 3 million deaths as a result of side effects [1]. The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014 [1]. Trinidad is also heavily affected by diabetes with it accounting for the second leading cause of death within the region [2]. Patients who are affected by diabetes also fall victim to complications such as cardiovascular distress, renal failure and possible amputations [1].

In a study conducted in 2014 by Cawich et al. [3] aimed to investigate event outcomes of early vs delayed medical treatment after home remedies of diabetic foot infections. They concluded that there are negative outcomes when patients delay conventional medical therapy in favour of home remedies and that persons with diabetes who wish to try home remedies are encouraged to seek medical advice in addition as a part of holistic care.

The economic impact of uncontrolled diabetic foot infection places an enormous burden on the government controlled public health system leading to a lack of resources for optimal treatment thus, essentially leading to more amputations. In a study done by Cawich et al. [4] investigating the economic impact of hospitalisations for diabetic foot infections in a Caribbean nation, 446 hospitalised persons with diabetic foot infections were identified in a catchment area of 400, 000 yielding approximately 0.75% annual risk for person with diabetes to develop foot infections. The mean duration of hospitalisation was 22.5 days. Sixteen patients (3.6%) were treated conservatively and 430 (96.4) were treated with some form of operative intervention. Each year, the government of Trinidad and Tobago spends US $85 million, or 0.4% of their gross domestic product, solely to treat patients hospitalised for diabetic foot infections. With this level of national expenditure and the anticipated increase in the prevalence of diabetes, it is necessary to revive the call for investment in preventive public health strategies.

As glucose management worsens in diabetic patients there is a degradation of sensory and motor functions in the lower extremities amputation (LEA). As a result, abnormalities in the pattern of walking and plantar pressures in the feet develop. This results in peripheral neuropathy leading to the development of ulcers. Ulcers are the initial sign to worsening diabetes leading to limb amputation [5].

With respect to the occurrence of amputations, it has been noted that persons within the Caribbean have been reported to have the highest rates of Lower extremity amputations [6]. Herein it was noted that patients were subject to LEAs mostly due to inadequate footwear. However other factors may be at play as it pertains to major causative factors such as age, sex, medication and diet [7,8].

Furthermore, patients' concerns after the occurrence of the LEA is also a realm which requires examination. Whilst the survival rates have been aptly studied as it pertains to patients who have undergone surgery [9]. The general concerns of the patients can be investigated through the survey using the questionnaire. In this regard, this study seeks to investigate both the causative factors for LEAs amongst diabetic patients as well as concerns of said patients within the Caribbean island nation of Trinidad.

## 2. MATERIALS AND METHODS

Data was collected from patients attending major clinics and admitted in Port of Spain General Hospital (POSGH), San Fernando General

Hospital (SFGH), and Eric Williams Medical Sciences Complex Hospital (EWMSC). These are the major hospitals of Northern, Southern and Western regional health authorities. This study mainly comprised patients who were subject to or will be subject to LEAs of differing degrees and these patients were selected randomly. We have used questionnaire which were given to participants to complete and returned questionnaires were only taken into consideration if over 85% of the questions were answered. The questionnaire was designed as to attain data on patient medical history as well as intrinsic and opinionated results. This study was approved by the University of the West Indies, St. Augustine Campus ethics committee (CEC 193/05/16). Informed consent was obtained from all individual participants included in the study. Once data was collated, it was then subject to statistical analysis using SPSS package.

## 3. RESULTS

### 3.1 Clinical Data

Altogether, 35 patients returned acceptably completed questionnaires with there being an even representation of males and females averaged 57±11.8 years of age. Based on the attained data it was firstly noted that most of the patients were diabetic for more than 20 years as this reflected 35.3% of the sampled population. Furthermore the average BMI was recorded at 27.8 ± 5.2 and this in turn stipulated a mostly overweight sample. It was also noted that of these patients, 19 (54.3% of valid respondents) reported having hypertension whilst 16 (45.7% of valid respondents) reported peripheral vascular disease. Only 1 patient (2.9% of valid respondents) presented with venous insufficiency. A subset of the population was also questioned about their medical history as it relates to complications to the lower limbs (Fig. 1). Herein, it was noted that the most common complications which were previously existing were peripheral vascular disease and hypertension.

Of these patients, 16 (45.7%) stated that this was their first amputation whilst 14 (40%) stated that it was not. Of those who were subject to a previous amputation it was most commonly a previous toe amputation with that reflecting 7 of the 14 patients. Furthermore of these patients, 8 (22.9% of sample population) presented with foot lesions. Of these persons, the causative factors were explored (Fig. 2) and it was noted that ulcers accounted for the majority of cases.

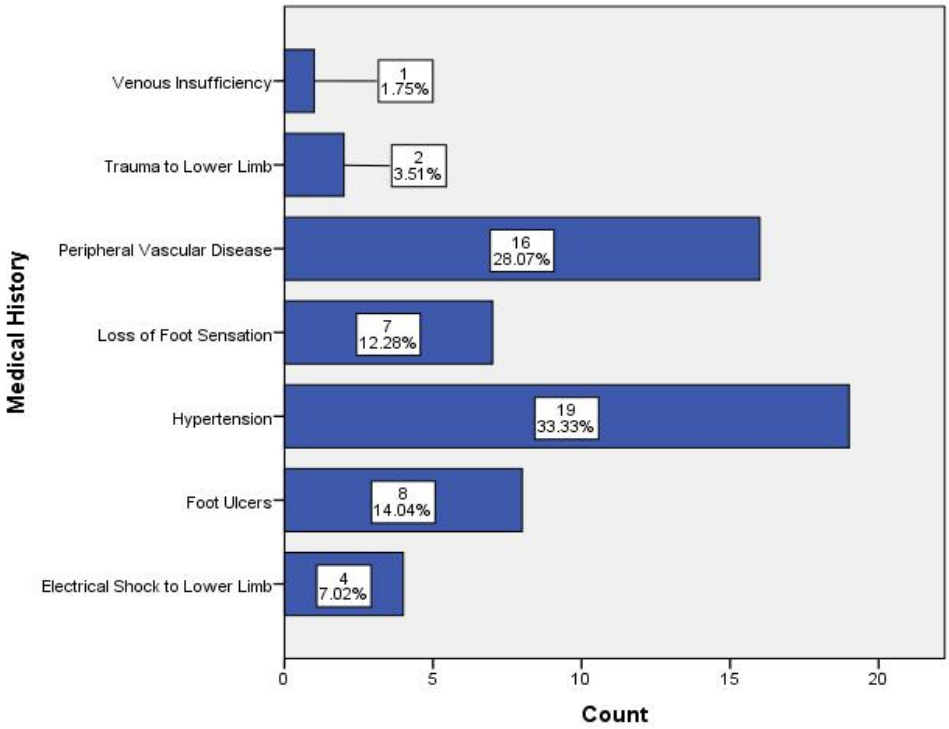


**Fig. 1. Reported pre-existing complications amongst sampled patients**

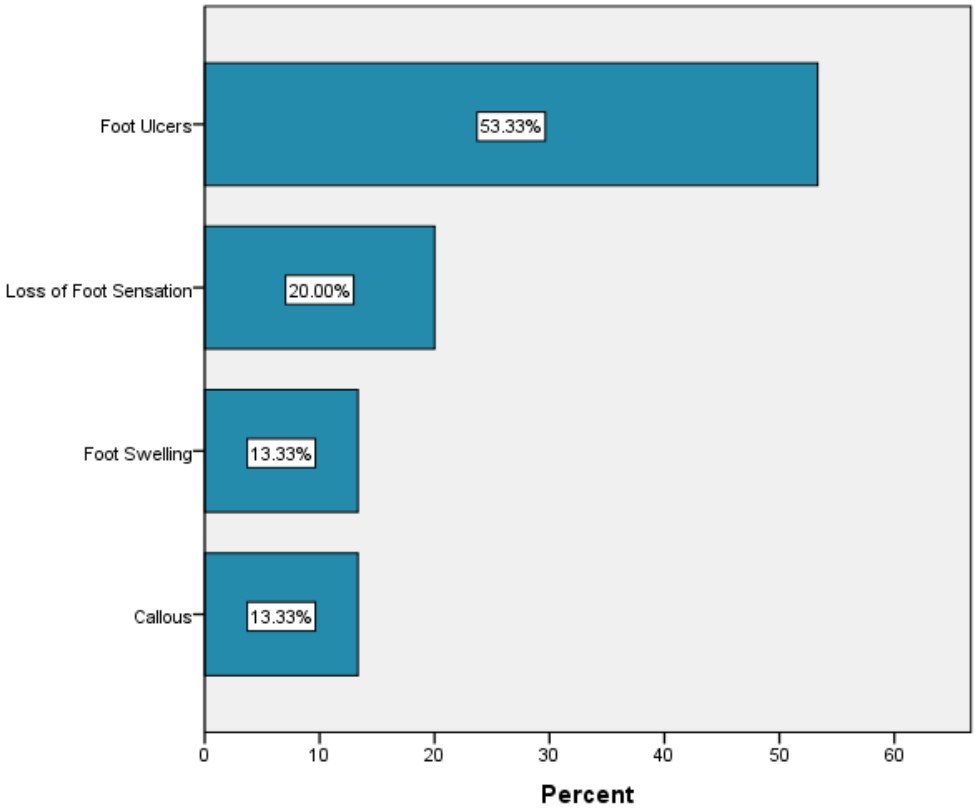


**Fig. 2. Causative factors for foot lesions**

We have collected the information about medication and noted most commonly used drugs were insulin, metformin and acetosalicylic acid (ASA) (Table 1).

### 3.2 Patient Self-care/Initiative

With respect to initiative, 26 patients (74.3% of the sample population) reported that they made the effort to ensure that they followed up with their diabetic clinic. Of these patients, 22.9% reported that they followed up with the clinic between 1 and 5 years with a cumulative 88.5% reporting that they followed up within 20 years.

Furthermore, patients were questioned about their diet and 46% of patients expressed that they followed the West Indian diet which in itself is high in carbohydrates, meats, fats, sugars and sodium with low counts of fruits, vegetables and fibre (Table 2).

It was also noted that 28 patients (77.1% of the sample population) admitted to consuming sweets/desserts/sodas/sweetened juices on a regular basis. This study also noted that 23 patients (65.7% of sample population) reported that they monitored their blood sugar at home and majority stated they monitored it twice a week. Total of 12 patients who did not monitor their blood sugar at home claimed that the inability to read or the cost of the test kits were the major deterrents.

### 3.3 Patient Lifestyle and History

Concerning the patient history and lifestyle collected, the first parameter was that of a family history of diabetes and 5.7% reported having a close family member or ancestor presenting with diabetes. It was noted that only 14 patients (40%) admitted to being habitual smokers and most of these stated they had been smoking for over 20 years with there being an average of 9 ± 7 cigarettes daily. There were far more drinkers in the sample with a reported 24 patients (68.6%) admitting to being regular drinkers. The most commonly consumed alcohol was that of beer followed by rum and whiskey. Drinks were reported to have been consumed on a weekly basis with an average of 6 ± 3 drinks taken.

**Table 1. Drugs used by patients**

| Drug | Count | Percent |
|---|---|---|
| ASA | 13 | 10.74 |
| Atenolol | 6 | 4.96 |
| Augmentin | 2 | 1.65 |
| Bezide | 1 | 0.83 |
| Bisodol | 1 | 0.83 |
| Ceftriaxone | 1 | 0.83 |
| Clopidogrel | 1 | 0.83 |
| Coreg | 4 | 3.31 |
| Daflon | 1 | 0.83 |
| Enalapril | 9 | 7.44 |
| Folic Acid | 2 | 1.65 |
| Gliclazide | 8 | 6.61 |
| Glimepiride | 1 | 0.83 |
| Glucophage | 1 | 0.83 |
| Hydralazine | 1 | 0.83 |
| Insulin 70/30 | 18 | 14.88 |
| Iron Sulfate | 4 | 3.31 |
| Lasix | 5 | 4.13 |
| Metformin | 18 | 14.88 |
| Mydriacyl | 1 | 0.83 |
| Neosoralen | 1 | 0.83 |
| Nifedpine | 10 | 8.26 |
| Omez | 1 | 0.83 |
| Plavix | 1 | 0.83 |
| Rosuvastatin | 1 | 0.83 |
| Simlo | 2 | 1.65 |
| Simvastatin | 4 | 3.31 |
| Sitagliptin | 1 | 0.83 |
| Trimetazidine | 2 | 1.65 |
| Total | 121 | 100 |

**Table 2. Diet employed by patients**

| Diet consumed | Number (%) |
|---|---|
| DASH (green leafy vegetable) | 1 (2.0) |
| Diabetic diet | 11 (22.0) |
| Low carbohydrate diet | 4 (8.0) |
| Low fat diet | 3 (6.0) |
| Low sodium diet | 8 (16.0) |
| West Indian diet | 23 (46.0) |

### 3.4 Reason for Amputation and Their Feelings After

Amongst the 33 patients who replied to the cause of their amputation, 19 (57.58%) stated that it brought on due to diabetes and infection whilst the remaining 14 reported an event split between diabetes and trauma (21.21%) and diabetes and ischaemia (21.21%). After having the amputation, the emotional state of the patients was recorded and it was noted that most patients were sad (Fig. 3). A major concern reported by patients was the fear of being a burden to their family (Fig. 4).

Furthermore, 31 patients (88.6%) of respondents claimed that they believed that their amputation may have been prevented if they have taken most common preventative measure of adhering to a better diet and exercise regime as well as visiting a doctor when noticed.

## 4. DISCUSSION

From the initial surveys carried out, each participant's medical history showed an early indication to the risk of additional future amputations if worsened. These included: Callouses- 6.67%, which forms as a result of keratinisation of skin cells and if left untreated could have resulted in foot ulcerations [10]. Electrical shock to lower limb- 8.89% may have been as a result of poor occupational health and safety equipment or attire at their workplace resulting in such injuries. As a result, not only the nerves, but tissue and vascular damages may have been incurred depending on the degree of shock suffered by the patient [11]. The loss of sensation in this area has led to 50-70% of non-traumatic amputations according to studies conducted by Vinik et al. [12].

Foot ulcers-17.28% which in studies conducted by Hunt [13] indicated the incidence of foot ulcers in well developed countries were 2.5% -10.7%, meanwhile Trinidad's incidence is at 17.28% in the population examined [13]. Foot ulcers range between 5 grades of severity, from superficial ulcers of Grade 1, those penetrating ligaments at Grade 2, abscess formation in Grade 3, localised gangrene in Grade 4 and excessive gangrene at Grade 5 [13]. If left untreated a simple Grade 1 ulcer can develop into a Grade 5 over a short period of time resulting in amputation of the infected limb and surrounding tissue.

Although heart attacks do not directly result in amputation it is the initial risks of lack of circulation to the lower limbs. If blood is unable to reach the extremities, considering these patients are diabetic, circulation is further affected as the erythrocyte aggregation is increased. As a result, clots are more likely to form [14]. From this clot, vascular damages incur, tissues are affected and ulcers begin to form, amputations occur.

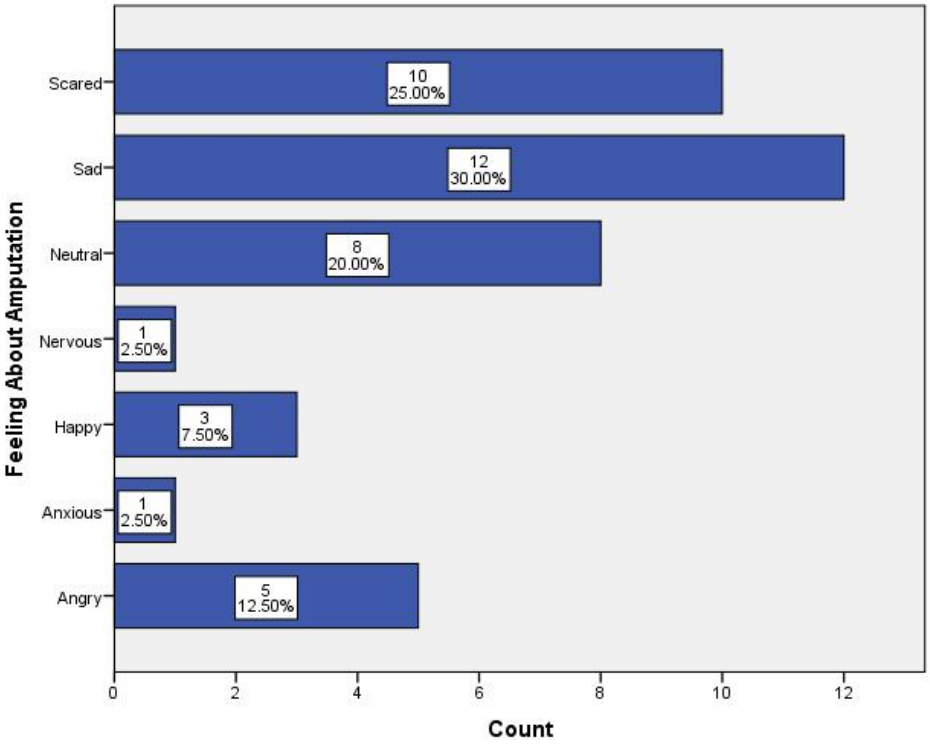


**Fig. 3. Patients' feelings about their amputation**

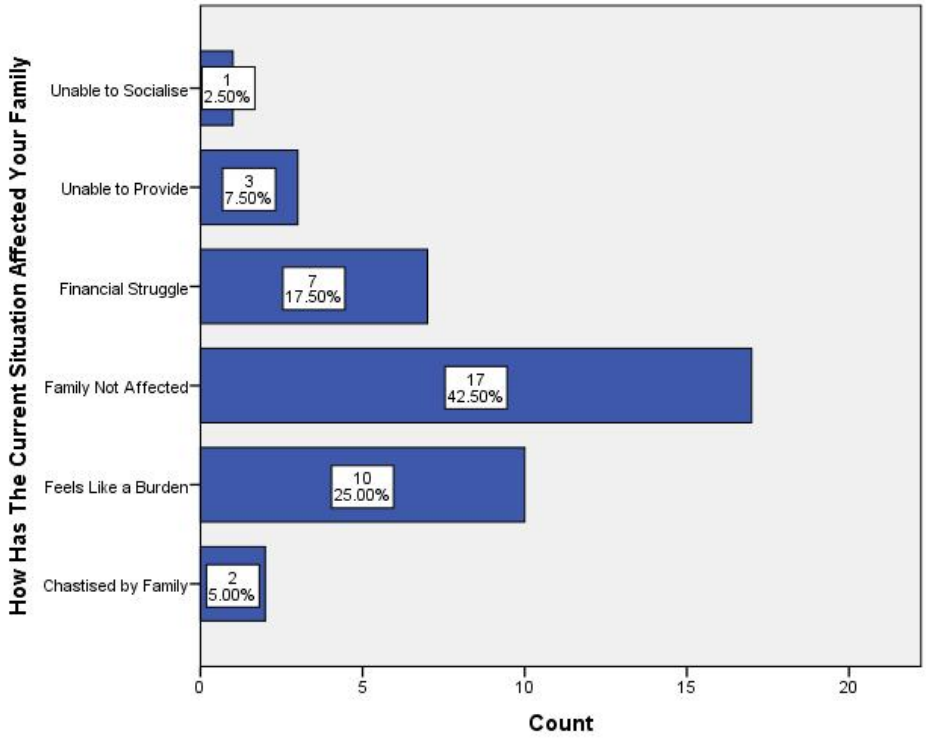


**Fig. 4. How the amputation has affected the patients' families**

Hypertension, although the most prevalent disease suffered by most patients in this research has been a significant contributor to the onset of diabetes, according to research conducted by Pemayun et al. [15] Meanwhile, other researchers indicate contrastingly in the study. The underlying link between hypertension and amputation may have been through atherosclerosis resulting in heart attacks and blood clots or the onset of nephropathy to diabetes, worsening, to cause amputations.

Loss of foot sensation can be as a result of mentioned variables such as electrical shock, foot ulcers, even loss of circulation and usually an indicator worsening diabetes and as mentioned causes 50-70% of amputations. This is experienced by 15.56% of the population sampled and mainly caused due to lack of preventative care and proactive treatment to early warning signs.

Peripheral vascular diseases (PVD) suffered by 22.22% of patients in the sample could have been as a result of atherosclerosis [16] relating to the premises on which amputations occurred for patients' history of heart attack and hypertension. Another cause of PVD was the loss of elasticity of arteries which may have resulted due to age of the patients. Considering the sample size consisted of patients over the age of 50 with 61% suffering from diabetes for over 10 years, this is a plausible reason for amputations.

In our study 46% of patients expressed that they followed the West Indian diet which in itself is high in carbohydrates, meats, fats, sugars and sodium with low counts of fruits, vegetables and fibre. It was also noted that 28 patients admitted to consuming sweets/desserts/sodas/sweetened juices on a regular basis. It is already known that improper lifestyle will lead to diabetes and later complications if not controlled. Therefore, lifestyle of these patients lead to high blood sugar followed by complications [17-18].

Trauma to lower limb affecting 4.44% of the population could have been as a result of an accident resulting in invasive injury. If these injuries were not treated callouses and ulcers would have developed leading to amputations.

Foot swelling suffered by 13.33% of the sample on visits to the clinic could have been caused due to build-up of fluids or a natural inflammatory response by the body. Considering 80% of the sample size did confirm foot lesions being present the swelling of feet can be validated.

The medicines prescribed were not only focused on diabetes such as metformin, but hypertension, aspirin and heart conditions, simvastatin, suffered by the patients as well as treatment for pain and side effects some pills may have on the stomach requiring omez. In modern day western medicine practices many tablets prescribed are a norm [19]. However, patients do not accept this norm lightly as not only do the medications have side effects, affecting each patient differently, it is costly. Considering these patients are older than 50 years old facing retirement, resulting in pensions as there only source of consistent income makes monthly purchasing of these drugs difficult. While some patients may have support from family members others do not. Meanwhile, the government provides the Chronic Disease Assistance Plan (CDAP) which can alleviate some costs. However, there is an inconsistency in the provision of the drugs since there is a large population in need with a limit to the drugs issued monthly. In addition to this, not all drugs mentioned are available on the CDAP programme and there is still a need to purchase drugs monthly.

Amputations not only affect the emotional and psychological state of the individual but the family they are surrounded by Aydın and Atiç [20], Batten et al. [21]. Considering these patients have lost a limb or part of, assistance will be required to carry out mundane tasks, much support is required at this time. The relationship between the individual and family will be further affected by the outlook the patient has on his/her amputation. While some patients become depressed or angry because of their loss resulting in poor attitudes towards the family, thus making the process of care more difficult, some patients may be supportive and find ways to become independent again without requiring family support. From the data collected, while most patients were sad, the sacrifices their family had to make may have taken a toll on them as they considered themselves a burden. While some were understanding of their situation, knowing their actions were not proactive to prevent their disease, accepted the outcome. Some were angry, possibly with themselves for lack of proactive behavior which could have eliminated their threat of worsening diabetes leading to amputation. Some were afraid, this may have affected those who lacked family, such as the 42% in which the families were not

affected and therefore living on their own and learning to function handicapped was an intimidating thought. Only few among the selected patients were happy of their outcome because they started getting required attention due to their disability.

## 5. CONCLUSION

Based on the data posited above it was noted that a number of factors played a role in the need for amputations amongst diabetic patients. The most noteworthy were that of diet and drinking in conjunction with infections. Among the population surveyed there is a low level of initiative towards self-care and, high concern among the amputees either due to fear before or sadness associated with the amputation in-spite of a majority of the subjects feeling that their respective families were not affected by the procedure.

## ETHICAL APPROVAL AND CONSENT

This study was approved by the University of the West Indies, St. Augustine Campus ethics committee (CEC 193/05/16). Informed written consent was obtained from all individual participants included in the study.

## ACKNOWLEDGEMENTS

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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*File No: ……*

☐ Participant Information

1. I confirm that I have read and understand the information sheet for the above study and have the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ☐
3. I agree to take part in the above study. ☐

Signature: _____. Date: ____/____/_____.

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☐ Voluntary Information

*This information is being requested in accordance with regulations as requested by the ethical committee. The information is voluntary and will not be used outside of this study.*

☐ *Racial or Ethnic Group*

☐ Indian/Indo-Trinidadian ☐ Asian/Chinese ☐ Black/Afro-Trinidadian

☐ Hispanic/Latino ☐ White/Caucasian ☐ Other

☐ *Gender*

☐ Female ☐ Male

RBS: HbA1c: _____

File No: _____

## PATIENT QUESTIONNAIRE

This questionnaire aims to answer the causes and concerns of diabetic subjects with or about to have amputations in Trinidad and Tobago and is based on individual case studies from participants like you. Thank you for your participation.
Please mark boxes like this ☑ with a ball point pen. If you change your mind, just cross out your previous response and make a new one. Also, circle the corresponding numbers like this 1 2 ③ 4 for the number scales used.

Part 1

1. How long have you been diabetic?

☐ < 1Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years

2. What is your weight and height?

_____Kg. /_____ lbs.

_____cm. /_____',"

3. Do you have a history of any of the following?

| | | |
|---|---|---|
| ☐ Hypertension | ☐ Peripheral Vascular Disease (Poor blood supply to limbs) | ☐ Venous Insufficiency (Varicose Veins/ Leg Swelling) |
| ☐ Trauma to Lower Limb | ☐ Burns to Lower Limbs | ☐ Electrical Shock to Lower Limb |
| ☐ Foot Ulcers | ☐ Bedsores | ☐ Loss of Foot Sensation |
| ☐ Clawed toes | ☐ Bunions (Side of Great Toe) | ☐ Callous (Under Foot) |
| ☐ Stiff Great Toe | ☐ Thick Darkened Nails | ☐ Foot Deformity |
| ☐ Skin Condition | ☐ Abnormal Walking | ☐ Foot Swelling |
| ☐ Corn (Lump Top of Toes) | ☐ Exostosis (Foot Arch Lump) | ☐ Flat Foot |
| ☐ Heart Attack | ☐ Stroke | |
| ☐ Gangrene | | |

4. Do you currently have a foot lesion and if yes, which of these?

☐ YES ☐ NO

| | | |
|---|---|---|
| ☐ Foot Ulcers<br>Where? _____.<br>How did it start?<br>☐ Skin Penetration<br>☐ Surface Trauma | ☐ Bedsores | ☐ Loss of Foot Sensation |
| ☐ Clawed toes | ☐ Bunions (Side of Great Toe) | ☐ Callous (Under Foot) |
| ☐ Stiff Great Toe | ☐ Thick Darkened Nails | ☐ Foot Deformity |
| ☐ Skin Condition | ☐ Abnormal Walking | ☐ Foot Swelling |
| ☐ Flat Foot | ☐ Corn (Lump Top of Toes) | ☐ Exostosis (Foot Arch Lump) |

5. How do you manage your foot lesion?

| | | |
|---|---|---|
| ☐ Antifungal Cream | ☐ Antibacterial Ointment | ☐ Home Made Remedy |
| ☐ Closed Toe Shoes<br>Hours Worn for day____. | ☐ Open Toe Shoes<br>Hours Worn for day____. | ☐ Both<br>Hours Worn for day____. |
| ☐ Debridement | How Often?<br>_____. | Where?<br>☐ Home<br>☐ Local Health Centre<br>☐ Hospital |
| ☐ Socks | | |

6. Do you have a family history (immediate family members) of:
   ☐ Juvenile (Type1) Diabetes ☐ Type2 Diabetes ☐ Vascular Disease
   ☐ Amputations

7. Were you ever bedridden?
   ☐ YES ☐ NO
   If yes, How long?
   _____.

8. Within one week before admission;

| | Not at all | A little | Quite a bit | Very much |
|---|---|---|---|---|
| Did you have difficulty with taking your medications on time? | 1 | 2 | 3 | 4 |
| Were you limited in doing either your work or other daily activities? | 1 | 2 | 3 | 4 |
| Did you have difficulty pursuing your hobbies or recreational activities? | 1 | 2 | 3 | 4 |
| Did you have any fevers? | 1 | 2 | 3 | 4 |
| Did you have limb pain? | 1 | 2 | 3 | 4 |
| Did you notice pale feet when elevated? | 1 | 2 | 3 | 4 |
| Did your feet feel cold? | 1 | 2 | 3 | 4 |
| Was it difficult to move your limbs? | 1 | 2 | 3 | 4 |
| Were your feet numb? | 1 | 2 | 3 | 4 |
| Did you have tingling in your feet? | 1 | 2 | 3 | 4 |

9. Was antibiotics prescribed for your lesion?
   ☐ YES ☐ NO
   If yes, did you take the antibiotic as prescribed?
   ☐ YES ☐ NO
   Did it heal completely?
   ☐ YES ☐ NO
   How long did it take to heal?
   _____.

10. Do you inspect your feet?
    ☐ YES ☐ NO
    If Yes, how often?

| | | |
|---|---|---|
| ☐ Daily | ☐ Weekly | ☐ Monthly |

11. What Medications do you currently use?

| | |
|---|---|
| 1. | 2. |
| 3. | 4. |
| 5. | 6. |
| 7. | 8. |
| 9. | 10. |

12. Do you follow up in the diabetic clinic?

☐ YES ☐ NO

a. If yes, how long?

☐ < 1Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years

13. Did you follow up with a dietician?

☐ YES ☐ NO

a. What was your diet like? You may choose more than one option if applicable.

| | |
|---|---|
| ☐ West Indian Diet | Diet high in carbs, meats, fats, sugars and sodium and low in fruits, vegetables and fibre. |
| ☐ Vegan Diet | Diet exclusive of all animal and animal products. |
| ☐ Pescetarian Diet | Diet which includes fish but not other meats. |
| ☐ Low Calorie Diet | Diet low in absorbable energy <800 calories/day, used for weight loss. |
| ☐ Low Carb Diet | Diet low in sugars and low in starchy foods such a potatoes, rice, flour etc. |
| ☐ Low Fat Diet | Diet low in oils and fats. Eg. Little to no cooking oil, lean meats, skimmed milk etc. |
| ☐ Low Sodium Diet | Diet consisting of no added salt. Up to 1500 mg of sodium per day. |
| ☐ DASH Diet | Dietary approach to stop hypertension- Low sodium up to 2300 mg, fruits and vegetables- nuts, beans and seeds, lean meats, low fat non-fat dairy. |
| ☐ Diabetic Diet | Diet low in foods with a high glycaemic index eg. White flour, white rice, potatoes. |
| ☐ Gluten-Free Diet | A diet which avoids the protein gluten, found in barley, rye and wheat. |

b. How often do you consume sweets/ desserts/ soft drinks/ juices?

☐ None ☐ Every other day ☐ Once a day ☐ 2 times a day ☐ >2 times a day

14. Do you have any of the following diabetic complications?

| | |
|---|---|
| Loss of sensation to toes | ☐ YES ☐ NO<br>If Yes, did you consult the doctor (or endocrinologist)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |
| Non-healing foot ulcer | ☐ YES ☐ NO<br>If Yes, did you consult the doctor (or general surgeon)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |
| Visual | ☐ YES ☐ NO |

| | |
|---|---|
| problems | If Yes, did you consult the doctor (or ophthalmologist)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |
| Kidney disease (Frequent, clear urine, weakness, confusion) | ☐ YES ☐ NO<br>If Yes, did you consult the doctor (or nephrologist)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |
| Heart disease (Heart attack Heavy, squeezing chest pain) | ☐ YES ☐ NO<br>If Yes, did you consult the doctor (or cardiologist)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |
| Vascular disease (Cramping pain in legs when walking) | ☐ YES ☐ NO<br>If Yes, did you consult the doctor (or vascular surgeon)?<br>☐ YES ☐ NO<br>If Yes, how long did you follow up?<br>☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years |

15. Are you able to ambulate (move around) independently?
    ☐ YES ☐ NO

    a. If Yes, are you;
    ☐ Solely Independent ☐ Crutches/Walking Stick Assisted ☐ Wheelchair Assisted

16. Do you monitor your blood sugar at home?
    ☐ YES ☐ NO

    a. If **YES**, How often?
    ☐ Twice daily ☐ Once daily ☐ Every other day ☐ Twice a week ☐ >1 week

    b. If **NO**, why?
    ☐ Fear of needle sticks ☐ No assistance ☐ Affordability of strips/ machine ☐ Unable to read or write ☐ Busy Schedule

17. Did you have any surgeries before?
    ☐ YES ☐ NO
    If yes, please state:
    1_____ 5_____
    2_____ 6_____
    3_____ 7_____
    4_____ 8_____

18. Do you have a family history of diabetes?
    ☐ Parents ☐ Siblings ☐ Children ☐ Other

19. Do you smoke currently or have smoked in the past?
    ☐ YES ☐ NO

    a. If Yes, how long have you been smoking for?
    ☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years

    b. If Yes, how many cigarettes did you smoke for the day?
    _____.

20. Do you consume alcohol currently or drank in the past?
    ☐ YES ☐ NO

    a. If Yes, how long have you been drinking for?
    ☐ < 1 Year ☐ 1-5 Years ☐ 5-10 Years ☐ 10-20 Years ☐ >20 Years

    b. If Yes, what type of alcohol, how much and how often did you drink?
    Type:
    _____
    How Much:
    _____
    How Often:
    _____.

File No: _____

Part 2

21. What level of amputation did you have?
    ☐ Toe ☐ Transmetatarsal (part of foot) ☐ Below Knee ☐ Above Knee

Other: _____

22. Is this your first amputation?
    ☐ YES ☐ NO

    a. If NO, what amputations did you have prior to this?
    ☐ Toe ☐ Transmetatarsal (part of foot) ☐ Below Knee ☐ Above Knee

Other: _____

23. What was the reason for your amputation?
    ☐ Diabetes+ Trauma ☐ Diabetes+ Infection (Wet Gangrene) ☐ Diabetes+ Ischaemia/Poor blood supply (Dry Gangrene)

24. How did you feel about this amputation? You may choose more than one answer.
    ☐ Sad ☐ Angry ☐ Nervous ☐ Scared
    ☐ Anxious ☐ Neutral ☐ Happy

a. Have you experienced any of these symptoms;

| | Not at all | Within past 2 weeks | 2 weeks-6 months | > 6 months |
|---|---|---|---|---|
| Have you noticed any changes in your sleep patterns? | 1 | 2 | 3 | 4 |
| Did you have any recent weight loss or gain? | 1 | 2 | 3 | 4 |
| Did you have any loss of interest in daily activities? | 1 | 2 | 3 | 4 |
| Did you have any feelings of guilt? | 1 | 2 | 3 | 4 |
| Did you feel like you have a loss of energy? | 1 | 2 | 3 | 4 |
| Did you have difficulty concentrating? | 1 | 2 | 3 | 4 |
| Did your appetite change recently? | 1 | 2 | 3 | 4 |
| Did you feel agitated, anxious or lethargic? | 1 | 2 | 3 | 4 |
| Did you have any loss of appetite? | 1 | 2 | 3 | 4 |
| Did you have any crying spells? | 1 | 2 | 3 | 4 |
| Did you have any suicidal thoughts? | 1 | 2 | 3 | 4 |

25. What is/was your occupation?

_____

a. Were you able to continue with your occupation?
☐ YES ☐ NO

b. Has this amputation negatively affected you finances?
☐ YES ☐ NO

26. Were you in receipt of financial assistance?
☐ YES ☐ NO

a. If Yes, which of these?
☐ Government ☐ Private Organisation ☐ Family ☐ Other

27. Are you interested in a prosthetic limb?
☐ YES ☐ NO

a. Have you made contact and discussed this with the social worker?
☐ YES ☐ NO

28. How has your current situation affected your family?
☐ Unable to provide ☐ Feels like a burden ☐ Financial struggle
☐ Unable to socialise ☐ Chastised by family ☐ Family Not affected

_____

_____

29. Based on the following scale, how has your current situation affected your recreational and social life?
☐ Unaffected ☐ Minimal change ☐ Somewhat affected
☐ Noticeable difference ☐ Moderately affected ☐ Drastically different

30. Has religion made a difference to you in the management of your current state?
    ☐ YES ☐ NO

    a. If Yes, can you please describe this?

    _____
    _____
    _____
    _____

31. Do you fear that you may require more amputations in the future?
    ☐ YES ☐ NO

32. How would you rate you overall **health** during the past 2 weeks?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very Poor | | | | | | Excellent |

33. How would you rate you overall quality of life during the past 2 weeks?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very Poor | | | | | | Excellent |

34. Do you believe your amputation could have been prevented?
    ☐ YES ☐ NO

    a. If yes, what would you have done to prevent it?

    _____
    _____

35. What advice would you give to other diabetics who are being worked up for an amputation?

    _____
    _____



*Peer-review history:*
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*http://www.sciencedomain.org/review-history/26844*