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## Original Article

Demographic and clinical characteristics of dominican adults admitted to a diabetic foot clinic in the Dominican Republic, 2015<sup>☆</sup>

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## ABSTRACT

**Aim:** To identify the demographic and clinical characteristics of Dominican adults admitted to a diabetic foot clinic and compare these characteristics by sex to better characterize and understand the severity of diabetes in the Dominican Republic.

**Methods:** We conducted a retrospective medical chart review of Dominican adults admitted to the National Institute of Diabetes, Endocrinology, and Nutrition's (INDEN) diabetic foot clinic between January 1st, 2015 and December 31st, 2015. We generated descriptive statistics and compared results by sex.

**Results:** We assessed 447 medical charts of patients admitted in 2015. More men visited the clinic than women (65% vs. 35%). The average duration of diabetes was  $14.4 \pm 8.9$  years. Abscess was the most common foot problem (74% in men, 68% in women,  $p = 0.164$ ). A slightly smaller proportion of men received amputations than women (46% vs. 51%,  $p = 0.390$ ). Women were older ( $p < 0.001$ ), less educated ( $p = 0.004$ ), and less likely to be married ( $p < 0.001$ ). Women also exhibited higher rates of obesity ( $p = 0.003$ ), hypertension ( $p = 0.005$ ), cardiovascular disease ( $p = 0.011$ ), ischemic foot ( $p = 0.008$ ), and above the knee amputations ( $p = 0.002$ ).

**Conclusion:** Implementation of diabetes education programs, introduction of proper foot care, and improved resources for lifestyle management are needed to increase awareness and subsequently decrease diabetes and its negative impact on the health and economy of the Dominican Republic. Our findings suggest that various risk factors and comorbidities important to the development of diabetes may be disproportionately affecting women. Interventions should focus on women and their behaviors that increase risk for diabetes.

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## 1. Introduction

Over 29.6 million people have diabetes in Latin America, and its prevalence is predicted to increase to 50 million by 2040 [1]. The Dominican Republic (DR) is among the top five countries in Latin America with the highest prevalence of diabetes [2]. In the early 1980's, the prevalence of diabetes among adults in the DR was less than 5% of the population, but by 2015 it increased to 9.3% [3].

Diabetes is responsible for 4% of all deaths in the DR, but this percentage may be underestimated due to many unknown or unreported cases [3]. An estimated 24–50% of adult cases with diabetes in South and Central America are undiagnosed [2]. Moreover, those with diabetes may not seek a health care professional until they are suffering from complications of late stage diabetes.

Diabetes results in high health care costs and imposes a financial burden on the country. Medical expenditures in Latin America are two to three times higher among diabetics when compared to non-diabetics [4]. The estimated cost attributed to diabetes in the DR is \$625 million, one of the highest costs of countries in the Caribbean and Central America [4]. The total per capita direct cost of diabetes in the DR is \$888, with more than 50% of the costs associated with diabetes due to hospitalizations [2].

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Few research studies have addressed diabetes in the DR. HIV/AIDS, the most studied health issue, occurs in less than 1% of the population, whereas other diseases with a much higher burden, such as diabetes, do not receive the same attention [5]. We identified demographic and clinical characteristics of patients admitted to the largest diabetic foot clinic in the DR, to better characterize and understand the severity of diabetes in the country, and assessed differences in these characteristics by sex.

## 2. Methods

### 2.1. Setting

We conducted a retrospective medical chart review at the National Institute of Diabetes, Endocrinology, and Nutrition (INDEN), a teaching hospital dedicated to preventing and managing diabetes. INDEN contains the largest diabetic foot clinic in the DR and receives patients from all over the country [6]. Patients are treated at the clinic for health issues ranging from lesions and ulcers to ischemic foot and neuropathy [7].

### 2.2. Sampling

Dominican patients over the age of 18 and admitted to the diabetic foot clinic between January 1st, 2015 and December 31st, 2015 were eligible (2015 was the most recent year with the most medical charts available for review). We excluded patients not born in the DR. Ambulatory patients were also excluded because they lacked the medical identification number required for chart access. There were 665 patients treated at INDEN's diabetic foot clinic in 2015, of which 96 were ambulatory patients. Of the remaining 569 admitted patients, 122 were missing records for 2015, leaving 447 patient records available for chart review, of which only 443 medical charts had data on sex.

### 2.3. Ethics and data collection

Our research protocol was approved by the University of Virginia's (UVA) Human Subject Research Institutional Review Board and Universidad Iberoamericana's (UNIBE) ethics committee. No identifying patient data were collected.

We used a data abstraction form to collect data on age, sex, marital status, education, residence, number of hospitalizations and aggregate length of hospitalization (days) in 2015, family history of diabetes, alcohol use, and smoking status. We also recorded diagnosis and years with type II diabetes (no patients had type I diabetes), number of diabetic medications, blood pressure, comorbidities (hypertension, heart disease, and chronic renal disease), fasting and postprandial glucose levels, HbA1C, history of foot ulcers, stroke, foot problems present at time of visit, and type of foot treatments received.

For patients with more than one admission, we recorded the maximum number of medications reported. When data on duration of diabetes and/or hypertension was inconsistent, we selected the longest durations. If a patient had diabetes or hypertension for less than one year, we rounded the duration to one year. For smoking and alcohol status, we classified patients as previous smokers and/or drinkers if they ever mentioned being a smoker and/or drinker but were no longer smoking and/or drinking at the time of admission.

### 2.4. Data analysis

We assessed patient demographic and clinical characteristics and compared them by sex. Pearson's chi-square test was used to

compare categorical data and Student's t-test was used to evaluate differences in continuous variables between sex. P-values <0.05 was considered as statistically significant. All statistical analyses were conducted using SAS version 9.4.

## 3. Results

Patient demographics are presented in Table 1. The majority of admitted patients were male (65%). Female patients were slightly older than male patients ( $64.6 \pm 12.6$  vs.  $59.5 \pm 11.8$  years;  $p < 0.001$ ), and less educated (86 vs. 74%;  $p = 0.004$ ). A total of 68% of the men, but only 35% of the women ( $p < 0.001$ ), were either married or in a free union, however, there were more female widowers than men (33 vs. 5%;  $p < 0.001$ ). The majority of all patients had one visit in 2015 and had a relative with diabetes. A minority of patients reported current alcohol or tobacco use; rates for each were higher among men (28 vs. 2%;  $p < 0.001$  and 12 vs. 8%;  $p = 0.280$ , respectively).

Patient clinical characteristics are shown in Table 2. The average duration of diabetes was  $12.7 \pm 1.2$  years for men and  $13.0 \pm 1.8$  years for women ( $p = 0.761$ ). A majority of men and women were taking between one and three diabetic medications at the time of their appointment (78 vs. 63%;  $p = 0.002$ ). The average HbA1c of admitted patients was almost twice the value for controlled diabetes (7%) for both men and women. The average fasting blood glucose (FBG) was  $155.4 \pm 61.5$  mg/dL among men and  $156.0 \pm 70.1$  mg/dL among women ( $p = 0.932$ ). About 21% of patients had an FBG over 200 mg/dL, which constitutes as an increased risk of amputation [8]. The majority of patients (90%) had a history of foot ulcers. Women had higher rates of obesity (38 vs. 22%;  $p = 0.003$ ), hypertension (83 vs. 71%;  $p = 0.005$ ), cardiovascular disease (31 vs. 20%;  $p = 0.011$ ), and stroke (10 vs. 7%;  $p = 0.194$ ) than men.

Fifty-one percent of the female patients and 46% of the male patients ( $p = 0.390$ ) received an amputation. Foot problems and treatments are shown in Table 3. The most common diabetic foot problem was abscess (74% in men, 68% in women,  $p = 0.164$ ). A greater portion of women had necrosis and ischemic foot than men (29 vs. 20%;  $p = 0.053$  and 8 vs. 2%;  $p = 0.008$ , respectively). The most common treatment, for both men and women, was debridement (68 vs. 60%;  $p = 0.076$ ). The most common amputation was a one-toe amputation for both sexes (25 vs 20%;  $p = 0.170$ ). Significantly more women received above the knee amputations than men (14 vs 5%;  $p = 0.002$ ).

## 4. Discussion

In this chart review, we found some important differences in demographic and clinical characteristics of male and female patients admitted to INDEN's diabetic foot clinic in 2015. Women were older, less educated, and less likely to be married than men. Women had higher rates of comorbidities, such as obesity, hypertension, cardiovascular disease, and also had a longer duration of diabetes and received more major amputations. Men had more visits to the diabetic clinic and a higher prevalence of uncontrolled diabetes. They were also more likely to use alcohol and tobacco than women. Our findings suggest that diabetes prevention and education programs should target different risk factors and behaviors for men versus women in the Dominican Republic.

Past studies of the difference between male and female health profiles in Latin America and the Caribbean have found higher rates of diabetes among women than men in Cuba, the Dominican Republic, and the Caribbean populations [9–12]. Unlike in our study, however, Caribbean women were found to be more likely to have uncontrolled or poorly controlled diabetes [10]. While our findings

**Table 1**  
Demographic characteristics of patients admitted to INDEN's diabetic foot clinic, 2015.<sup>a</sup>

Demographic Characteristic	Total Population N (%) or Mean $\pm$ SD (n = 447)	Male N (%) or Mean $\pm$ SD (n = 289)	Female N (%) or Mean $\pm$ SD (n = 154)	P-value
Age (years)	447 (61.3 $\pm$ 12.3)	289 (59.5 $\pm$ 11.8)	154 (64.6 $\pm$ 12.6)	<.001
Residence				0.857
Rural	95 (21.9)	58 (20.9)	35 (23.0)	
Urban	249 (57.4)	162 (58.2)	85 (55.9)	
Mixed <sup>b</sup>	90 (20.7)	58 (20.9)	32 (21.1)	
Education Level				0.004
None	34 (8.0)	14 (5.1)	19 (12.8)	
Some primary	166 (39.1)	100 (36.6)	65 (43.9)	
Completed primary	86 (20.2)	53 (19.4)	33 (22.3)	
Some high school	45 (10.6)	34 (12.5)	10 (6.8)	
Completed high school	42 (9.9)	30 (11.0)	11 (7.4)	
Some college	11 (2.6)	8 (2.9)	3 (2.0)	
Completed college	41 (9.7)	34 (12.5)	7 (4.7)	
Marital Status				<.001
Single	115 (26.4)	70 (24.9)	42 (28.0)	
Married	152 (34.9)	118 (42.0)	34 (22.7)	
Divorced	11 (2.5)	5 (1.8)	6 (4.0)	
Widowed	64 (14.7)	15 (5.3)	49 (32.7)	
Free union	93 (21.4)	73 (26.0)	19 (12.7)	
Visits in 2015 per person				0.314
1	373 (83.5)	243 (84.1)	127 (82.5)	
2	55 (12.3)	32 (11.1)	22 (14.3)	
3	14 (3.1)	9 (3.1)	5 (3.3)	
4+	5 (1.1)	5 (1.7)	0 (0.0)	
Length of hospitalization (days)	432 (6.4 $\pm$ 3.8)	280 (5.6 $\pm$ 1.7)	148 (4.9 $\pm$ 1.7)	0.544
First degree relative with diabetes				0.999
Yes	295 (68.3)	191 (68.5)	102 (68.5)	
No	137 (31.7)	88 (31.5)	47 (31.5)	
Alcohol Status				<.001
Current	81 (18.5)	78 (27.7)	3 (2.0)	
Previous	42 (9.6)	41 (14.5)	1 (0.7)	
Never	314 (71.9)	163 (57.8)	147 (97.4)	
Smoking Status				0.280
Current	47 (10.7)	33 (11.6)	12 (7.9)	
Previous	103 (23.5)	70 (24.7)	32 (21.2)	
Never	289 (65.8)	181 (63.7)	107 (70.9)	

<sup>a</sup> Not all categories sum to 447 due to missing data. Sample size for male and female do not add up to 447 due to 4 medical charts missing data on sex.

<sup>b</sup> Mixed province contains both rural and urban areas.

suggest the opposite, the majority of both sexes had high levels of HbA1c, indicating a severe lack of diabetic control in the overall population.

Smoking is known to increase the risk of both diabetes and amputations [13,14]. Smoking also increases the risk of foot infections and ulcers by disrupting the blood flow in legs and feet, and negatively affects the healing process after amputations [13]. Among diabetics, smokers are at an increased risk of undergoing lower limb amputations than non-smokers [13]. About one-third of our patient population were either previous or current smokers, which is higher than the national adult cigarette smoking prevalence for the Dominican Republic (11% in men and 6% in women) [15].

Obesity is another major risk factor that results in high rates of diabetes, especially among Caribbean women [10]. Caribbean women are three times more likely to be obese than men [10]. In the Caribbean, larger and more full-bodied women are preferred and seen as healthy [10]. Obesity is also a risk factor for cardiovascular disease, hypertension, and stroke. Our findings show that the majority of women were overweight, and that the prevalence of obesity was significantly higher for women than men. This may contribute to the higher rates of comorbidities in women in our study.

Comorbidities associated with diabetes can add to a patient's medical and financial burden. Treatment of comorbidities requires additional medications, more frequent visits to physicians, and higher costs. In general, Latin American women over the age of 65

have a higher prevalence of hypertension than men, which is consistent with our findings [16]. Cardiovascular disease has a greater prevalence in men than women, however there is an increased risk of cardiovascular disease in postmenopausal women which may explain why there were significantly more women than men with cardiovascular disease in our study [16,17]. Furthermore, high mortality rates in women, post lower-limb amputations, are thought to be a result of deaths from cardiovascular disease [18].

Risk factors for amputations include uncontrolled diabetes, duration of diabetes, foot ulcers, hypertension, and smoking [18,19]. Up to 85% of non-traumatic amputations consists of diabetic foot amputations [19]. When compared to non-diabetics, patients with diabetes are 20 times more likely to undergo a lower limb amputation. Studies have found that diabetic foot amputations are more common in men than women [19]. About fifty percent our population received an amputation, however, our results indicate that a higher percentage of women underwent this procedure than men. The women in our population received significantly more above the knee amputations than men.

It is important to acknowledge the potential influence of machismo and its strong presence in the DR and other Latin American countries [20]. Machismo is a cultural term associated with attitudes of strength, pride, and fortitude observed among Latino men. As a result of machismo, men may be less likely to visit a doctor or accurately report their health problems [20]. However, Latino men tend to first seek health advice from their wives and visit a physician if their illness affects their ability to work and earn

**Table 2**  
Clinical characteristics of patients admitted to INDEN's diabetic foot clinic, 2015.<sup>a</sup>

Clinical Characteristics	Total Population N (%) or Mean $\pm$ SD (n = 447)	Male N (%) or Mean $\pm$ SD (n = 289)	Female N (%) or Mean $\pm$ SD (n = 154)	P-value
Presence of diabetes				<b>0.038</b>
Yes	429 (96.8)	282 (98.3)	144 (94.7)	
No	14 (3.2)	5 (1.7)	8 (5.3)	
Duration of diabetes (years)	429 (14.4 $\pm$ 8.9)	282 (12.7 $\pm$ 1.2)	144 (13.0 $\pm$ 1.8)	0.761
Number of diabetic medications				<b>0.002</b>
0	19 (4.3)	13 (4.6)	6 (4.0)	
1 to 3	322 (73.0)	224 (78.3)	95 (62.5)	
4 to 6	87 (19.7)	41 (14.3)	46 (30.3)	
7 to 9	10 (2.3)	7 (2.5)	3 (2.0)	
10 or more	3 (0.7)	1 (0.4)	2 (1.3)	
History of foot ulcers				0.684
Yes	387 (89.6)	250 (89.3)	134 (90.5)	
No	45 (10.4)	30 (10.7)	14 (9.5)	
Fasting Blood Glucose (mg/dL)	397 (155.3 $\pm$ 64.6)	254 (155.4 $\pm$ 61.5)	139 (156.0 $\pm$ 70.1)	0.932
FBG $\leq$ 200	313 (78.8)	202 (79.5)	108 (77.7)	0.671
FBG > 200	84 (21.2)	52 (20.5)	31 (22.3)	
HbA1c (%)	368 (11.5 $\pm$ 3.6)	239 (11.0 $\pm$ 1.4)	126 (11.0 $\pm$ 1.4)	0.866
HbA1c ( $\leq$ 7%)	32 (8.7)	19 (7.9)	13 (10.3)	0.447
HbA1c (> 7%)	336 (91.3)	220 (92.1)	113 (89.7)	
BMI				<b>0.003</b>
Underweight	8 (2.4)	8 (3.6)	0 (0.0)	
Normal	114 (34.1)	74 (33.6)	37 (33.3)	
Overweight	122 (36.5)	90 (40.9)	32 (28.8)	
Obese	90 (27.0)	48 (21.8)	42 (37.8)	
Hypertension				<b>0.005</b>
Yes	331 (75.2)	200 (70.9)	128 (83.1)	
No	109 (24.8)	82 (29.1)	26 (16.9)	
Duration of hypertension (years)	223 (12.2 $\pm$ 9.7)	128 (6.6 $\pm$ 1.1)	93 (10.1 $\pm$ 2.8)	<b>0.003</b>
Chronic Kidney Disease				0.050
Yes	86 (20.4)	63 (23.2)	22 (15.1)	
No	336 (79.6)	209 (76.8)	124 (84.9)	
Cardiovascular Disease				<b>0.011</b>
Yes	106 (24.4)	57 (20.4)	47 (31.3)	
No	328 (75.6)	223 (79.6)	103 (68.7)	
Stroke				0.194
Yes	33 (7.9)	18 (6.7)	15 (10.3)	
No	387 (92.1)	252 (93.3)	131 (89.7)	

<sup>a</sup> Not all categories sum to 447 due to missing data. Sample size for male and female do not add up to 447 due to 4 medical charts missing data on sex.

money for their family [20]. More men visited the clinic than women, with 70% being married or in a free union; it is possible that their wives advised their husbands to visit the doctor and address their health issues before it affected their ability to provide for their family.

People with lower education have higher rates of diabetes [10,11]. According to the Dominican Republic's 2014 National Education Profile [21], 64% of Dominicans have more than a primary school education, however this is true for only 33% of our patient population. Furthermore, significantly more women had low education levels than men. The low education level of our population may indicate that limited schooling is associated with inadequate attention to health or a lack of understanding of unhealthy behaviors and their consequences.

Diabetic foot problems, and their subsequent treatments, create a high economic burden [19]. Lengthy hospital stays, amputations, and other foot treatments increase the costs associated with diabetes [19]. Costs accrued by diabetic patients are three times higher than non-diabetics [19]. While most of our patient population only visited the clinic once in 2015, the average length of stay was over six days. In addition, the majority of patients were taking up to three different types of medications to treat diabetes, and 20% were taking four to six. In the DR, most people pay for medications out of pocket. The added cost of multiple medications may deter some people from following the proper treatment plan needed to manage diabetes.

The high prevalence of preventable diabetic foot-related issues

indicates a lack of knowledge on how to prevent and manage diabetes and its resulting foot problems. Communities in the DR would benefit from educational programs on diabetes that address both the severity of the disease and the importance of prevention. These programs should address the complications of uncontrolled diabetes and the importance of seeking health care providers early in their disease. In addition, our results demonstrate a need for programs specifically tailored for women, as they suffer disproportionately from various risk factors and comorbidities associated with diabetes. One study found that a community health program aimed at educating mainly Hispanic females was effective in increasing knowledge of prevention and control of diabetes [22]. The study also found that family history of diabetes is a strong risk factor for diabetes, and thus the inclusion of family members is necessary to increase awareness of the disease [22]. Our findings further reinforce the need to include family members since the majority of the patient population had a first-degree relative with diabetes. Educating children about healthy behaviors is also necessary to establish life-long healthy behaviors that will prevent diabetes. Considering the majority of patients in our study only had a primary level of education, diabetes education programs should be implemented early in primary schools to teach children how to prevent the disease and live a healthy lifestyle. One program shown to be effective in a charter school among predominantly Hispanic and African-American adolescents in the U.S. is a modified version of the Center for Disease Control and Prevention (CDC) Diabetes Prevention Program (DPP) [23]. Thirty-six percent of the

**Table 3**  
Foot problems and treatments for patients at INDEN's diabetic foot clinic, 2015.<sup>a,b</sup>

Foot problems	Total N (%) (n = 447)	Male N (%) (n = 289)	Female N (%) (n = 154)	P-value
Abscess				
Yes	321 (71.8)	215 (74.4)	105 (68.2)	0.164
No	126 (28.2)	74 (25.6)	49 (31.8)	
Ulcer				
Yes	189 (42.3)	122 (42.2)	65 (42.2)	0.999
No	258 (57.7)	167 (57.8)	89 (57.8)	
Necrosis				
Yes	106 (23.7)	59 (20.4)	44 (28.6)	0.053
No	341 (76.3)	230 (79.6)	110 (71.4)	
Ischemic foot				
Yes	20 (4.5)	7 (2.4)	12 (7.8)	<b>0.008</b>
No	427 (95.5)	282 (97.6)	142 (92.2)	
Osteomyelitis				
Yes	10 (2.2)	7 (2.4)	3 (2.0)	1.000
No	437 (97.8)	282 (97.6)	151 (98.0)	
Gangrene				
Yes	11 (2.5)	8 (2.8)	2 (1.3)	0.505
No	436 (97.5)	281 (97.2)	152 (98.7)	
Other				
Yes	40 (8.9)	31 (10.7)	9 (5.8)	0.088
No	407 (91.1)	258 (89.3)	145 (94.2)	
<b>Foot treatments</b>				
Debridement				
Yes	291 (65.1)	197 (68.2)	92 (59.7)	0.076
No	156 (34.9)	92 (31.8)	62 (40.3)	
Minor Amputation				
One toe				
Yes	103 (23.0)	73 (25.3)	30 (19.5)	0.170
No	344 (77.0)	216 (74.7)	124 (80.5)	
Multiple toes				
Yes	42 (9.4)	26 (9.0)	16 (10.4)	0.634
No	405 (90.6)	263 (91.0)	138 (89.6)	
Transmetatarsal				
Yes	39 (8.7)	23 (8.0)	13 (8.4)	0.859
No	408 (91.3)	266 (92.0)	141 (91.6)	
Major Amputation				
Foot				
Yes	3 (0.7)	2 (0.7)	1 (0.7)	1.000
No	444 (99.3)	287 (99.3)	153 (99.3)	
Below the knee				
Yes	9 (2.0)	8 (2.8)	1 (0.7)	0.172
No	438 (98.0)	281 (97.2)	153 (99.4)	
Above the knee				
Yes	37 (8.3)	15 (5.2)	21 (13.6)	<b>0.002</b>
No	410 (91.7)	274 (94.8)	133 (86.4)	
Incision and drainage				
Yes	57 (12.8)	41 (14.2)	16 (10.4)	0.256
No	390 (87.3)	248 (85.8)	138 (89.6)	
Cleaning				
Yes	9 (2.0)	9 (3.0)	0 (0.0)	<b>0.031</b>
No	438 (98.0)	280 (97.0)	154 (100.0)	
Antibiotics				
Yes	4 (0.9)	2 (0.7)	2 (1.3)	0.613
No	443 (9.1)	287 (99.3)	152 (98.7)	

<sup>a</sup> Sample size for male and female do not add up to 447 due to 4 medical charts missing data on sex.

<sup>b</sup> Patients with multiple foot problems/treatments were counted once for each category.

participants were overweight or obese and 40% had a first-degree relative with type 2 diabetes. The modified DPP increased participant's health promoting behaviors to prevent type 2 diabetes. Participants self-efficacy to perform physical activity and select healthy foods increased, while BMI and waist circumference decreased.

Providing patient education about proper foot care is also necessary to help reduce foot ulcers, abscess, and other diabetic foot problems, and to help eliminate lower-limb amputations. Eliminating diabetic foot-related amputations would also reduce death rates associated with the procedures; research has shown that up to 78% of patients die five years after a major amputation [19].

This study was limited by its retrospective design; some variables were missing from patient's medical charts. In addition, patients for whom there was no mention of a specific problem or treatment in their record were counted as not having had the foot problem or received the treatment. We also tabulated foot problems and treatments on a per-patient rather than a per-treatment basis. Of note, there were 2 female patients who received above the knee amputations on each leg, however we only counted them once in that category. There were also 6 patients (1 female, 5 males) that received a debridement on each leg; these were each counted once in that category. In instances where there were multiple values for a given variable, the highest value was used, which may have biased our findings. Patients may not have disclosed their true

smoking and/or alcohol use status to their doctor, which may have resulted in underestimates for these characteristics. In addition, the data collected only reflect procedures performed in 2015.

In conclusion, diabetes is a burdensome disease that needs to be addressed in the DR. Implementation of diabetes education programs, introduction of proper foot care, and improved resources for lifestyle management can help increase awareness and quality of life, and subsequently decrease diabetes and its negative impact on the health and economy of the DR.

### Conflicts of interest

The authors declare that they have no conflict of interest.

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