P-0903 – The association between diabetes and disability: what is the contribution of diabetes risk factors and complications?

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Background:

People with diabetes have two to three fold higher risk of physical disability. Diabetes is the leading cause of disabling diseases such as cardiovascular disease, renal failure, blindness and lower limb amputation. Understanding the factors that explain the association between diabetes and disability might provide insight into strategies to reduce the burden of disability and its related cost and improving quality of life among people with diabetes. Mauritius is a multi-ethnic nation with a population of 1.3 million people comprising diverse ethnicities including South Asians (Indian origin), Creoles of mainly African origin and Chinese. The age- and sex standardized prevalence of Type 2 diabetes in the Mauritian population aged 18–74 years was estimated at 19.2%, which makes this one the highest in terms of diabetes prevalence in the world (1). The high prevalence of diabetes and concomitant diseases together with ethnic diversity in Mauritius provides an ideal setting to investigate the association of disability with diabetes in a middle-income country.

Methods:

A national population-based survey was conducted in Mauritius in 2015. The assessments included a blood sample, anthropometric and blood pressure measurements, and interviewer-administered questionnaires. Disability was estimated in adults aged ≥50 years using the Katz index of independence in activities of daily living (Katz ADL) questionnaire. This instrument rates adequacy of performance in six major activities of daily living including: walking, bathing, transferring, toileting, dressing, and eating. A logistic regression model was used to examine the association between diabetes and disability, with disability as the main outcome of interest. Further, a series of logistic regression models were conducted and adjusted for the different variables. To quantify the contribution of risk factors to the association of disability with diabetes, the percentage of excess odds of disability related to diabetes in each model were calculated and compared to the base model

Results:

- We found that diabetes is associated with 67% increased odds of disability.
- There was a significantly higher prevalence of disability among women [16.4% (95% CI 14.8, 18.0)] than men [9.1% (95% CI 7.8, 10.6)].
- The relationship of diabetes with disability was stronger among African Creoles [OR: 2.61 (95% CI 1.54, 4.43)] than among South Asians [OR: 1.52 (95% CI 1.18, 1.95)].
- Adjusting for all risk factors in Model 5 attenuated the association of disability with diabetes among South Asians and resulted in a non-significant association [OR: 1.21 (95% CI 0.91- 1.62)]. In contrast, in African Creoles, diabetes remained significantly associated with diabetes in Model 5 [OR: 2.06 (95% CI 1.08- 3.91)].
- BMI and waist circumference together explained nearly 33% of the association between diabetes and disability.

Key messages and implication :

- Diabetes is associated with 67% increased odds of disability.
- The Prevalence of disability is higher among women compared to men.
- Half of the association of diabetes with disability can be explained by risk factors and concomitant disease.
- Obesity explained the highest percentage of contribution to this association, indicating that weight management might be helpful in controlling disability related to diabetes.
- The association of diabetes with disability is stronger among African Creoles than among South Asians.

Table 1: Odds ratios (95% Cis) for the association of diabetes with disability, stratified by ethnicity

	Total population		South Asians		Africans	
	OR	P	OR	P	OR	P
Model 1: Adjusted for age, sex, education and smoking	1.67 (1.34, 2.08)	<0.001	1.52 (1.18, 1.95)	0.001	2.61 (1.54, 4.43)	<0.001
Model 1 + BMI and waist	1.43 (1.31, 1.80)	0.002	1.32 (1.02, 1.71)	0.04	2.17 (1.24, 3.79)	0.006
Model 1+ blood pressure and lipids	1.52 (1.20, 1.93)	<0.001	1.38 (1.05, 1.81)	0.019	2.54 (1.44, 4.51)	0.001
Model 1+ chronic disease*	1.46 (1.15, 1.85)	0.001	1.35 (1.04, 1.77)	0.02	2.28 (1.29, 4.03)	0.005
Adjusted for all variables	1.29 (1.01, 1.67)	0.045	1.21 (0.91, 1.62)	0.19	2.06 (1.08, 3.91)	0.027

Table 2: The percentage of excess odds accounted for by risk factor adjustment (95% CI)

	Total population	South Asians	Africans
Model 1: Adjusted for age, sex, education and smoking	Base model	Base model	Base model
Model 1 + BMI and waist	29.8 (17.9, 41.8)	33.3 (18.0, 53.4)	19.1(3.6, 44.7)
Model 1+ blood pressure and lipids	17.7 (4.4, 39.3)	22.9 (0.0, 52.3)	2.7 (0.0, 36.3)
Model 1+ chronic disease*	25.6 (6.4, 38.1)	26.6 (10.2, 42.9)	14.2 (0.0, 38.4)
Adjusted for all variables	48.9 (23.6, 98.2)	53.7 (21.2, 100)	24.7 (0.0, 71.2)

*chronic disease: history of CVD, asthma, GFR and depression

1) Tabesh M, Shaw J.E, Zimmet P.Z, Soderberg S, Kowlessur S, Timol M, Joonas N, Alberti G.M.M, Tuomilehto J, Shaw B.J, Magliano D.J, Meeting American Diabetes Association diabetes management targets: trends in Mauritius, Diebet Med. 2017 Aug 9.