Prevalence of *Diabetes mellitus* and association between knowledge of diabetes and *Diabetes mellitus* among police officers in Peter Singogo camp, Zambia

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ABSTRACT

Background: *Diabetes mellitus* is becoming one of the major contributors of mortality and morbidity in Zambia and worldwide**.** The objectives were to determine the prevalence of *Diabetes mellitus* and the association between knowledge of diabetes and *Diabetes mellitus*. **Method:** The study was a community based cross sectional study conducted in Peter Singogo police camp Ndola, Zambia. Systematic sampling was used. The statistical tests used in the analysis of the data were Chi-square and Fisher's exact tests were appropriate. The level of significance was set at 5%. **Results:** Out of a sample size of 158, 148 took part in the study giving a response rate of 93.7%. Overall, 50.7% of the respondents were married and 55.3% had attended tertiary education. Out of 148 participants, 13 (8.8%) had *Diabetes mellitus*. On each birthday respondents were 11% more likely to become diabetic (OR=1.11, 95%CI (1.04, 1.18). **Conclusion:** The prevalence rate of *Diabetes mellitus* in the study area is high, Therefore, the need for interventions targeting the younger age group to be put in place so as to curtail the early onset of diabetes.

Key words: *Diabetes mellitus*, Prevalence, Risk factors, Police camp, Zambia

Introduction

Diabetes mellitus is increasingly becoming one of the most common and major non communicable chronic disease burden worldwide [1,2]. About382 million people were affected by diabetes in 2013 and this is expected to rise to 592 million by 2035[2]. The prevalence of diabetes for African region in people above 18 years according to WHO [3] was 7.1% and the International Diabetic Federation (IDF)[4] estimate of undiagnosed diabetes was 80% in African region. Many Africans and other third world countries have little or no knowledge about diabetes and its detrimental complications. According to Muninaruyana *et al* [5], it was only 50.8% participants that knew of condition diabetes and Rema *et al* [6] also stated that only few participants knew diabetes. The prevalence of diabetes is increasing due to aging, urbanization, and increasing prevalence of obesity and physical inactivity [3, 7]. It is now regarded as a global epidemic because more people worldwide are living with diabetes. International diabetes federation [8] estimated the prevalence of diabetes in Zambia at 3.1%. Further Nsakashalo- Senkwe et al [9] found the prevalence of diabetes of 4.0% in Lusaka urban district in Zambia. However, with Zambia's improved economy, population aging, nutritional transition and urbanization, for instance Ndola Peter Singogo camp, there have been no studies done concerning diabetes prevalence among the residents and its major risk factors. To find out the prevalence and related risk factors, we carried out the study aimed at establishing the prevalence of *Diabetes mellitus* and the association between knowledge of diabetes and *Diabetes mellitus* among police officers in Peter Singogo camp.

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Method

The study was a community based cross sectional study conducted in Peter Singogo police camp. Data was obtained from respondents through self-administered questionnaires and interviews.

Study site

The study was carried out among police officers in Peter Singogo, a police camp located in urban centre of Ndola on the Copperbelt province of Zambia. This is

the second largest city after Lusaka, the capital city of Zambia.

Sample size and sampling method

The total number of respondents was 148 out of a sample size of 158 calculated using EpiInfo version 7.0, considering a prevalence of 50%(actual prevalence of diabetes was not known in the study population), 95% response rate and 95% confidence level. Systematic sampling method was used to select the participants amongst police officers in the camp during the period of data collection.

Ethical clearance

The study was reviewed and ethically approved by Tropical Diseases Research Centre Research and Ethical Committee. Before data collection, an informed consent was obtained from each respondent and confidentiality was maintained.

Data collection tool, data entry method and analysis

Data collection tool used in the study was the questionnaire which had questions concerning social demographic factors, knowledge and prevalence of diabetes. Blood glucose was determined using an Accu-Chek Active (Roche) glucometer. Data was entered using Microsoft Excel 2010. Data was then exported to SPSS for window version 10.0 for analysis. Prevalence of diabetes was determined and its correlates were established using Chi-square test and Fisher's exact test, where appropriate. Logistic regression was used to determine independent factors associated with diabetes. Level of statistical significance was set at 5%.

Results

Out of 158 participants who were approached to take part in the study, 148(93.7%) actually took part in the study. There are no significant associations between marital status, education, and *Diabetes mellitus* on one hand and gender on the other (Table 1). Overall, 50.7% of the respondents were married and 55.3% had attended tertiary education. Out of 148 participants, 13(8.8%) had *Diabetes mellitus*. Respondents who were diabetic [mean (SD)] were significantly (P<0.001) older 48.1(SD 12.02) than non-diabetic 34.6(SD 10.78) years. On each birthday respondents were 11% more likely to become diabetic (OR=1.11, 95%CI (1.04, 1.18)). Table 2 shows social demographic factors associated with diabetes. Only marital status was significantly associated with diabetes (P=0.002). There was no significant (P=0.101) difference in mean (SD) knowledge score on diabetes between respondents who were diabetic 5.50(3.14) and non-diabetic 3.89(2.09).

Table 1: Sample description

Factors		Total n (%)	Male N (%)	Female N (%)	P-value
Marital status	Single	57(40.7%)	35(40.2%)	22(41.5%)	0.942
	Married	71(50.7%)	44(50.6%)	27(50.9%)	
	Divorced	12(8.6%)	8(9.2%)	4(7.5%)	
Education	Primary/secondary	63(44.7%)	40(44.9%)	23(44.2%)	1.000
	Tertiary	78(55.3%)	49(55.1%)	29(55.8%)	
Diabetic status	Diabetic	13(9.1%)	10(11.1%)	3(5.7%)	0.372
	Non diabetic	130(90.9%)	80(88.9%)	50(94.3%)	

Table 2: Factors Associated with *Diabetes mellitus*

		Diabetic status		
Factors		Diabetic n (%)	Non diabetic n (%)	P- Value
Gender	Male	10(76.9%)	80(61.5%)	0.372
	Female	3(23.1%)	50(38.5%)	
Marital Status	Single	1(7.7%)	56(42.7%)	0.002
	Married	8(61.5%)	67(51.1%)	
	Divorced	4(30.8%)	8(6.1%)	
Education	Primary/secondary	6(46.2%)	59(44.4%)	1.000
	Tertiary	7(53.8%)	74(55.6%)	

Discussion

To our knowledge this was the first study of its kind done in Peter Singogo camp, Ndola, Zambia. The prevalence rate of *Diabetes mellitus* amongst residents was observed to be 8.8% with significant associated risk factor being the age. Chinenye et al [10] reported that the prevalence of diabetes was 11% in Lagos, an urban center. Two years ago, Enang et al [11] noted also a prevalence rate of 6.5% for diabetes in Calabar,

another urban centre. Furthermore, Mohan et al [12]indicated that 10-16% of the urban population was affected by diabetes in India and according to World Health Organization [3] the prevalence of diabetes in African regions was 7.1%. This may explain the prevalence reported in this study as the setting is located in a city. According to the results, it showed that age was significantly associated with *Diabetes mellitus*. This has been supported by Oputa et al [13] who stated in their study that the age group that was highly affected was around 40-59 year of age. Reports from Nigeria [10, 11, 14] also stated that age is significantly associated with diabetes. Efforts to increase physical activity among the younger population through sport may prevent onset of diabetes. In conclusion, the prevalence rate of *Diabetes mellitus* in the study area is high. The prevalence of diabetes in Peter Singogo camp is already at an alarming level and it is now that interventions targeting the younger age group should be put in place to curtail the early onset of diabetes. Therefore, residents should be empowered with the knowledge of life modification so as to prevent diabetes, importance of having their fasting glucose levels monitored regularly, significance of early diagnosis and diabetes management in those diabetic and prevention of devastating and detrimental complications. We would like to recommend similar studies in other camps in order to map the distribution of diabetes among police officers in Zambia.

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