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Influence of socio-demographic characteristics on management of type 2 diabetes mellitus among T2DM clients in Nyandarua South Sub-County, Kenya

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Abstract

Background: Diabetes mellitus (DM) is a complex disease with most complications leading to morbidity and mortality amongst population subsets if not managed. In every six seconds, a person dies from DM or DM related complications. Type 2 diabetes mellitus (T2DM) has markedly increased necessitating active development and implementation of efficient management programs addressing sociodemographic characteristics of diabetic clients. The aim of this study was to determine the influence of socio-demographic characteristics on management of T2DM among type 2 diabetic clients in Nyandarua South sub-County, Kenya.

Methods: A cross-sectional facility based study design was used. The study population comprised T2DM clients, aged above 18 years. Systematic random sampling technique was used to select the sample of 294 clients who consented to participate in the study. Data was collected by use of a semi-structured researcher administered questionnaire. Data was analysed using SPSS Version 21. Descriptive statistics were computed to generate frequencies, mean, median and standard deviation. Relationship between socio-demographic factors and management of T2DM was examined using chi-square and bivariate analyses.

Results: Majority of the participants were females (59.5%). Slightly more than a quarter of the participants (28%) had good knowledge on management of T2DM. College/university education level was found to be significantly associated with participants' management of T2DM (OR 5.3666 (1.47-19.58), 95% CI, 1.47-19.58, P=0.0109).

Conclusions: Level of education significantly influenced participants' management of T2DM. The study recommends creation of awareness on T2DM management in Nyandarua County so as to improve clients' knowledge of management interventions for T2DM health education on T2DM management practices to empower clients to effectively manage the condition.

Keywords: Influence; Type 2 diabetes mellitus (T2DM); Management

1. Introduction

Diabetes mellitus (DM) is a complex disease with most complications leading to morbidity and mortality amongst population subsets if not managed. Globally, in every six (6) seconds, a person dies from DM or dm related complications resulting to 5.0 million deaths by 2015 [1, 2]. Thus, diabetics require lifelong individualized care in order to prevent or delay onset of detrimental long term complications [3, 4]. Type 2 diabetes mellitus (T2DM), the most common form of

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diabetes, is characterised by disorders of insulin resistance, insulin secretion, obesity, lipid abnormalities, hypertension and cardiovascular disease [5, 6]. Effective management of T2DM demands an understanding of the demographic attributes of populations including their age, education level, beliefs, income and family social networks as they affect their management [7, 8].

In Africa, undiagnosed diabetes raises a major public health concern. The prevalence of DM is rapidly increasing especially in Sub-Saharan Africa (SSA). The number of people suffering from diabetes in Africa is expected to double within the next 25 years thus outnumbering other regions of the world [9, 10]. The impacts will be an increase on the burden of the disease on health care system [10]. Besides, Africa has a fast growth rate of childhood obesity and overweight which increase the risk of developing T2DM later in life. Therefore implying a relationship between diabetics demographic characteristics and management of T2DM (11, 12)

In Kenya, the prevalence of diabetes is estimated to rise to 4.5% by 2025 [13]. T2DM is rapidly growing making up over 90% of all reported cases of diabetes in Kenya. This has been largely attributed to decreased physical activity, increased high calorie diets [14, 15]. Therefore, this study seeks to determine the influence of socio-demographic characteristics on management of T2DM among type 2 diabetic clients.

2. Material and methods

2.1. Study site

This study was carried out in Nyandarua South sub-County, Kenya.

2.2. Study design

Descriptive cross-sectional facility based study design used.

2.3. Study population

The population for this study included all long serving adult T2DM clients.

2.4. Sampling design

Purposive sampling method was used in selection of the study area while probability proportionate to size (PPS) strategy was used to determine no. of participants in each facility. Systematic random sampling was used in the selection of subjects for inclusion in the study.

2.5. Sample size determination

The sample size was determined using Fischer et al; formula $n = z^2 pq / d^2$ and a sample of 294 participants was selected for the study

2.6. Data collection procedures

Data collection tool used was a semi-structured questionnaire constructed based on the study objectives.

2.7. Data quality assurance

Collected data was profiled to check for any inconsistencies and completeness, was cleaned and accurately described to uphold relevance to the study

2.8. Data management

Data was coded and entered in excel software, Microsoft office Excel 2010.

2.9. Data analysis

Statistical analyses were performed using statistical package for social sciences (SPSS) software version 21 (SPSS In., USA).

2.9.1. Descriptive analysis

Descriptive statistics were computed to generate frequencies, mean, median and standard deviation. Proportions for categorical data were computed.

2.9.2. Bivariate analysis

Bivariate analysis of the Chi-square test was used to examine differences in proportions between socio-demographic variables and the dependent variable. A P-value of less than 0.05(P<0.05) at 95% CI was considered significant for all statistical analyses.

2.10. Ethical considerations

Ethical approval for this study was granted by Kenyatta University Ethics Review Committee (KUEC) and permission to conduct the study sought from the National Commission for Science Technology and Innovation (NACOSTI). Administrative authorization for the study was sought from North Kinangop Catholic hospital and Engineer Sub-County hospital in Nyandarua South Sub-County. Informed consent was sought from all participants prior to data collection.

3. Results and discussion

3.1. Socio-demographic characteristics of study participants

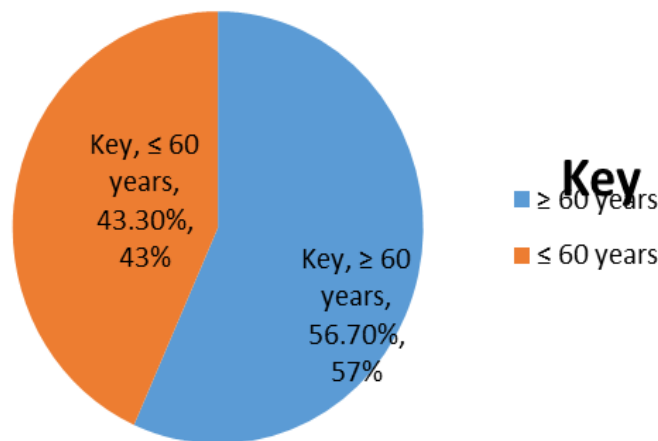


Figure 1 The participants’ median (range) age was 64.0 (18-91) with slightly more than half (56.7%) aged above 60 years.

Table 1 Socio-demographic characteristics of the respondents.

Variable	Category	Frequency (n=294)	Proportion (%)
Gender	Male	119	40.5
	Female	175	59.5
Level of education	Non-formal	83	28.2
	Primary	129	43.9
	Secondary	65	22.1
	College/university	17	5.8

Most of the respondents (59.5%) were females. A larger proportion of the respondents (43.9%) had primary level of education while those with college/university education were the least proportion (5.8%). Majority of the participants, (92.2%) were married.

3.2. Management of T2DM among study participants

A large proportion of the participants (46.6%) had poor dietary practices while the least (20.1%) indicated good practices. This was rated in reference to the diabetic plate outlining balanced diet for diabetics in the recommended nutrient proportions. Regarding participants' duration of physical activity, slightly more than half (56.5%) exercised for at least thirty (30) minutes in a day while one fifth (20.4%) exercising for 0 - 15 minutes daily. Majority of the participants (79.9%), indicated to have been monitoring their body weight once every month while the least (2.4%), monitored once every three (3) months.

Table 2 Association between participants' demographic characteristics and management of T2DM

Variable	χ^2 - Value	P- value	Frequency	df
Gender	0.043	0.836	294	1
Marital status	3.131	0.209		2
Education level	4.433	0.035		3

Socio-demographic characteristic that we found to be significantly associated with management of T2DM was education level (n = 294, df=3, χ^2 -4.433, P- 0.035).

Table 3 Bivariate analysis of association between socio-demographic characteristics and management of T2DM.

Variable	Good management (155)	Poor management (139)	OR (95% CI)	P-value
Age - median, (range)	68.00 (IQR=21)	62.00 (IQR=20.00)		
Gender				
Male	62 (40.00%)	57 (41.01%)	Reference	
Female	93 (60.00%)	82 (58.99%)	1.0427 (0.65-1.66)	0.8606
Education level				
Primary	69 (44.52%)	60 (43.17%)	Reference	
Secondary	33 (21.29%)	32 (23.02%)	1.1152 (0.61-2.03)	0.7204
College/ university	14 (10.07 %)	3 (1.94%)	5.3666 (1.47-19.58)	0.0109
Non-formal	50 (32.26%)	33 (23.74%)	0.7590 (0.43-1.33)	0.3340
Marital Status				
Single	9 (5.81%)	11 (7.91%)	Reference	
Married	144 (92.90%)	127 (91.37%)	0.7216 (0.29-1.80)	0.4835
Divorced	2 (1.29%)	1 (0.72%)	0.5337 (0.03-5.28)	0.4933

Bivariate analysis results of socio-demographic characteristics of the participants. Participants who had College/university education were 5.4 times more likely to practice good management of T2DM (OR 5.3666 (1.47-19.58), 95% CI, 1.47-19.58, P=0.0109) compared to those with non-formal, primary and secondary education levels. There was no significant association between participants' age, gender and marital status with good management practice.

4. Discussion

Influence of participants' socio-demographic characteristics on management of T2DM.

On the influence of socio-demographic characteristics on management of T2DM, the study established a significant association between education among the diabetes mellitus clients and management of T2DM. There was no association between age, gender, marital status and management practices for T2DM among the clients. Education level was found to be associated with management of T2DM. Participants with college and university education were more likely to manage the condition effectively. This finding is dissimilar to those from a study carried out in Qassim which found out that educational level had no influence on diabetes management [16].

5. Conclusion

Low educational level (EL) and low physical fitness are both predictors of increased morbidity and mortality in patients with type 2 diabetes.

Compliance with ethical standards

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Disclosure of conflict of interest

Authors declare no conflict of interest of any nature in this study

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors. However, ethical approval was sought from Kenyatta University Ethics Review Committee

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] International Diabetes Federation. (2015). *Diabetes Atlas, 7th Edition*. International Diabetes Federation. www.idf.org.
- [2] International Diabetes Federation (2017). *Diabetes Atlas, 8th edn*. International Diabetes Federation, Brussels <http://www.idf.org/diabetesatlas>
- [3] International Diabetes Federation, *IDF Diabetes Atlas Eight edition 2017*
- [4] Wild S, Roglic G, Green A, Sicree R, King H. (2004). Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care* 2004;27:1047–53
- [5] Conget I, Mauricio D, Ortega R on behalf of the CHADIG Study investigators, et al Characteristics of patients with type 2 diabetes mellitus newly treated with GLP-1 receptor agonists (CHADIG Study): a cross-sectional multicentre study in Spain *BMJ Open* 2016;6:e010197. doi: 10.1136/bmjopen-2015-010197
- [6] International Diabetes Federation. (2013). *Diabetes Atlas, 5th Edition*. International Diabetes Federation. www.idf.org.
- [7] Gonzalez-Zacarias AA, Mavarez-Martinez A, Arias-Morales CE, Stoicea N, Rogers B. Impact of Demographic, Socioeconomic, and Psychological Factors on Glycemic Self-Management in Adults with Type 2 Diabetes Mellitus. *Front Public Health*. 2016;4:195. Published 2016 Sep 12. doi:10.3389/fpubh.2016.00195

- [8] Mezyed, A. A., & Yahya, W. N. (2013). The Relationship between Demographic Variables and Diabetes Self-Management in Diabetic Patients in Amman City/Jordan. *Glob J Health Sci Mar*, 5 (2), 213-220.
- [9] Agyemang C, et al. Obesity and type 2 diabetes in sub-Saharan Africans—is the burden in today’s Africa similar to African migrants in Europe? The RODAM study. *BMC Med*. 2016;14(1):166
- [10] Cho NH, Kirigia J, Mbanya JC (2017) IDF diabetes atlas - eighth edition 2017. The International Diabetes Federation.
- [11] Powers AC. Diabetes Mellitus. In: Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. *Harrison’s Principles of Internal Medicine*, 18th ed. New York: McGraw-Hill, 2012
- [12] Rossouw, H. A., Grant, C. C., & Viljoen, M. (2012). Overweight and obesity in children and adolescents: The South African problem. *South African Journal of Sciences*, 108, 1-7.
- [13] MOH. (2013), Ministry Of Health, Nairobi Kenya.
- [14] KNDS. (2010). *Kenya National Diabetes Strategy 2010-2015*. Nairobi: Ministry of Public Health and Sanitation.
- [15] Dropkin. (2010). An Approaching Epidemic: Exploring Diabetes Awareness & Care in Mombasa, Kenya. *Independent Study Project (ISP) Collection Paper 820* .
- [16] Ahmad, A., & Rasheed, A. (2014). The role of educational level in glycemic control among patients with type 2 diabetes mellitus. *International Journal of Health Sciences*, 8 (2), 177-187.