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# Effects of Diabetes Mellitus in Prediction of Its Management in Kakamega County

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***Abstract:*** **This descriptive study aimed at studying whether the effects of diabetes mellitus can predict its management in Kakamega County and Kenya. 327 respondents took part in the survey, with 135 (41.3%) being females and 192 (58.7%) being males. Most of the respondents, 190 (62.5%) had acquired primary education, 23 (7.6%) of the respondents had attained post-secondary education. 91(29.9%) of the respondents had attained secondary education. Most of the respondents did know the side effects of diabetes mellitus 204 (67.1%). Those who said loose of body weight 91 (29.9%) as side effects of diabetes were many as compared to those who identified non-healing wounds 9 (3%). Most of the respondents indicated that they did exercise as part of utilization of glucose in the blood stream. Although bicycling was done as an exercise but those who did were 13 (4.3%) as those who did not were 291 (95.7%). A balanced diet results in control of blood pressure and dyslipidemia which was a good riddance in the study area. Both the national government and the county government of Kenya and Kakamega respectively should strengthen health systems through innovative health care and promotion on effects of diabetes mellitus so that the burden of diabetes mellitus is reduced on both the health care services and the community in Kakamega and Kenya.**

***Keywords:*** **Community, Diabetes mellitus, Health promotion, Health systems, Prediction.**

## 1. BACKGROUND

Diabetes mellitus is a disease in which the body is unable to properly use and store glycogen. Glucose backs up in the bloodstream causing one's blood glucose to rise too high [1]. Over 2.9 million people have died from diabetes mellitus from the more than 180 million people worldwide who were suffering from diabetes mellitus [2]. By the year 2000 it was estimated that 7.1 million Africans were suffering from diabetes mellitus, a figure that is projected to rise to 18.6 million people by 2030 and thus a burden of health system services and health promotion [3].

Most of diabetes mellitus cases in Kenya are high in urban areas as compared to rural areas that accounts for between 6-12% of all health-care expenditure. Most of the diabetes mellitus cases are found in urban areas of Kenya and this s largely attributed to the change in lifestyle. Management of diabetes mellitus requires adherence to dietary guidelines so that the foods eaten are exhaustive used by the body cells. A study found out that leguminous plants, for example, pulses (dry beans, chickpeas, lentils, and peas) and oil seed (soybeans), are a key factor in the diabetic diet [4]. These plants are nutritious products valued highly in nutrition. This specific group provides wholesome products of vegetable protein whose volume ranges from 20% in beans and peas up to 38–40% in soya beans. These proteins contain a large amount of lysine, especially in beans, which is the reason they are regarded as wholesome.

According to a study control of blood pressure and dyslipidemia in patients with diabetes mellitus markedly reduces their risk of cardiovascular complications to the need to include it in routine diabetes mellitus management services. In addition, glycemic control reduces the risk of micro-vascular complications such as retinopathy and nephropathy [5]. For

these reasons, less than half of all diabetic patients meet their combined targets for blood pressure, low-density lipoprotein and hemoglobin. Alcohol consumption in any population is usually dependent on its availability and socio-cultural factors. Excessive alcohol consumption has been associated with diabetes mellitus in adult Africans [6]. The rise of these determinants of chronic diseases reflects the major forces driving social, economic and cultural change in the Kenyan society. These same factors are driving the epidemiological landscape with chronic non-communicable diseases becoming major contributors to the national disease burden (IDF, 4th Edition). Limited access due to distance to health care not only influences the use of preventive services, but also elevates the risk of a decline in health [8].

According to a study retinopathy is a common cause of visual loss in the world and it is a potentially blinding complication of diabetes mellitus that damages the eye's retina [9]. Another survey indicates that diabetics are prone to retinopathy, glaucoma and various types of neuropathy [10]

Community Health Workers (CHW's) are a good avenue for strengthening health systems through health education and health promotion on diabetes mellitus management at the household level for accessibility and affordability of health care in rural communities, and are more appropriate to the health needs of the population than those of clinic based-services [11]

As part of sustainable diabetes mellitus management getting better control over your blood sugar, cholesterol, and blood pressure levels helps reduce the risk of kidney disease, eye disease, nervous system disease, heart attack, and stroke [12]. It is advisable to follow your health care provider's instructions on managing your diabetes mellitus and other diseases [13].

## 2. METHODS

**Type of study**: This descriptive cross-sectional study involved 327 people from Kakamega County. The aim of the study was to determine whether the effects of diabetes mellitus predicts its management in Kakamega county. 384 respondents were considered adequate after calculation from the total population of 28,445 people in the study area.

**Validation of research tools:** The questionnaires were peer reviewed by a biostatistician for validation of the questions. The questionnaire was then piloted on four respondents with similar characteristics like the study area. To enhance consistence all questionnaires were written in English language.

**Sections in research tools**: The first part of the questionnaire covered the respondent's socio-demographic information which included: sex of respondent, age, level of education, occupation and main source of income.

The questionnaire had a section on management of diabetes mellitus with questions on what foods eaten for breakfast and in the day, exercise for prevention or control of diabetes mellitus and mode of transport, distance covered to the nearest health facility and type of medical attention given at the facility.

**Administration of research tools:** The questionnaire was administered by interviewers with medical knowledge of diabetes mellitus and included community health extension workers and community health volunteers.

The interviewers were taken through one day training on the data collection tools before they embarked on data collection by moving from house to house within the study area. During data collection interviewees who declined, a second person was interviewed and in their absence the next household was visited. After entering the data analysis was done by descriptive statistics using SPSS software.

## 3. RESULTS AND DISCUSSION

The aim of the study was to determine whether the effects of diabetes mellitus predict its management and found out that those who took milk in the form of tea 201 (66.1%) formed the majority. The respondents who said they ate beans were 28 (9.2%), eggs 31 (10.2%) and those who ate mixture of foods 44 (14.5%). According to a study taking a balanced diet resulted in control of blood pressure and dyslipidemia which concurs with this study that most of the households took a mixture of foods which was likely to reduce their chances of developing diabetes mellitus [5].

The level of education of the non-diabetics was used to determine the level of their understanding and assess how a socio-demographic characteristic predicts existence of diabetes mellitus in Kenya. Most of the respondents, 190 (62.5%) had

acquired primary level of education, 23 (7.6%) of the respondents had attained tertiary education (post-secondary education) and 91 (29.9%) secondary education. Most of the respondents, Diabetics with formal education were likely to seek medical assistance from conventional health facilities. There was a contrast of level of education in this community as a study [1]indicates that comprehensive health promotion is important in the management of diabetes mellitus [14].

The study sought to find out what the respondents could identify the long term effects of diabetes mellitus. Most of the respondents did know the side effects of diabetes mellitus 204 (67.1%). Those who said loose of body weight 91 (29.9%) as side effects of diabetes were many as compared to those who identified non-healing wounds 9 (3%). According to [9] retinopathy is a common cause of visual loss in the world and it is a potentially blinding complication of diabetes mellitus that damages the eye's retina which is a contrast with this study that the community did not identify blindness as a side effect associated with Diabetes mellitus. A research indicates that diabetics are prone to retinopathy, glaucoma and various types of neuropathy and this concurs with this study where the respondents (diabetics) confided to be aware of the long term effects of Diabetes Mellitus [10]

The study showed that stretching exercise 14 (4.6%) was done as those who did not do stretching exercise being 290 (95.4%). It was reported that those who did walking exercise were 23 (7.6%) as the majority who did not walk for exercise being 281 (92.4%). The study sought to identify if bicycling was done as an exercise but those who said yes were 13 (95.7%). Most of people in this area of study were not doing exercises for diabetes mellitus therefore this was a risk factor for diabetes mellitus. This finding concurs with a study that obesity is a major risk factor for Cardio-Vascular Diseases (CVD) and this risk is said to be accentuated when obesity has a predominantly abdominal component. When people do not exercise through walking, stretching and weight lifting they are at a higher risk of concentrating lots of fats in the muscles [15].

## 4. STUDY LIMITATIONS

The enumerators were trained on data collection tools in order to reduce misinterpretations of the responses. The responses from respondents was assumed to be reliable. The questionnaires were in English and their administration relied on the translation of enumerators for the respondents to understand and answer as truthfully as possible.

## 5. CONCLUSION

The effects of diabetes mellitus have a contribution to prediction of its management. Most of the respondents had acquired primary level of education that was the basic form of communication on health education and health promotion in management of diabetes mellitus both at the health facility and school.

Most of the respondents did know the common side effects of diabetes mellitus as the indicated such signs and symptoms as loose of body weight, non-healing wound. The complications that arise due to diabetes mellitus could not be identified by the community easily. Retinopathy is a common cause of visual loss in the world and it is a potentially blinding complication of diabetes mellitus that damages the eye's retina which could not be identifies by the respondents.

The research showed that most of the respondents ate foods which combined made a balanced diet. A balanced diet results in control of blood pressure and dyslipidemia which was a good riddance in the study area. Both the national government and the county government of Kenya and Kakamega respectively should strengthen health systems through innovative and accelerated health care on effects of diabetes mellitus so that the burden of diabetes mellitus is reduced on both the health care services and the community in Kakamega and Kenya.

**Competing interests:**

The authors declare no conflict of interest.

**Authors' contribution:**

WMC participated in proposal and thesis preparation, obtaining the ethical approval, study design, data analysis and in drafting the manuscript. AM participated in supervision for shaping the thesis. CM participated in the correction of thesis preparation.

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