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Does Diabetics Support Groups Moderate the Relationship between Socio-economic Factors and Glycaemic Control among T2DM Patients in Nakuru Level V Hospital, Kenya?

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***Abstract*— The main investigation question of the study addressed was; does Diabetics Support Groups moderate the relationship between socio-economic factors and Glycaemic control among T2DM Patients in Nakuru Level V Hospital, Kenya? This study adopted a cross-sectional design using a quantitative method approach of individuals with T2DM between 20 and 79 years of age, having been diagnosed not later than January 2019 and on follow up outpatient visits at the Nakuru level V Hospital (NKLVH). The target was 8346 patients with T2DM aged between 20 and 79 years, attending outpatient follow-up diabetes clinic at NKLVH with a confirmed diagnosis evident from the patients' records. There were both exclusion and inclusion criteria. Primary data was then collected using semi-structured questionnaires administered to the respondents by the research assistants. The investigation used sampling formula by Yamane (1967) to arrive at 381 sample size of the patients. The 381 sample size was systematically and randomly selected from the NKLVH patients register, the numbers of those attending the diabetic clinic from Mondays to Fridays (attendance range of 35 to 55), and an average of 45 patients per day. Multiple regression models were used to analyze the moderating effect of social support group on the relationship between the socio-economic factors and Glycaemic control. Findings of the study established that the introduction of social support into the model as a moderator variables accelerated significant relationship between T2DM age of diagnosis, T2DM level of education, urban residence and T2DM patients who did not take alcohol and their glycaemic control among the sampled T2DM patients who attended Diabetics clinic in Nakuru Level V Hospital, Kenya. Social support did not have any moderating effect on socioeconomic factors as; T2DM gender, marital status, occupation and patients not smoking. The change in R2 by 12% in the regression model was therefore caused by social support moderator variable. The study recommends that Support Groups should be entrenched in T2DM Policy by the Ministry of Health since the investigation revealed a positive intercept between Socio-economic Factors and Glycaemic Control among T2DM Patients in Nakuru Level V Hospital, Kenya.**

***Index Terms*— Type 2 Diabetes Mellitus, Socio-Economic Factors, Health Services, Self-Care Behaviour, Social Support.**

I. INTRODUCTION

The burden of diabetics is greatly exacerbated by extreme emotional distress in people with diabetes [1]. Diabetes pain was found to have a detrimental effect on glycaemic regulation and quality of life [2]. For both type 1 and type 2 diabetes mellitus, psychosocial concerns have been reported worldwide. "Ref [3]" stresses that diabetes anxiety has greater links than depression with psychological, behavioral and social effects. The scenario posed by the authors is an example of the need for T2DM support systems, which are essential to the support group in this investigation.

Diabetic patients who do not respond to care have impaired glycemic control and increased problems associated with insulin treatment due to diabetes [4]. Fear of stigmatization [5] is one of the factors causing psychological insulin resistance (PIR). 'Stigmatization' refers to isolating a person or a particular group from society, discriminating, devaluing and accusing them, and generally treating them in a negative way [6]. The forms of stigmatization among Australian adults with type 2 diabetes were explored by [6]. Findings revealed that these people believed that in relation to their illness, they were criticized and blamed by society because of the belief that they eat too much, practice bad eating habits, lack physical exercise and are overweight as a result of the disease. It is important to note that stigmatization requires a support group in Nakuru Level V Hospital, Kenya, which was the objective of the current study that revealed data that support groups of diabetics moderated the relationship between socio-economic factors and glycaemic regulation among T2DM patients.

"Ref [7]" recorded that a number of studies were performed not only on how frequent self-care habits of diabetes (exercise, hypoglycemia, blood glucose self-monitoring and diet) were shown by patients who did not respond to diabetes treatment, gave up insulin treatment or were insulin users, but also on the fear of hypoglycemia, anxiety and depression of patients. No quantitative research was found to examine the effect on their views of insulin care of the support community for insulin-treated type 2 diabetic patients or examples of diet, exercise, and blood glucose self-monitoring support. In addition, the number of studies examining the correlation between hbA1C, the negative perception of insulin therapy, and the fear of stigmatization among type 2 diabetic patients treated with insulin is very low. The aim of the current investigation was to investigate the moderating impact of the support group for diabetics on the relationship between socioeconomic factors and glycaemic regulation in Nakuru Level V Diabetics Clinic patients with T2DM.

Further research on the stigmatization of diabetics, [8] found that the overall negative view of insulin care decreased

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with the growing daily number of injections used by type 2 diabetic insulin-treated individuals and with the increasing number of insulin-trained patients. Furthermore as their fear of stigmatization increased, the negative view of insulin care increased among patients. Societal judgment on 2 TDM patients is a problem that must be answered by health economists. In Nakuru Level V Hospital, Kenya, the current study attempted to resolve the stigmatization of T2DM patients by investigating whether support groups for diabetics moderate the relationship between socio-economic factors and glycaemic regulation among T2DM patients.

The strict medical adherence of diabetics, which can be improved by support programs, is also of interest to investigators. Results from [9] showed a substantial prevalence of uncontrolled and weak glycaemic regulation in one of the largest diabetes care settings in Libya among Libyans with T2DM. The most significant behavioral predictor of glycaemic function, accompanied by exercise, was adherence to medication. Adherence to medication as well as activity promotion services will also help to minimize the severity of poor glycaemic regulation. Patients treated with insulin and females have been established as needy classes and should be included in future therapies. The results demonstrated that much needs to be achieved. Further study is proposed to explore the efficacy of self-care approaches in Libya, which has a distinctive culture and values. The results of this research are applicable to the current study in which the support group was considered an important factor in promoting adherence to medication as well as exercise promotion programs.

As stated early in this study, the family support system is the main immediate support group in T2DM management, as [10] identified a direct relationship between family role and social support in a sample of type 2 diabetic patients attending the general outpatient department, among other key family characteristics and glycaemic regulation. A total of 156 subjects with an attrition rate of 7 percent, indicating impressive participation, were recruited into the sample. The results of [10] provide a significant indication that the current research was studied at Nakuru Level V Hospital, Kenya.

The correlation between socio-economic status and type 2 diabetes is well known [11], but in Nakuru Level V Hospital, Kenya, very little is known about the moderating impact of support groups on the relationship between socioeconomic factors and glycaemic regulation among diabetic patients. The largest number of subjects with type 2 diabetes were identified among those with the highest level of education in this sample. Furthermore the findings of [10] revealed a low level of glycaemic regulation among subjects studied with an average HbA1c of 8 percent (4.8-14 percent). Accessible research on the outcomes of diabetes treatment in hospital-based cohorts is restricted by the lack of data on levels of HbA1c, which is the best surrogate marker of diabetes control currently developed. For example, in the Diabcare Africa study, only about 47 percent of the participants had at least one HbA1c measurement during the 12 months before data collection. This figure ranged from 27.5 percent in countries in East Africa to 81.1 percent in countries in Central Africa. The latest research performed at the Nakuru Level V Diabetics Clinic is based on [10].

The reasons found among the study subjects for poor glycaemic regulation are multi-factorial. The poor level of glycaemic regulation among the study participants may have been accounted for by poor enforcement and compliance with follow-up visits and medications. Research by [12] revealed that financial difficulties are also a major factor since most patients have to pay out of pocket for their medications and blood glucose tests, and at a price that has been found to be much higher in other parts of the world than the cost of these drugs. A large proportion of health care expenses (74.5 percent) in Nigeria are borne by the patient, as only about 25.5 percent of health care spending is provided by the government (according to a WHO report). The WHO study reports that 90.2 percent of Nigerians are living below the $2 a day poverty line. Thus for people living with diabetes in Nigeria, accessing health care is a struggle. “Ref [12]” provided the path for the current research investigating whether income in the Nakuru Level V Diabetics Clinic was correlated with glycaemic regulation, the results of which are discussed in the form of findings and discussions.

In this research, the association between socio-economic status and diabetes was found not to be statistically relevant ($p=0.737$). High socio-economic status has been historically correlated with poorer health outcomes, and people living in low-income regions have higher rates of chronic disease-related mortality and morbidity, whereas the poorest of the poor globally are considered to have the worst health rates [13]. Ref [14]” showed a clear effect on poor diabetes outcomes from low income and lower educational levels, as demonstrated by ignorance and lack of sufficient knowledge or skills needed to maintain quality diabetes treatment and control. While adequate information is provided to T2DM patients in the Diabetics Clinics, the implementation of a support system improves the use of such knowledge for T2DM management, an investigation attempted by the current study at Nakuru Level V Hospital, Kenya.

A statistically significant association between family functioning and glycaemic control ($p<0.001$) and the MPSS score and glycaemic control ($p<0.001$) was shown by the assessment of the family functional status of survey participants using the family APGAR questionnaire and family support using the adjusted MPSS score. This agrees with results from other studies that have shown that family functioning is linked to glycaemic regulation [15]. The central role that a family plays in patient management, especially in chronic diseases such as diabetes in our environment, may explain this finding. This function may generate a positive result in some circumstances and may have a negative impact in some. In the management of a disease, a patient in a dysfunctional relationship would not be able to benefit much from such a family. Therefore it is fair that physicians handling patients, particularly those with chronic diseases such as type 2 diabetes, need to examine the family support available to those patients and the functional status of the family in others in order to efficiently use these proven tools in patient care. As stated earlier in this investigation, the center of the current investigation was the family as the first line support group, whose findings are presented in this article.

Given the importance of the reciprocal relationship between family function and glycaemic control as found in this research, it seems reasonable to conclude that improving

family function and implementing validated family-based patient management strategies will break the vicious circle by improving diabetic subjects' glycaemic control [10]. As an immediate support network, family relationships are important for T2DM patients, which was important for the current investigation as such information is not available among T2DM patients in Nakuru Level V Hospital.

Primary care clinicians should always determine the family functional status of diabetes patients in care, taking into account the findings of this report, and concentrate on a family therapy strategy for those patients who have been found to have impaired family functioning. Specially tailored strategies to ensure family engagement in patient care could prove to be an important addition to the normal diabetic treatment plans, i.e., lifestyle change and medications. It is also suggested that, following the results of this research, it may be necessary to test the hypothesis that specific measures aimed at improving family function can lead to an increase in the degree of diabetes control beyond that induced by diet, exercise and medication. It is proposed that a long-term longitudinal analysis of populations of diabetics with various levels of family functioning be carried out in order to determine conclusively whether family dysfunction has any causal impact on diabetes regulation.

While changes in diabetes treatment can enhance health outcomes, the regular diabetes self-management habits of patients do not generally support them [16]. It is not always easy or effective to incorporate self-management support (SMS) for people with chronic conditions and many challenges affect the implementation of SMS initiatives: lack of nurses, lack of incorporation of support for self-management into routine treatment, and the conventional model of acute episodic care have been described in the literature [16]. Research into organizational effects on the implementation of SMS in primary care, however is minimal. In this report, SMS applies to methods that include patient education, the collective use of behavioral-change strategies to facilitate lifestyle change, the implementation of habits that promote wellbeing, and the development of skills.

"Ref [17]" identified that for people with diabetes, SMS represents a significant but under-supported area of treatment. Currently, illness management programs (DMP) are being introduced. A variety of steps to improve the provision of SMS should however be pursued. These include the promotion of teamwork and inter-provider integration, ongoing training of HCPs for healthcare practitioners, and enhanced group infrastructure. The introduction of an Integrated Health Information Technology (HIT) framework, aligned financial benefits and a national education initiative for nurses working in general practice are particular examples. In speeding up the work of support groups, the use of a technology-based support system is significant, albeit not at the heart of the current investigation.

The preventive measure for the reduction of micro and macro vascular complications linked to diabetes is glycaemic regulation. Glycosylated haemoglobin (HbA1c) of less than or equal to 6.5% and Fasting Blood Sugar (FBS) of not exceeding 7.0 mmol/l are calculated as good glycaemic controls. Therefore to direct their treatment, people living with diabetes must have their HbA1c checked every 3 to 6 months (Holman, et al., 2015). Socioeconomic status (SES) is a significant determinant of periodontal disease [18]. Cross-sectional research using general populations found that low income and low education in the United States were correlated with periodontitis and countries using general populations other than Japan showed that comparatively low SES was associated with worse periodontal health in adulthood earlier in life [19].

In Kenya, however few studies have investigated the relationship between patients with SES and T2DM. Compared to developed countries, Kenya is considered to have a high socioeconomic gap, including a lack of adequate universal health system coverage that can finance T2DM patients. Because of the bidirectional association, data on the association between SES and periodontal status in T2DM patients is useful for target populations to enhance periodontal health in such patients and relevant for further consideration by medical practice when treating T2DM patients [20]. In developed countries such as Japan, research on the prevalence of T2DM and socio-economic disparity is prevalent [21] compared to emerging economies such as Kenya. Based on the empirical studies examined, the researcher concludes that there is no empirical study that has adequately answered the research question in form and content; does the relationship between socio-economic factors and glycaemic regulation among T2DM patients at Nakuru Level V Hospital, Kenya moderate for diabetics support groups? Therefore, this was the reason for carrying out the current study in Nakuru Level V Hospital, Kenya, which has shaded empirical light on the moderating role of the support group in the relationship between socio-economic factors and glycaemic regulation among T2DM patients.

II. Materials and Methods

A. The Study Area and Research Design

The research was performed at Nakuru Level V Hospital (NKLVH) in Nakuru District, which is the Nakuru County referral hospital. The hospital is Nakuru County's largest hospital, which provides more than 1.6 million people with health services and is used as a teaching and referral hospital and covers an area of 7235.3 km. The hospital serves most of the neighboring counties of the South and Central Rift Valley, including Nakuru, Kericho, Bomet, Laikipia, Baringo, Nyandarua and Narok counties. The hospital has a bed capacity of seven hundred (700) beds, according to the officer in charge of Hospital Nursing. Nakuru Level V Hospital has a Centre of Excellence for Diabetes. The hospital has diabetes support groups that enable patients with diabetes to deal with lifelong improvements in diabetes treatment and management.

The study followed a cross-sectional study design using a quantitative method approach for people between 20 and 79 years of age with T2DM, who were diagnosed no later than January 2019 and on outpatient follow-up visits at Nakuru Level V Hospital (NKLVH). The inquiry used primary data obtained using semi-structured questionnaires administered by the research assistants to the respondents.

B. Population, Sample Size and Patients Selection of the Study

The research targets 8346 T2DM patients aged between 20 and 79 years attending the NKLVH outpatient diabetes

follow-up clinic with a verified diagnosis apparent from the records of patients. The research used both exclusive and inclusive methods. The inclusive strategy was focused on patients aged 20 and 79 years and diagnosed with type 2 diabetes with daily follow-up at NKLVH no later than January 2019. The exclusive strategy was focused on patients under 20 years of age or over 79 years of age, pregnant women and patients with diminished mental illness due to their inability to give informed consent.

The study used [22] sampling formula to achieve a sample size of 381 patients. The sample size of 381 patients was systematically and randomly selected from the registry of NKLVH patients, the number of patients attending the diabetic clinic from Mondays to Fridays (attendance range 35 to 55) and the average of 45 patients per day. Therefore the study selected every third person systematically, which was an average of 15 respondents a day.

C. Ethical and Consenting Consideration

On a voluntary participation basis, the T2DM attending the diabetic outpatient clinic of the NKLVH patients recruited for the study complied with the inclusion and exclusion criteria. A standard KNH-ERC informed consent form was used to direct the consenting process. A qualified research assistant provided a consent form that provided data that helped the respondent determine whether to participate in the study or not. As outlined in the consent form, the object of the study, potential risks and benefits of participation and rights were clearly explained to each respondent by the recruited research assistants. The T2DM patients who were willingly recruited then signed the consent document for information. Until the required sample size of 381 was reached, recruitment of the consenting respondents proceeded. In order to address any questions and concerns that might arise during or after the interview session, respondents were free to contact the principal

investigator or the KNH-ERC via email or phone. In order to achieve the ethical and consenting regulation, the recruited T2DM participating patients were also told that they were free to opt out of the study at any time. The Kenyatta National Hospital - University of Nairobi Ethics and Study Committee accepted research protocols and survey instruments upon clearing and issuing a letter of introduction from the School of Graduate Studies (SGS).

The goal of the study was therefore to investigate the moderating impact of social support on the socio-economic factors influencing glycaemic regulation among T2DM patients in Nakuru Level V Hospital, Kenya (age at diagnosis, marital status, education, residence, occupation, income, whether patient smokes, drinks alcohol or belongs to support groups). The research question answered by the study was does social support affect glycaemic regulation among T2DM patients at Nakuru Level V Hospital, Kenya, moderate socio-economic factors (age at diagnosis, marital status, education, home, occupation, income, whether patient smokes, drinks alcohol or belongs to the support group).

D. Statistical Analysis

STATA statistical package was the main tool that was used in this study for data analysis. Descriptive statistics; mean, mode, standard deviation, frequencies and percentages was used. Multivariate regression model (1) was used to analyze the relationship the socio-economic factors and Glycaemic control.

$$PGlyC_{ij}=\beta_0+\ +\beta_1 Agedx_i+\beta_2 Sex+\beta_3 Educ_i+\beta_4 MS_i+\beta_5 Res+\beta_6 HSI_i+\beta_7 Occ_i+\beta_8\ SC_i$$

$$+\beta_9 Smok_i+\beta_{10} Alcohol_i+\ \beta_{11}+\varepsilon \quad \text{.....(1)}$$

Where **GlyC** = Glycaemic control**; Agedx** = Age at diagnosis; **Educ** = Education level; **MS** = Marital Status; **Res** = Residence; **HSI** = Household income; **Occ** = occupation; **SC** = Social Capital; **Smok** = history of smoking; **Alcohol** = history of alcohol intake **ε** = Error term.

The moderation effect was measured by the following model.

$$PGlyC_{ij}= \beta_0 + \beta_i X_i + \beta_i M +\varepsilon \quad \text{.....(2)}$$

$$PGlyC_{ij}= \beta_0 + \beta_i X_i + \beta_i X_i M +\varepsilon \quad \text{..... (3)}$$

Where

M= Social Support (1 with Social Support and 0 without Social Support)

Xi= Elements of socioeconomic factors

Bi= coefficients (i=1, 2, 3, 4, 5,6,7,8,9,10,11…)

The regression analysis tested the variation of the dependent variable explained by the variation in the independent variables by calculation of the R2 and adjusted R2 statistics. ANOVA for regression was also used to determine the goodness of fit of the produced model. A multiple regression model was then fitted to determine the combined effect that the independent variables had on the dependent variable when acting jointly. Findings were presented in form of tables accompanied by relevant discussions.

III. Results and Discussions

Using multiple Regression Analysis, we measured socio-economic and Glycaemic control of T2DM patients at Nakuru Level V hospital, Diabetics Clinic whose results are presented in Table 3.1. presented in terms of the coefficients, standard errors and the significance of the regressed variables.

Table 3.1: Multiple Regression Results of Socio-Economic, Social Support and Glycaemic Control

Random-effects GLS regression			Number of obs =			476
Group variable: code			Number of groups =			68
R-sq: within = 0.0035			Obs per group: min =			7
between = 0.2528			avg =			7
overall = 0.6076			max =			7
			Wald chi2(4) =			19.01
corr(u_i, X) = 0 (assumed)			Prob > chi2 =			0.0008
distr	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Agedx	15.233	4.228	3.60	0.000	6.946	23.52112
Gender	6.234	4.855	1.28	0.199	-3.282	15.74992
Educ	22.697	7.135	-3.18	0.001	-36.681	-8.713008
MS	7.022	3.0259	0.86	0.392	-.028	0.072992
Res	69.168	15.02	4.60	0.000	39.713	98.600
Occ	9.205	2.193	1.06	0.288	-.173	0.581
SC	-15.371	19.883	-0.77	0.440	-54.338	23.626
Smok	8.222	5.158	1.41	0.1600	-.088	0.531
Alcohol	2.392	9.537	4.45	0.000	1.339	3.45
_cons	.709	.126	5.65	0.000	.4626	0.955
sigma_u	.58027673					
sigma_e	.92493462					
rho	.28243078	(fraction	of variance due to u_i)			

Results presented in Table 3.1 on multiple regression results of socio-economic, social support and Glycaemic control among the T2DM patients who attended Diabetics Clinic in Nakuru Level V hospital. The study established overall R^2 was 0.607 indicating that 0.61% of the variance of glycaemic control is explained by socioeconomic factors and social support compared to 39% which were explained by other factors outside the current investigation. The study established a statistically significant relationship between T2DM patients age at diagnostic and glycaemic control (r=15.233, p=0.0.000<0.05). The finding revealed that increasing T2DM patients' age at diagnosis by 1 unit resulted into glycaemic control by 15.233 multiple units. The results indicated that T2DM patients' age at diagnosis was an important factor in predicting glycaemic control.

By introducing social support as a moderator in the model, the study established significant relationship between T2DM patients level of education and glycaemic control (r=22.697, p=0.0.001<0.05). The finding revealed that increasing T2DM patients' level of education by 1 unit resulted into glycaemic control by 22.697 multiple units. The results indicated that T2DM patients' level of education was an important factor in predicting glycaemic control. Third, findings on T2DM patients residence (urban) revealed significant relationship between T2DM patients residence (urban) and glycaemic control (r=69.168, p=0.0.001<0.05). The finding revealed that increasing that T2DM patients' residence (urban) by 1 unit resulted into glycaemic control by 69.168 multiple units. The results indicated that T2DM patients' residence (urban) was an important factor in predicting glycaemic control.

Further findings on T2DM patients not taking alcohol established significant relationship between T2DM patients not taking alcohol and glycaemic control (r=2.392, p=0.0.000<0.05). The finding revealed that increasing those T2DM patients not taking alcohol by 1 unit resulted into glycaemic control by 2.392 multiple units. The results indicated that T2DM patients' not taking alcohol was an important factor in predicting glycaemic control. The study established insignificant relationship between the following factors; T2DM gender, marital status, occupation, social capital, and patients not smoking and glycaemic control among T2DM patients who attended Diabetics Clinics in Nakuru Level V Hospital, Kenya.

Table 3.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Before moderation	.662[a]	.439	.430	.47802
After moderation	.747[a]	.559	.552	.42387
Difference	0.085	0.120	0.122	-0.05415

a. Predictors: Predictors; $\beta_i X_i + \beta_i X_i M$

The model summary after social support moderation established an R squared value of 0.559 indicating that the value of R-squared increased from 0.439 in the overall regression model to 0.559 with the inclusion of the moderating variable, indicating an increase in variation between the independent and dependent variable by 12%. As

such, the inclusion of the moderating variable (social support) enhanced the percentage of variance explained by the independent variables by 12%. This is a substantial enhancement since the independent variables now account for 55.9% from 43.9% in the first model. The remaining 44.1% of the variation in glycaemic control was accounted for by other factors not considered in this model. Analysis of variance was performed to check for the overall significance of the model with the moderating variable. The change in R2 by 12% indicates that there was a slight change in the moderating effect of social support on the relationship between socioeconomic factors and glycaemic control of T2DM patients who attended Diabetics Clinic in Nakuru Level V Hospital. This finding is supported by Odume, Ofoegbu, Aniwada & Okechukwu (2015) who established a direct relationship between family function and social support amongst other key family characteristics and glycaemic control in a sample of type 2 diabetic patients attending the general outpatient department. The findings are as shown in Table 3.2.

IV. Conclusions

The goal of this research was to address the question: Do diabetic support groups in Nakuru Level V Hospital, Kenya, moderate the relationship between socio-economic factors and glycaemic rcontrol among T2DM patients? The study found that the introduction of social support into the model as a moderator variable accelerated the significant relationship between the diagnosis age of T2DM, education level of T2DM, urban residence and non-alcoholic T2DM patients and their glycaemic regulation among the sampled T2DM patients who attended the Nakuru Level V

Hospital Diabetics Clinic, Kenya. There was no moderating impact of social support on such socio-economic factors as T2DM gender, marital status, occupation, social capital, and T2DM patients' non-smoking and glycaemic patients. Therefore the change in R2 in the regression model by 12 percent was caused by the moderator variable for social support.

V. Limitations

This study did not examine the technical improvement of the studied social support systems among T2DM patients, such as studies performed by [16]; [17], which analyzed the use of SMS in diabetic patient trials among the social support groups. Other social support systems that are technologically activated may exist, including the use of whatsapp, Face Book, Tweeter Social Media to improve the sharing of information between T2DM and social support groups. The sampling technique, which may restrict the generalizability of results to only T2DM at the Nakuru Level V Diabetics Clinic leaving out Referral Hospital Diabetics Clinics in Kenya, is another possible limitation, which may be of interest to researchers.

VI. Implication for Policy, Practice and Future Research

A. *Implication for Policy and Practice*

It is important to consider a policy push to increase the use of social support groups as champions of growing levels of glycaemic regulation among T2DM, especially among elderly people with T2DM. Giving priority to social support groups funded by the family could assist T2DM patients in tracking and managing sugar levels. Diabetics Clinics in Kenya can use family-enabled social support groups to achieve an improvement in the intake of medication for diabetics, blood sugar self-monitoring self-care to minimize the risk of complications and self-care to control emotion and psychological status. This will lead to an improvement in T2DM glycaemic regulation that can achieve healthier living for those who already have T2DM and deterrence among diabetics in Kenya of potential complications of the disease.

B. *Implication for Future Research*

The sample size should be more general and cover not only all of Kenya's Level V Hospital Diabetics Clinic, but also the three Referral Hospitals (Kenyatta Referral and Teaching Hospital, Moi Referral and Teaching Hospital and Kenyatta University Referral and Teaching Hospital) for future research on the moderating impact of social support groups on the socio-economic factual relationship.

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