Family Factors Influencing Their Participation In Self-Care Management For Patients With Dmtii In Kitui County.

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Abstract
Globally, it is projected that the number of diagnosed diabetes mellitus cases will surge by 642 million by 2035, with over 90% of these being attributed to type 2 diabetes mellitus. Kenya is also witnessing a growing burden of this disease, revealing a substantial knowledge gap among affected individuals and their families, particularly in rural areas where resources are limited. This knowledge deficit contributes to poor self-care practices among patients. This research endeavors to construct a family-based intervention model to enhance family involvement in the management of type 2 diabetes mellitus patients in Kitui County, Kenya. The study involves 68 participants and focuses on creating informative resources that underscore the significance of family participation and offer guidance on self-care practices related to diabetes mellitus type II (DMTII).

Within the sample, 28 participants (49.1%) reported daily monitoring of their blood sugars, whereas 29 participants (50.9%) admitted to not engaging in this practice. Monitoring encompasses various aspects, including overall health assessment, reviewing medication plans, adjusting treatment as needed, and receiving education on diabetes management. These findings underscore the necessity for targeted interventions and educational initiatives to enhance self-care practices among individuals with DMTII, addressing specific areas where adherence is lacking. Despite some positive self-care behaviors, identified areas warrant attention and improvement.

Healthcare providers can leverage these findings to develop tailored interventions, patient education programs, and supportive frameworks to enhance self-care practices among DMTII patients. By advocating and facilitating optimal self-care activities, healthcare providers contribute to improved health outcomes and reduced complications for individuals living with DMTII.

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I.   Introduction

Diabetes mellitus type II, often known as DMTII, is an example of a chronic non-communicable disease (NCD) that is on the rise all over the world. This type of problem is prevalent in more than ninetieth percent of diabetes cases that are presented.(International Diabetes Federation (Esteghamati, A.H., and Halabchi., F.2019). According to the American Diabetes Association (2017), global predictions suggest a substantial growth in the number of individuals affected with the condition, which is expected to reach 642 million by 2040. In addition, an equivalent increase is expected in the number of complications associated to the disease. A previous study that was carried out in the United States of America (USA) to determine the benefits of family participation in educational and support programs showed that only fourteen point four percent (14.4%) actively participated in diabetes care for their sick relatives. During this time, 16.3% of the patients carried out routine monitoring of their blood glucose levels. (Shultz et al., 2016) provides evidence that demonstrates why it is necessary to carry out this research.According to Azevedo et al. (2017), the existence of additional disorders, such as obesity and hypertension, as well as the adoption of sedentary behavioral patterns, such as drinking alcohol and smoking cigarettes, make the impact of DMTII even more severe. According to the World Health Organization (2018), some of the many variables that contribute to the alarmingly high incidence of the diseases include shifts in demographic features, transitions in cultural practices and beliefs, bad eating habits, and a lack of activities involving physical exercise.According to the World Health Organization (2016), it is common knowledge that the disease affects every single person of society. According to Gomez V et al. (2019), the nature of DMTII in its course necessitates long-term management that not only demands the sick individual to play an active role in the care but also requires the complete engagement of the family members. People who have the disease are best served by adopting a self-care management strategy that involves intervention at the family level. (ADA, 2017). Recent surveys have indicated that the majority of diabetes management takes place at home, and that members of the family play an important role in influencing care (WHO, 2012). Studies conducted by Orvik et al. (2019) reported a variety of responses from family members upon learning that their relative has DMTII. For instance, families with little knowledge of disease management may feel distressed by the sickness of their relative; as a result, they may not know what to do to support them, may not either understand the patient's needs, may lack strategies to cope with the emotional aspect of the disease, and therefore fail to participate in the care of their loved one. Association of American Diabetes Patients (2017). In addition, additional data suggests that having family members participate in diabetes care can help patients become better at managing their own self-care. This is done in order to justify the considerable gap that has existed with regard to the amount to which family participation has a significant influence on progress in self-care management for those who are affected by the disorder. which has been largely unknown; as a consequence, global studies have similarly reported that family members rarely participate in supporting their sick persons in attending to self-care activities. This includes attending significant educational sessions offered at their home, despite the fact that these are significant components of diabetes care management. (Center for the Control and Prevention of Diabetes (2018).

II.   Literature Review
Family related factors influencing their participation in self-care management

According to the institute for patient and family -centered care (2018), family members can be defined as two or more people who are linked in any way—emotionally, biologically, or legally—and as a result, can include nuclear families, extended families, single families, separated families, and others. According to burg et al. (2018), family members typically have an important role to play in the improvement of diabetes self-care management. This includes acting as reminders in medication adherence, changing patients' attitudes toward the condition in a positive manner, and initiating and maintaining changes in patients' activity and eating habits.Family-centered methods to the management of chronic conditions are extremely important because they place emphasis on the context in which the disease develops, which may include the patient's physical surroundings, relational dynamics, educational pursuits, and individual requirements, in addition to the requirements of their families. (HU 2108).According to Fisher et al.'s 2019 research, family members can have a positive influence on diabetes family structure, their views, and their skills in problem solving have demonstrated to lessen the stress that is associated to the disease's incidence. However, in the majority of situations, family members are actively involved in improving diabetes self-care management. They do this by providing crucial assistance in a variety of areas, including food, weight reduction, and blood glucose monitoring. Reminding patients to take their medications as directed, appointment attendants at the doctor's office However, there have been no studies conducted to determine the outcome of family participation in improving diabetes self-care management; therefore, it is essential that this study be carried out. even though It has been established that diabetes self-care management is affected by a number of familial characteristics, particularly attitudes and perceptions, among those who are afflicted with the condition. For instance, a study

that was carried out by Konen et al. (2017) and fisher et al. (2016) to evaluate the effects of family attitude and perceptions regarding the disease found that families who exhibited a positive attitude were more supportive, and their patients reported good glycemic control, healthier self-care behaviors, high levels of drug adherence, and reduced stress levels (Konen et al., 2017). Those members of the family who actively participated in the teaching activities showed tremendous improvement in diabetes self-care Practice, whereas those families who did not participate in the intervention programs had difficulties in implementing diabetes self-care Activities (Denham et al., 2016). This was found in a systematic review that was also done in 2014 to assess the impact of family educational interventions with the extent to family involvement. Glycemic control has been demonstrated to be significantly influenced by both the level of knowledge of diabetes self-management held by people living with the disease as well as members of their families, According to the findings of a study that was carried out by Mayberry and Osborn (2016), family members who had more knowledge had a tendency to engage in more supportive behaviors and were more likely to manage their disorder. On the other hand, family members who had little knowledge or misconceptions about the diabetes engaged in obstructive behaviors (maybery et al, 2016). According to the findings of a study conducted in China on diabetes self-care knowledge among family members and their patients (Li, et al, 2017), 50.09 percent of participants possessed fundamental knowledge regarding diabetes care. However, instruments that are valid, easy to administer, and dependable are extremely difficult to come by, which is why this study needs to be carried out. More recent researches have also demonstrated that having good information can result in desirable behavior. The American Diabetes Association (ADA) reports that diabetes intervention that involves the entire family not only contributes to the alleviation of stress brought on by the diagnosis of the condition but also generates awareness regarding the disorder's prevention, treatment, management, and control. Patients who showed a strong bond with their families were more motivated to make the right decisions, followed health instructions, and undertook various lifestyle changes as compared to those patients who showed a strained relationship (American Diabetes Association, 2016). A good relationship between sick people and their families influences the family to participate more in diabetes self-care management.

III. Research Methodology

The study was based cross-sectional descriptive study design was employed. Mixed methods approach was used to collect both quantitative and qualitative data from study participants. The study was carried out in Kitui County. The county is located 170 km to the south East of Nairobi city, in former eastern province of Kenya. Its capital and largest town is Kitui with Mwingi serving as a major urban centre. Kitui county has a population of 1,136187 (2019 census). The study population comprised of all adult patients clinically diagnosed with diabetes mellitus Type II for a period of at least six months. A questionnaire is a research instrument that is used to collect data comprising of a number of questions for the study participants to respond on. A Structured interview questionnaire was used to collect qualitative data from focused group discussions while semi-structured questionnaire was used to collect quantitative data. The data was analyzed using SPSS version 25.

IV. Results and Findings

Descriptive analysis on determination of the factors influencing family participation in self-care among DMTII patients at Kitui county.

To determine the factors on patients' related factors influencing family participation in self-care among DMTII patients was determined and the results were presented on table 8 below;

Table 1: Respondents analysis on the determination of the patients' related factors influencing family participation in self-care among DM TII patients at Kitui county

Test Item		F	%
In which ways has your educational levels influenced your family in participating in self-care activities?	Yes	27	47.4%
	No	30	52.6%
Has your knowledge on self-care activities influenced your daily diabetes practices in any way?	Yes	32	56.1%
	No	25	43.9%
Has your age affected the family participation in daily self-care practice?	Yes	27	47.4%
	No	30	52.6%
Has the family support provided made you realize the sense of belonging hence motivated you in improving diabetes self-care practice?	Yes	33	57.9%
	No	24	42.1%
Since diagnosis of the disease, how have you been able to cope and accept this chronic disorder?	Yes	23	40.4%
	No	34	59.6%
Has your cultural beliefs and practices affected your family in participating in diabetes self-care management?	Yes	22	38.6%
	No	35	61.4%
In your own opinion, what are some benefits in family participation in self-care management to the patient	Yes	31	54.4%
	No	26	45.6%

Would you recommend family participation in diabetes self-care management?	Yes	29	50.9%
	No	28	49.1%
In your own opinion, State the factors that you think;	Prevent family participation in self-care management	30	52.6%
	Positively influence family participation in self-care management	27	47.4%

Source Field Data (2023)

The study indicated 27 individuals (47.4%) indicated "Yes," indicating that their educational levels have influenced their families to participate in self-care activities. On the other hand, 30 individuals (52.6%) responded with "No," indicating that their educational levels have not influenced their families' engagement in self-care activities. On determination on "Has your knowledge on self-care activities influenced your daily diabetes practices in any way?" comprises two parameters: "Yes" and "No." Among the total number of respondents, 32 individuals (56.1%) answered "Yes," indicating that their knowledge on self-care activities has influenced their daily diabetes practices. On the other hand, 25 individuals (43.9%) answered "No," implying that their knowledge has not influenced their daily practices regarding diabetes care. Among the respondents, 27 individuals (47.4%) answered "Yes," indicating that their age has influenced family participation in daily self-care practices. On the other hand, 30 individuals (52.6%) answered "No," suggesting that their age has not affected family participation in self-care practices.

In analyzing whether the "Has the family support provided made you realize the sense of belonging, hence motivated you in improving diabetes self-care practice?" two parameters were considered: "Yes" and "No." Out of the total number of respondents, 33 individuals (57.9%) responded with "Yes," indicating that the family support they received has indeed made them feel a sense of belonging, thereby motivating them to improve their diabetes self-care practice. On the other hand, 24 individuals (42.1%) responded with "No," suggesting that the family support provided did not have the same impact on their sense of belonging or motivation to enhance their self-care practices. Out of the total number of respondents, 23 individuals (40.4%) answered "Yes," indicating that they have been able to cope with and accept the chronic disorder since their diagnosis. Conversely, 34 individuals (59.6%) answered "No," suggesting that they have faced challenges in coping with and accepting the chronic disorder since their diagnosis.

A response rate of 22 individuals (38.6%) responded with "Yes," indicating that their cultural beliefs and practices have influenced their family's involvement in diabetes self-care management. On the other hand, 35 individuals (61.4%) responded with "No," indicating that cultural beliefs and practices have not affected their family's participation in diabetes self-care management. Further the study indicated that 31 individuals (54.4%) answered "Yes," indicating that they believe there are benefits in family participation in self-care management for the patient. On the other hand, 26 individuals (45.6%) answered "No," indicating that they do not perceive any benefits in family involvement in the patient's self-care management. Among the total respondents, 29 individuals (50.9%) answered "Yes," indicating that they would recommend family participation in diabetes self-care management. Conversely, 28 individuals (49.1%) answered "No," indicating that they would not recommend family involvement in diabetes self-care management. Finally, study indicated that out of the total number of respondents, 30 individuals (52.6%) stated that there are factors preventing family participation in self-care management. On the other hand, 27 individuals (47.4%) expressed that there are factors that positively influence family participation in self-care management.

Inferential analysis on determination of the factors influencing family participation in self-care among DMTII patients at Kitui county.

To determine whether there was statistical relationship on the determination of the patients' related factors influencing family participation in self-care among DMTII patient's linear regression was used to determined and the results were presented in 3 tables which comprised of Model summary, ANOVA summary and multiple linear regression on table 9, 10 and 11 respectively.

Table 2: Model Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780[a]	.8200	.570	.00000

Source Field Data (2023)

The study indicated a moderate to strong positive correlation with an R value is 0.780, the R Square value is 0.8200, which means that approximately 82% of the variance in family participation in self-care can be explained by the patients' related factors included in the model and the adjusted R Square is 0.570, suggesting that approximately 57% of the variance in family participation in self-care can be explained by the patients'

related factors. From above table the study can indicate that the included factors have a substantial influence on family participation in self-care among Type II Diabetes Mellitus patients.

Table 3: ANOVA Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients

ANOVAᵃ					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.431	9	2.048	1.533	.003ᵇ
Residual	4.222	47	1.090		
Total	4.653	56			

Source Field Data (2023)

Table 10 indicates that the ANOVA summary where the f value was found to be 1.533 which was greater than 1 indicating good yield efficient model. At 95% level of confidence the model was found to be statistically significance wince the sig value was found to be 0.003 which was less than 0.05 indicating a statistical relationship between dependent and independent variable.

Research often explores the influence of social support on family participation in self-care from various diseases according to study by Moayed (2018). This can encompass emotional, informational, and practical support provided by family members or significant others. For effective communication and shared decision-making between patients, family members, and healthcare providers. Good communication facilitates family involvement in self-care management. Cultural and individual beliefs can influence family participation in self-care. Research may examine how these factors affect decision-making, attitudes, and behaviors regarding involvement in patient self-care. The role of patient and family education in promoting family participation in self-care. Providing adequate information and training to both patients and their families can empower them to engage in self-care activities.

Table 4: Regression Summary on the determination of the patients' related factors influencing family participation in self-care among DM TII patients

Coefficientsᵃ					
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.281	.396		3.234	.002
In which ways has your educational levels influenced your family in participating in self-care activities?	-.065	.086	-.113	-.752	.456
Has your knowledge on self-care activities influenced your daily diabetes practices in any way?	.061	.086	.106	.709	.482
Has your age affected the family participation in daily self-care practice?	-.022	.087	-.038	-.251	.803
Has the family support provided made you realize the sense of belonging hence motivated you in improving diabetes self-care practice?	-.044	.085	-.076	-.517	.607
Since diagnosis of the disease, how have you been able to cope and accept this chronic disorder?	.095	.096	.163	.992	.327
Has your cultural beliefs and practices affected your family in participating in diabetes self-care management? in any way? Please indicate in the space provided	.093	.088	.158	1.049	.300
In your own opinion, what are some benefits in family participation in self-care management to the patient	.023	.089	.040	.259	.797
Would you recommend family participation in diabetes self-care management?	.034	.087	.059	.385	.702
In your own opinion, State the factors that you think;	-.029	.088	-.051	-.333	.741

Source Field Data (2023)

According to table 11 the study indicated that there was an overall statistical relationship on the model since the sig value was found to be 0.002 which was less than 0.005 hence statistical relation at 95% level of confidence. To determine the beta value contribution of each parameter the study and the following multiple linear regression was developed to the study.

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \varepsilon$$
$$y = 1.281 - .065 x_1 + .061 x_2 - .022 x_3 - .044 x_4 + .095 x_5 + .093 x_6 + .023 x_7 + .034 x_8 - .029 x_9 + \varepsilon$$

From the equation above "Since diagnosis of the disease, how have you been able to cope and accept this chronic disorder?" was found to have the highest correlation of .095 hence high influence determination of the patients' related factors influencing family participation in self-care among DM TII patients while "In which ways has your educational levels influenced your family in participating in self-care activities?" had the least correlation of -.065 hence low correlation on dependent variable.

Thematic analysis on determination of the factors influencing family participation in self-care among DMTII patients at Kitui county.

The following were some of issues raised when it come to determination of the patients' related factors influencing family participation in self-care among DM TII patients.

"The support and dynamics within the patient's family play a crucial role in determining their participation in self-care. Supportive and involved family members who understand the importance of self-care and are willing to aid and encouragement are more likely to participate actively."

"Cultural beliefs and social norms can influence family involvement in self-care. Some cultures emphasize collective decision-making and family involvement in health matters, while others may prioritize individual autonomy."

"The burden placed on family caregivers and their availability to provide support can impact their participation in a patient's self-care. High caregiver burden or limited availability may affect the extent to which family members can contribute to self-care activities."

"Effective communication and shared decision-making between patients and their family members are essential for involving families in self-care. Open and respectful communication can foster collaboration and facilitate the exchange of information and responsibilities."

It is important to note that these factors are not exhaustive and may vary depending on individual and cultural contexts. Understanding these factors can help healthcare providers tailor interventions and support systems to enhance family participation in self-care among T2DM patients, ultimately improving disease management and patient outcomes.

V. Summary, Conclusion and Recommendations

Summary

The findings of the study indicate that educational levels did not significantly influence family participation in self-care activities, as reported by 52.6% of respondents. Similarly, knowledge on self-care activities did not significantly influence daily diabetes practices for 43.9% of participants. Age also did not have a significant impact on family participation in self-care practices, as indicated by 52.6% of respondents. However, family support had a positive impact on motivation and sense of belonging, leading to improved self-care practices for 57.9% of participants.

In terms of cultural beliefs and practices, they did not play a significant role in family involvement in diabetes self-care management, according to 61.4% of respondents. Additionally, the perceived benefits of family participation in self-care management varied, with 45.6% of participants not recognizing any benefits. Recommendations for family participation in diabetes self-care management were provided by 50.9% of respondents.

The ANOVA analysis showed a statistically significant relationship between the dependent and independent variables, indicating the efficiency of the model in explaining the data. This suggests that the model utilized in the study was effective in determining the factors influencing family participation in self-care management.

The study highlights the importance of social support and effective communication in facilitating family involvement in self-care. Cultural and individual beliefs can influence family participation and should be considered when designing interventions. Patient and family education play a crucial role in promoting family participation by providing necessary information and training.

Conclusion

The findings indicate that self-care practices and family involvement in DMTII management are influenced by various factors. Disease severity varies among patients, highlighting the need for tailored interventions based on individual needs. Complications related to DMTII and the level of family involvement in self-care activities emphasize the importance of support systems and targeted interventions. Motivating factors

for self-care, such as personal health goals, family support, and healthcare provider recommendations, can be utilized to enhance patient engagement. Effective communication and collective decision-making within the family play a vital role in promoting self-care practices. Understanding cultural and social factors and addressing caregiver burden are essential for optimizing family involvement. Overall, these findings provide valuable insights that can guide healthcare providers in developing interventions and support systems to improve self-care practices and outcomes for individuals with DMTII.

Recommendations

1. Develop comprehensive educational programs to improve dietary habits and encourage healthy eating practices among DMTII patients.
2. Design personalized exercise plans and promote physical activity as an integral part of diabetes self-care.
3. Establish reminder systems and adherence strategies to support medication adherence among DMTII patients.

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