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Conceptualization of Management of Comorbid Diabetes and Hypertension Conditions in Kenya: A Focused Ethnographic Study

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Abstract:
Background: *Chronic Comorbid conditions are emerging to be a global concern; while management interventions remain being medical oriented and fragmented, with diminutive regard to the cultural aspects of people especially at the primary health care levels.*
Aim and settings*: To understand how management of comorbid diabetes and hypertension is conceptualized in primary health care settings in Nandi County in the Kenyan from the patients and health care providers' perspectives.*
Methods*: Qualitative focused ethnography was used an approach of data collection within the community and grounded theory method was used for data analysis using the paradigm model. Purposeful sampling was used to select informants based experience and expertise related to management of comorbid diabetes and hypertension. Data was collected through triangulation of participant observation, interviews, focus group discussion and document analysis. Interviews were tape recorded, later transcribed verbatim, a series of coding was conducted leading to emergence of categories and core phenomenon of study.*
Results: *The core phenomenon of management of chronic comorbid conditions was conceptualized in different variations; these included: being collaborative in nature involving multidisciplinary, multisectoral and community collaborations and patient being involved as a team member. Comorbid condition management requires coordination of care and timely service provision across care setting. Management of comorbid diabetes and hypertension requires culturally sensitive care. Self-management of chronic comorbid conditions is patient centred rather than problem focused with support family or minimally from health providers.*
Conclusion*: Comprehensive management of chronic comorbid conditions has direct influence on the individual patients, community, health organization and health systems. This leads to improved health service provision and quality of life for people with comorbid conditions.*
Keywords*: chronic conditions, comorbid, culture, self-management, collaboration, diabetes, hypertension*

I. Introduction

Non communicable diseases (NCDs) are emerging to be a global concern. Most of the mortality cases occur in low and middle income countries reporting up to approximately 82% of total deaths. [1] Sub-Saharan region countries, Kenya included form one of the greatly affected regions with double burden of communicable and NCDs.[2] Kenya currently reports mortality rate of 50-70% of all hospital admissions due to NCDs. [3] Improved understanding of comorbidity nature of chronic conditions leads to knowledge development for health providers and improved self-management skills for patients.

II. Background to the Study

Most NCDs mortalities in the sub-Saharan region are premature affecting the most productive age groups of adults less than 60 years of age, leading to a vicious cycle of poverty yet they are preventable.[1] While chronic conditions occur as single conditions, most patients have more than one chronic condition occurring concurrently during the course of management, commonly referred to as comorbid conditions.[4] Hypertension is commonly known as a comorbid condition among adults' patients with diabetes, and form the leading cause of mortality and risk factors for cardiovascular diseases(CVDs), which globally causes 37% deaths.[1] With a myriad of irreversible complications, such as retinopathy, neuropathy and kidney diseases.[5-7] To date there is no acceptable definition of comorbidity despites its long term existence in the medical fraternity and its negative effectives in clinical care provision[8], there exists several terms which are used interchangeably to refer to the either the index conditions or the coexisting conditions. The terminology uses range from comorbid, multimorbidity, polymorbid, polypathology, multiple conditions and complex chronic conditions.[9] In this study comorbidity will be used to denote people living with two index conditions occurring to one person at the same time, with no regard to their pathological relationship.[10]

According to the most recent systematic review on people living with multiple conditions[9], it is approximated that 50% of the total population of people with chronic conditions in developed, and the prevalence of comorbidity in developing countries is yet to be determined due to double burden from chronic communicable conditions.[11] However, few studies from Sub-Saharan African have recorded higher prevalence ranging up to 70% or even higher both in rural and urban communities. In a study conducted in South Africa, Soweto hospital based prevalence of comorbidity among 844 heart failure patients, 10% had diabetes, with similar rate for those with coronary diseases.[12] In Kenya, Tanzania and Cameroon higher prevalence of comorbid diabetes and hypertension has been reported up to 50% of patients with reporting a lower level of control of the two conditions.[13-15] In the United States comorbidity of diabetes and hypertension has been reported to be above 75%, representing 23,6million with diabetes and 74,5million with hypertension while in Thailand 78.4% have comorbid diabetes and hypertension.[16, 17] In Canada comorbidity prevalence of obesity and diabetes was almost 75% with diseases ranging from hypertension, diabetes mellitus and dyslipidaemia. Noteworthy comorbidity is influenced by age, gender health beliefs among other social health determinants, which also affect the utilization and quality of care in the health system and organizations.

It is widely known that patients with comorbid conditions tend to use more health care services, including making frequent visits to healthcare providers and have increased health expenditure as compared to those with single chronic conditions.[18] The burden of comorbidity to the health care organizations and the individual need to be understood both theoretically and practically to enable ample planning and reorganization of the current acute and single disease designed health systems to comorbidity comorbid patients.[9] Studies have indicated that patients with comorbid conditions, report high rates of admission, mortality rates and prolonged hospital stays.[19] Community and rural setting comorbidity of diabetes and hypertension has been found to be one cause of increased poverty due to high cost of treatment and lifestyles modification. Comorbidity also increases the number of defaulters, a direct opposite view in developed countries.[20] Studies conducted in sub-Saharan Africa, have reported a biological interaction between chronic communicable conditions and NCDs, which continue to increase the burden to the existing PHC services. [11, 21, 22] While other studies suggest the focus of care should be on the severity and type, rather than the prevalence[23],due to effect on self-management, other studies advocates for deeper understanding of the point of interaction of the comorbid conditions especially where HIV and opportunistic diseases such as TB are involved.[11, 22] Similarly [10, 24] have proposed four categories of chronic comorbid conditions as: Causal or common pathology; complicating morbidities; Concurrent with or without known cause in relation to index condition and intercurrent-interacting acute conditions limited with time. Other categories have further been elaborated and categorized further by [10] in relation to medical specialization, which also need to be considered during management of comorbid conditions in PHC settings. Interactions between risk factors usually may have lasting implications to the expected health outcomes of individuals and the health care systems.[8]

Despite the enormous studies on chronic conditions, comorbidity is yet to be understood from the perspectives of health care research, patients and health care perspectives, with few patients with comorbid conditions being included in clinical trials.[25] Health care systems currently remain monopolized with paternalistic control of health care service provision, neglecting patients and community roles in healthcare provision, either as key partners or teams members.[26, 27] Research has further shown that most patients with chronic comorbid conditions are poorly managed, majority do not achieve optimal required level of control for either of the conditions.[28-30] Studies done in Europe have shown that intense monitoring and management, has minimum changes among diabetic patients as compared to intensive control of hypertension in reducing vascular complications as well as mortality rates.[31, 32] In the same study the benefits of intensive blood pressure control at 87mmHg for diastolic pressure was more than control of blood glucose levels at HAb1c 7.6% or 7.0%. The Hypertension Optimal Treatment (HOT) study indicated that the cardiovascular mortality reduced by 43% when blood pressure reduced to 130/80mmHg among patients with comorbid conditions, on strict intensive treatment and proved to be cost effective. [32] However, risk factors and environments of care in sub-Saharan region do not favor the intensive control of both conditions. [33, 34] In Kenya the level of control achieved for patients with comorbid diabetes and hypertension has been low regardless of the level of facilities and cadres of health care providers. In a study conducted in a tertiary hospital on diabetes patients with comorbid cardiovascular conditions out of 211 participants with diabetes and hypertension only< 30% achieved level of control of diabetes measures and 65% did not achieve hypertension level of control despite being on treatment. [15] Similar results although with low and other with high levels have been reported within the country and regional clinical based studies.[35-38] The persistent low level of control achieved in most patients' necessities further investigations to understand the phenomena of management of comorbid conditions in an effort towards comprehensive and wholistic patient's management. The objective of this paper is therefore to explore how patients and health care providers understand management of chronic comorbid conditions with reference to diabetes and hypertension in selected Primary Health Care (PHC) facilities in Kenya.

III. Methodology

The study of objective is to understand how management of chronic comorbid conditions (diabetes and hypertension) is conceptualized from patients and health care providers' perspectives in Kenya primary health care systems. A qualitative focused ethnography was used as an approach of data collection within the community and grounded theory method was used for data analysis using Strauss and Corbin paradigm model.[39] This article forms part of a doctoral thesis, where a full detailed explanation of focused ethnography study design has been explained.

3.1 Study Setting

The study was conducted in Nandi County in North Rift Valley region of Kenya. The County covers an area of 2.884.4 KM^2. The county is subdivided into six political and developmental constituencies, and has a population of 813,803 people [40] and has a total of 129 health facilities; among them is the county referral hospital, which is the hub of primary health care in the county. The county is grouped to be in the rural area as only 37% of the total population resides in urban areas.

3.2 Ethical Considerations

Ethical clearance granted by the University of KwaZulu Natal Bioethics Committee (BE231/2014). In Kenya the institutional clearance was sort from Baraton University and National Commission of science and technology and innovations, provided permission to conduct the study in Kenya in Nandi County (NACOSTI/P/14/4551/3239). On the ground gate keepers were approached by the researcher and permissions was granted by the county commissioner, County Ministry of Education, County Ministry of Health and respective supervisors of each health facility gave permission to conduct the study.

3.3 Sampling and sample size

In accordance with ethnographic studies, informants are purposely selected based on their experience and knowledge on the area of interest or by being members of the culture under investigation.[41] In this study participants in this study were selected purposefully based on their experience and expertise in the management of comorbid diabetes and hypertension. A total of 33 participants took part in this study. This included 6 patients with comorbid diabetes and hypertension, 7 members of the support group, 13 health care providers, 2 Community health workers, 2 focus groups discussions were held with health care providers.

3.4 Data collection and analysis

Data collection was achieved mainly through observations, where the researcher was the main tool of data collections.[42] Informants' were informed about the study and the chances of being observed by the researcher, interviewed in the course of the study with their consent, signed and confirmed verbally. Data was collected through triangulation of several techniques namely: informant observation (participant observation), interviews, focus group discussion and document analysis. Participation in the study was voluntary and withdrawal from the study was also voluntary with no consequences attached. The researcher took the role of informant observer, as at some facilities it was necessary for the researcher to participate in some routine activities to be able to observe what was being done in the health facility. Data collection in the field took a period of 10 months of episodic emersion in the culture of the community of study. Data analysis was done concurrently with data collection and continued throughout the period to allow the emergence of new themes and questions for further data collection. Interviews were tape recorded; later transcribed verbatim, those collected in the Swahili language were translated into English and back translated to Swahili for quality checks. Data coding was done manually and adhered to coding sequences of open, axial and selective coding and data followed [39] the paradigm model for model or theory development.

The results which are herein presented forms part of a doctoral thesis as major findings on the management of chronic comorbid diabetes and hypertension among adults in PHC settings in Kenya.

IV. Results

The results reflects data collected from 5 health facilities, interviews and discussions with patients, care givers and 2 focus groups discussions (FGD#1-2) with health care providers representing health facilities in the county which participated in the study. Health care providers and patients participants in this study are abbreviated as (HP#) and (Informants #) respectively, while support group discussion with patients is abbreviated as (DSG#) and Community Health Workers as (CHW#). Table 1 presents a summary of the informants' responses on the conceptualization of management of chronic comorbid conditions in the Kenyan context.

Management of chronic comorbid conditions emerged as a core phenomenon, which was conceptualized as being collaborative in nature, is continuous in nature across care settings, requires self-

management skills and culturally sensitive care was the most outstanding characteristic of management in the County.

Management of chronic comorbid conditions was conceptualized to be collaborative in nature, involving a multidisciplinary team bade of health care providers with different levels of training, specialty and skills to management comorbid conditions. The goal of management united members of the health care team of improving the quality of care and improving

In this facility we collaborate together to ensure that patients receive quality services,… we work as a team comprising of clinicians, pharmacists, laboratory offices, nurses, and patients, it is a team work to manage chronic conditions….HP#8
Working as a team of health professionals together gives you the confidence of providing all rounded quality care to our patients….in collaboration you handle the patients' problems wholesomely with confidence as everyone is involved….they have multiple conditions which one individual cannot manage comprehensively……..HP#4

Collaboration was also evident in the form of multisectoral collaboration within the county level and at national levels. The most evident collaboration was between the agricultural sector and health sector in sensitizing the community on food productions relevant to chronic diseases risk factors chronic conditions. Collaboration between public health sector and ministry of health in developing relevant school health programs to access school going children who form one of the most vulnerable groups for risk factors.

Collaborations exist between agriculture, education and nutrition sectors although on small scale has been going, to produce food which is organic and advising members of the public how to prepare the same food, as risk prevention... reaching out the young people at schools through education and risk factor prevention especially malnutrition We collaborate to produce what utilized within the county….FGD#1
Collaborating with farmers to produce food in the region of high quality ensures that the patients with comorbid conditions in need of diet adjustments are catered for always…. HP#5

Collaboration was also evident through involvement and participation of the community in community health projects, active representation of health members in decision making on healthcare service provision during action and dialogue days. The significant role of the community in partnership with through CHWs, collaboration with the community on health issues affecting individual members of the community defined management of chronic conditions.

In this community members collaborate to provide care at household levels… when one is sick, they take responsibility of looking for ways to get medical attention…especially the elderly….they are all members of this community so we are responsible for their care….CHW#2
Community members and other organizations collaborates to ensure that, those patients who cannot afford medicine, are helped to access the essential medicine at an affordable price, when the health sector cannot supply….HP#5

Management of chronic comorbid conditions was defined as being characterized by the need for continuum of care in the form of time and care coordination across different levels of care and providers. Informants indicated that continuity is the ability of the patient to have access to well-coordinated care right from home to the highest level and back home. Patients perceived continuity to be availability and access of health services on time and of good quality from health care providers, who on the contrary viewed continuity as a process of being regular and adherence to treatment plans and schedules for review. Patients preferred going to facilities where they can access service within shortest time possible and access medicines for their conditions.

….Linkage of chronic condition patients from the county hospital back to the health centre, dispensary and community units (households)….to ensure continuity of care for patients….communication between health care providers about patient's conditions during follow-up…. HP#10
When referring a patients who needs care of another facility…we first call to inform the receiving facility of the patients....Write well about the patient information and the nurse on duty coordinates the whole process to ensure that the patient receives quality care, and leaves on time to ensure continuity and good outcome of care….HP#12

The findings of this study indicated that in the context of PHC strategy of service provision management of chronic comorbid conditions was defined as culturally sensitive process of care provision: Culture sensitive care is cognizant of the unique and sensitive needs of individual patients, which need to be accommodated, negotiate and respect their point of view. Health care providers require culture competence skills to be able to understand cultural aspects of care and its influence especially to chronic care. One health care provider intonated as follows:

One needs to be culture sensitive in this community…..try and fit in the norms and expectations of a patient when they come for health care services…Otherwise you may never get to really understand the patient or their families…..HP#12

The following sub-themes emerged as characteristics of a culturally sensitive care in the management of chronic comorbid conditions.

Culturally embedded parent-child expectations*:* it emerged that in a community setting, parents and their children had expectations on each other, especially with the onset of chronic conditions, which add responsibility of each member in the community. It was observed that parents expected their grown up children to provide for their medical costs, provide emotional and physical support, including accompanying them to the clinic for checkup. On the other hand, culturally siblings and children knew their roles on their sick parents, to care, plan together assign duties and implement the intervention for their older and sick parents: some of the extracts from informants included:

…. we talk and plan about his management both at home, and in Eldoret there is one of my brother in Eldoret, we plan together and he will consult the doctor when need be, then we do what he has said. It is part of us now, we discuss and plan, implement his care with my siblings…. Care Giver#2.
……Culturally in this community it is a requirement or let me say it is expected for children to support parents, especially when they are unable to do anything by themselves it is a norm ….HP#8

Culturally determined gender roles and expectations**:** it was observed that for care provision of culturally congruent care, health care providers needed be cognizant of the culturally determined roles and expectations within the community. Men and women in this community perceived their care differently and reacted to health care instructions differently, based on cultural ascribed roles for instance, culture determined meal preparation and care provision roles for women, and prohibited men from meal preparation or even give instructions on how to prepare certain meals. Informants indicated that:

Men in this community don't cook or even prepare meals for themselves, so it is good to involve wives and children on how to adjust diet for the patients and for the entire family….HP#8.
How can I give instructions to my wife how to cook my food…? I really don't know what to do there… I don't go to the kitchen, so I eat what she prepares for me all the time, if she does not prepare what is required, then I eat it just like that…DSG#5.

Culturally embedded religious beliefs and practices: It emerged that religion played a central part in community, especially when faced with a challenge which seemed to have no immediate intervention. Most informants indicate that they believed in a supernatural being and were in control of their health. Diversity in religious beliefs and practices was a common in the community, patients and health care providers addressed them differently to accommodate each other's needs. Extracts from informants are presented below:

… understand the religion of the patients, to know what to teach them, on self-care, diet modification with prayers and what are the risks involved with the practice and comorbid conditions……SGD#6
I am a Muslim, when I want to fast for prayer, I first consult with the nurse, and I measure my sugar levels, and adjust my eating time and what type of fasting I will do…it is about knowing yourself before you fast….SGD #2

It was observed that there was a group of religion, who do not take tablets or any processed products within the community, yet they need health care services for comorbid diabetes and hypertension. Within the context of managing this type of patients, one health care provider had this to say:
…..Some patients don't take tablets or injections because of religious beliefs and orientation, they need to be understood and helped to manage their health, while you respect their autonomy and religious practices…but you know they need it to survive… …. you learn to respect their choices and accommodate them through teaching them what to do…. HP#6

It emerged that health care providers in primary health care setting, being cognizant of diversity in the practices, had tailored the traditional health talks to accommodate their clientele needs based on their religious beliefs and practices. One informant had this to share.

When preparing teaching materials and health education to a group, you need to understand the religious stand for the group…so that they are relevant in the community which they will be used, particularly when the community is composed of both Muslims and Christians and extreme cases of religion also exist here too….HP#10

Management of chronic comorbid conditions was also defined as being characterized by self management, which emerged as being central to the whole process of chronic care service provision. Patients and health providers indicated that most of the management aspects of comorbid conditions were dependant on the patients' ability to take care of their own health as instructed by the health care providers towards either ameliorating the signs and symptoms of the disease process or preventing onset of complications. Self management was characterized by but not limited to the following activities by the patients or with assistance from families and health care providers.

Self assessment emerged as the patient's ability to perform self assessment of the body to identify deviations from the normal order of the body. Empowered with information, and skills patients were able to perform these activities with easy as reported by some of the informants.

With this conditions, you manage them well by being able to do your own assessment of the body parts you can see and reach for….I check the legs for heat, if I am able to sense, any color change on my legs or body, small lesions on my legs and go for medical consultation immediately or next day….SGD#5
I go for body assessment in the clinic, especially the eyes as I cannot assess them myself, but the nurse does them for me….SGD#2

Self drug administration and monitoring: informants especially patients indicated that they have the potential and the efficacy conduct self drug administration at home with ease or with assistance from their immediate family members. This also indicated their determination to master the regimen of treatment despite mutable drugs involved; this defined their understanding of management. Extracts from informants on self- drug administration indicated:

Myself I understand that I have to take my medicine tablets daily, but my son injects me because I cannot see clearly the small needles, he does it for me daily…it is a commitment on my part and him also for everyday of my life…..Informant#2

Awareness of danger signs: management of chronic comorbid conditions is the ability of the patients to identify and be cognizant of danger indicators and take appropriate measures to correct them within the sorted time possible. The ability to identify and recognize danger signs was based on previous experience or knowledge of the same from health care providers or support group peers. Abstracts from informants represent the same.

I am aware that when I feel so lazy to wake up in the morning …I know the sugar levels are low and needs my attention by eating something to boost it……..SGD#1
When you feel the head is so light, and you lose your balance when walking…at times you can start sweating so much, then you just need to take action by taking something sweet or ask for help form someone...SGD#3

Dietary adjustment and regulation: self management of comorbid chronic condition just like single chronic conditions was characterized by diet adjustment and regulation. Informants indicated that they had to adjust their primordial diets in terms of eating the right amount at the right time, right type of food and regulate the frequency of eating towards meeting the goals of management and controlling the blood pressure, weight and glucose levels. Informants had this to say:

With this conditions in my life, I have learnt to eat food in the right time, at the right amount and type…I stopped eating what I am not supposed to take…..I take food being aware of my condition always…..Infromant#1
…..it means I observe the diet they (nutritionist) want me to eat at the right amount, time and type….. I eat white maize meals just like anybody, but I eat small quantity, eat vegetables, rice, milk, and I also eat fruits (oranges) a half of the fruit….but with an open mind and moderation not to make the sugars scale up again……Informat#3

Table 1: Conceptualization of Management of Chronic Comorbid Conditions

Table 1. Conceptualization of Management of Chronic Comorbid Conditions		
Themes	Sub-themes	Ethnographic description
Collaborative in nature	Multisectoral collaboration	… We collaborate with NGO with home based services to follow up patients during home visits… that improves the quality of care and outcome…..HP#2. Collaborations exist between agriculture and nutrition sectors although on small scale has been going, to produce food which is organic and advising members of the public how to prepare the same food, as risk prevention... We collaborate to produce what is utilized within the county….FGD#1
	Multidisciplinary collaboration and team work	
	Patient – provider /community Partnership	In this facility we collaborate together to ensure that patients receive quality services,… we work as a team comprising of Clinicians, pharmacists, laboratory offices, nurse, and the patients themselves—it is a team work to manage chronic conditions….HP#8
Requires continuity of care	Care coordination between facilities During referral Timely services and back referral	Involving everybody in the fight against chronic conditions is the way to go….HP#6 In this community members collaborate to provide care at household levels… when one is sick, they take responsibility of looking for ways to get medical attention…especially the elderly….they are all members of this community so we are responsible for their care….CHW#2
	Liking of patients from home to hospital	…Write well about the patient information and the nurse on duty coordinates the whole process to ensure that the patient receives quality care, and leaves on time to ensure continuity and good outcome of care….HP#12 …For back referral,…we receive information on what needs to be done for the patient as follow up directly to us or more detailed information on the discharge sheet of the patient, to ensure continuity of care in the next level of care…… HP#3
Self management focused care	Self -Assessment	One needs to be culture sensitive in this community…..try and fit in the norms and expectations of a patient when they come for health care services…Otherwise you may never get to really understand the patient or their families…..HP#12
	Dietary adjustment	I assess the legs for heat, if I am able to sense, any color change on my legs or body, small lesions on my legs and go for medical consultation immediately or next day….SGD#5 I go for body assessment in the clinic, especially the eyes when as I can assess them myself, but the nurse does them for me….SGD#2
	Recognition of danger signs	With this conditions in my life, I have learnt to eat food in the right time, at the right amount and type…I stopped eating what I am not supposed to take…..I take food being aware of my condition always…..Informant#1 Managing diabetes ad pressure means I don't take sugar or salt at all in my food, I also take measured meals not just like anybody, but I eat normal food (white maize meal), I don't smoke or drink any alcohol anymore…..Informant #5,
	Self drug administration	When you feel the head is so light, and you lose your balance when walking…at times you can start sweating so much, then you just need to take action by taking something sweet or ask for help form someone…SGD#3
		I do understand that I have to take my medicine the tablets daily, but my son injects me because I cannot see clearly the small needle my son, does it for me daily…it is a commitment on my part and him also for everyday of my life…..Informant#2 Being diagnosed with sugar and pressure, means you take medication as required daily at the right dose you were told to take, and time... For me it means I swallow my medicine and inject myself with insulin on my legs (thigh) every day morning and evening. It also means I use the machine to know how far my sugars are once in a while…..Informant #1

V. Discussion

The findings of this study indicate that management of chronic conditions in primary health care settings can never be a sole responsibility, but requires collaborations from related sectors with the health care system, both at national, county and community levels. It is of significance for the patient and health care provider to collaborate in setting goals, be motivated to achieve the goal and be satisfied with service given or received. The collaborative nature of chronic management is being supported and proven to be effective especially in HIV interventions programs in western region of Kenya.[5]

From this study it emerged that despite the care being collaborative in nature; it required being continuous along the progression of the conditions, regardless of the outcomes. Functional referral systems across care settings for both to forward and back referrals have proven to be effective in chronic cares services in both developed and developing countries.[43] Care coordination for patients with complex chronic conditions in North Carolina, reduced readmission cost for the medical aid and the patients. [44] Care coordination and timely services to patients, solves the long standing care fragmentation and poor referral systems which cuts across the developing countries' health care systems. These findings continue to echo the recommendations from other studies [45, 46], despite that most of the care coordination success has been on HIV and AIDS service provision.

Thirdly the findings indicated that self –management is a central aspect of managing of chronic comorbid conditions especially in PHC settings. Self management is the ability of individual patients to take active roles in making decisions concerning their health and life. Self management is based on the cognitive learning ability of both the patient and the provider, to be empowered with right information, which triggers the initiative to perform activities on daily living with comorbid conditions. In this study self management revolved around self assessment of the patients for early identification of deviations from the normal, mainly at the foot and eyes which are the first indicators of onset of complications.[6] Self –drug administrations and monitoring at home, emerged to be practiced among patients, recognition of danger signs, although not directly related to level of control achieved by the patients, as similarly reported from studies across the region. In a study done in Kenya, found that self-monitoring levels were less that 80% and not related to level of control achieved.[47] Self–management skills are influenced by the level of literacy, physical functionality, social motivation of the patients, and the psychological status of the patients to cope with the life and disease induced stress.[27, 48]

From the findings on culturally congruent care in the management of chronic comorbid conditions, it is apparent that patients with comorbid conditions have unique needs, practices and beliefs which determine their health seeking behavior**.** It also become evident that health care providers culturally competence skills in the provision of care to patients with comorbid conditions cannot be undermined or be compared to routine health service provision. According to Schim, Doorenbos (49) cultural competence skills gives the provider the ability to understand his/he own culture as a person, profession and the culture of the health care organizations to allow culturally congruent care emerge. In conceptualizing cultural congruent care, patients and health care expectations need to be merged to form a union which will allow continuity of care in the community. According to BeLue, management of chronic conditions is heavily determined by culture, just as it is equated to comprehensive primary health care, excellent leadership, and health interventions specific to conditions, so does culture which cuts across service provision. [50] In a study conducted in South Africa, based on the PEN-3 model, it indicated that culture determines the meaning attached to the conditions and actions to be taken by the individual or family, culture determines identity, it shapes relationship and expectations and cultural empowerment of the individual or community.[51]

The findings further elaborate the culturally embedded parents/children expectations and relationships. Children are culturally expected directed to provide financial, emotional and physical support to their patients, absence of the care leads to emotional distress and noncompliance to care. This finding is congruent to findings from several other studies in the African context which includes Kenya.[52, 53] In a study conducted in Ghana on illness practices of patients with diabetes and healer shopping, the study indicated the role of children to their ailing parents. [54] Similarly lack of involvement of family in planning and understanding of patients and family divided roles may negatively influence quality of life and chronic care outcomes.[55] Community and primary health care should endeavor to involve patients' care givers, while considering their cultural orientation, norms and beliefs.

Noteworthy is culturally embedded gender roles and expectations in the community apparently determined how patients responded to interventions to manage their comorbid conditions. A culturally competent health care provider would consider family centred care as compared to individual patient being seen in the facility. According to Goldberg and Rickler [55], men have attendance to receive care from female, as compared to women who multitask in care provision and self care. Studies have shown that female gender tends to bear more burdens when it comes to chronic comorbid conditions. [56, 57] Recent studies have also confirmed that gender has a direct influence on the level of control achieved among patients with comorbid diabetes and hypertension, with men scoring lower than female in, Korea, Kenya and Tanzania. [58, 59] However, global studies on ill health and related gender norms have shown that men report a generally poor health outcome compared to women. [60] The result from this current study indicate that gender ascribed roles for male and female, determine nutritional adjustment and adherence as confirmed by several studies [61, 62], creating the need to hold joint patient teaching comprised of men and women, to balance the equity on provision and preparation of the right food and serve the right amount. This strategy eliminates gender stereotypes, which hinder implementation of interventions for improved health outcome. Health care providers need to have the

cultural competence skills to critically circumvent the issues which surround culture and gender roles in the community.

Autonomy of women to seek and access health care is restrictive in some communities, leading to delays in seeking in medical attention, even as reported in this current study compared to previous study across varied contexts.[57, 63] The result also indicated that out of pocket cost for health care for chronic conditions tend to be more on women headed households, as compared to male dominated households. There is paucity of research studies on the context of comorbidity in relation to gender and health care provision considering gender and equality sensitivity issues, a prime area for further investigation.

The findings also indicated that culturally embedded religious beliefs and practices, determine health and illness practices when it comes to health seeking behaviours. It became evident that communities have various set of traditions and religious beliefs which determine the first initiative to seek medical attention or choices on where to get the services. Evidence from Kenya and Tanzania attest to this results. [64, 65] Religious diversity among community members as is common among African communities, determine the use of traditional herbal medicine or modern medicine. Ascribed religious practices such as fasting for Muslims and Christians, may determine adherence to treatment and health outcomes within those periods. [57] Culturally congruent care need to focus on the cultural dimensions of both the health care providers and patients, allowing the health care provider to have self-awareness and others and the willingness to respect diversity. According to Schim and Doorenbos (66),cultural congruent care require continuous upgrading of communication skills of the health care providers, to accommodate the ever changing experiences of patients and their families, perceptions about chronic care. Being ware of the norms and expectations each patient and their families bring on every health care encounter, which may at the end hinder or facilitate culturally congruent care and hence health outcome.

VI. Conclusion

With the emergence of NCDs across the globe, comorbidity of these conditions is also on the rise, there is need to embrace what seem to be interventions congruent to the health care needs of the community in need of care. Chronic care demands working with communities and patients as partners in health care systems in chronic care provision. Appropriate care which is comprehensive and patient centered is achievable through acknowledgement of significant role of culture and collaboration of efforts from political stakeholders and the community taking active roles in decision making. Further appreciate the role of cultural diversity even in health care organizations systems, often acting as barriers to provision of culturally congruent care. Health care providers should endeavor to up-tune their cultural competence skills through being culturally aware, accommodating culture diversity and being culturally sensitive to the patients, families and community needs.

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