Management of Chronic Comorbid Conditions Model: Context –Informed for Primary Health Care Settings in Kenya.

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Abstract

Comorbidity of non communicable diseases, posses a new global challenge to health systems. Management of chronic conditions require a comprehensive care provision to both at risk and affected by the coexisting conditions. Management process has to be cognizant of cultural differences, attitude, beliefs and practices of the community, patients and health care providers. The objective of this study was to explore and analyze current approaches to management of chronic comorbid diabetes and hypertension among adults in selected Primary Health Care settings in Kenya and further develop context informed model to guide management of chronic comorbid conditions in primary care settings. The study adopted a constructivist, qualitative approach and a combination of focused ethnography and grounded theory research designs towards the development of context informed model. Ethnography design was to collect data: participant observation; structured interviews, document analysis and focus group discussion. The study used constant comparative method in the field to ensure rich data collection. The study sites comprised; seven health facilities and 40 informants who were purposively selected. Data was analyzed using Open, axial and selective coding as presented in Strauss and Corbin substantive model.

*Management of chronic comorbid conditions model was developed and, which is presented as: concepts of the model; the context, political commitment; integrated health service delivery; guiding principles and expected outcomes. Several basic assumptions to management of chronic comorbid conditions emerged. **T**he model adds new literature on the management of chronic comorbid conditions, particularly in Primary care settings, and in-corporates a devolved health system into quality health care service provision, leading to improved quality of life and informed patients.*

***Keywords*:** Diabetes, Hypertension, Management, Comorbidity, Model, Culture Sensitive, Continuity.

Introduction

Non- Communicable Diseases (NCDs) emerge as a global burden, despite the efforts being put in place by World Health Organization (WHO) and other health related organizations(WHO, 2010). Evidence based studies have shown that people with type 2 diabetes usually have more than one co-existing chronic conditions among them, hypertension yet healthcare systems lack adequate information on management of chronic comorbid conditions, among (diabetes and hypertension) which is context specific to suit primary health care settings (Long and Dagogo-Jack, 2011, Islam et al., 2014, Piette and Kerr, 2006).

Global statistics indicate an increasing trend of NCDs concern despite the efforts by WHO to integrate prevention and control of NCDs into PHC, the efforts and the pace continually remain slow (WHO, 2010). According to WHO (2008), world statistics, it was projected that NCDs will cause 59 percent of annual deaths and lead to 46 per cent of the global disease burden by the end of 2030. WHO, (2013) report highlights the global concern of diabetes and hypertension being high risk factors for cardiovascular diseases, which coexist in patients commonly seen in PHC settings (Mohan et al., 2013, WHO, 2013). The International diabetes Federation (IDF) estimates that the number of adults (between 20 and 79 years of age) with diabetes in the world will increase by 54 percent from the current 371 million globally to 438.4 million by 2030, with sub-Saharan African region projected to experience an increase of 98 per cent from the current 12.1 million to 23.9 million by 2030, with 81.2 per cent being undiagnosed (International Diabetes Federation [IDF], 2012). The high prevalence of NCDs is attributed to globalization, adoption of westernized lifestyles and urbanization. Most mortality cases are reported in low and middle income countries and affect the most productive age groups in the community thus, propelling poverty further (Mathenge *et al.*, 2010, Buowari, 2013, WHO,

2013). Most of the NCDs have similar risk factors, hence common management strategies, commencing with health promotion and illness prevention among at risk and unaffected groups (Mohan et al., 2013).

In Kenya like all other sub-Saharan African Countries, the prevalence of comorbidity of diabetes and hypertension is high and poses medical management challenges. It is evident that 65 per cent of patients with comorbid diabetes and hypertension are poorly controlled; despite being on treatment and follow up care(Otieno et al., 2005). Unfortunately most health care systems in developing countries are ill equipped with strategies to manage chronic comorbid conditions in PHC settings (Mendis et al., 2012) hence the need to analyze the current approaches into management of comorbid conditions with the view to developing, context-informed interventional models to aid the management of chronic comorbid conditions in PHC settings.

Despite the availability of intervention models from developed countries on chronic care, developing countries' have not put them to practice. Lack of resources, policies, infrastructure and political interferences in the health sector. Furthermore interventional models developed outside the operational context have variations based on the levels of development and preparedness in chronic care management in other socio-economic contexts (Ploubidis et al., 2013, Olmen et al., 2012). For instance the Chronic Care Model (CCM) which is internationally recognized, puts more emphasises on clinical and self-management strategies for chronic care, especially diabetes (Pilleron et al., 2014, Si et al., 2008). The Collaborative Care Model (CCM) uses different cadres of health professionals to manage patients through use of Managers for patients who need comprehensive chronic care (Unützer et al., 2013). Notably, most health facilities in Kenya do not practice coordinated or collaborated care to manage patients with chronic conditions. Thus all clinical guidelines in use single condition oriented; leaving out people with comorbid conditions and the same applies to available chronic care intervention models (Fortin et

al., 2013). Implementation of health strategies therefore becomes a challenge for most Primary health care systems, especially in devolved health care settings (Turin, 2010).

These challenges in primary healthcare create the urgency to develop interventions which are context –specific, based on available resources and skills to suit patients' needs at community level, for effective management of comorbid diabetes and hypertension as well as other NCDs.

This study sought to explore and analyze management of chronic comorbid diabetes and hypertension among adults in selected PHC settings in Kenya with the view to developing a context informed model to be used as a guide in the management of chronic comorbid diabetes and hypertension in Nandi County.

Methodology

The study used a qualitative focused ethnography to collect within the community and grounded theory method was used for data analysis using Strauss and Corbin Paradigm model(Corbin and Strauss, 2008). The study was philosophically underpinned by interpretivism commonly referred to as constructivism. Interpretivism views the world that knowledge is constructed through interaction between research and informants within the environment. Reality is subjective and is usually based on what people think; see in their daily activities, where they live, and work through continuously interacting among themselves. (Crotty, 1998, Lincoln et al., 2011).

Study Settings

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 (Kenya National Bureau of Statistics, 2010). Nandi County has a total of 129 health facilities; among them

the county referral hospital, which is the hub of primary health care in the county. The county is classified as rural because only 37% of the total population reside in urban areas.

Ethical Consideration

Ethical clearance for this study was granted by the University of KwaZulu Natal Bioethics Committee (BE231/2014). Institutional clearance in Kenya was obtained from University of Eastern Africa, Baraton and National Commission of Science and Technology and innovation Kenya (NACOSTI/P/14/14551/3239) and research conducted as permitted by the Kenya legal system.

Sampling and Sample Size

Study participants were purposely selected based on their experience and knowledge on the area of interest to the researcher or being members of the culture under investigation. A total of 40 informants took part in the study namely: six patients with comorbid diabetes and hypertension, five caregivers, 12 health care providers and two community health volunteers. Additional data was collected from two focused groups and other relevant documents were reviewed.

Data Collection and Analysis

Data was collected mainly through observations, where the researcher was the main instrument for data collection (Higginbottom et al., 2013). All informants gave their consent both written and verbal. Other data collection techniques included interviews, document analysis and focus group discussion. 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 through the period to allow emergence of new themes and questions for further data collection. Interviews were tape recorded and transcribed verbatim, those collected in the Swahili translated to English and back to Swahili for quality checks. Data coding was done manually and adhered to

coding sequences of open, axial and selective coding and data followed paradigm model for model or theory development(Corbin and Strauss, 2008). Data was continuously analysed usually taking a cyclic format through data collection and coding. (Hammersley and Atkinson, 2007).

Results

This study presents the third phase of selective coding for the development of substantive theory or model of management of chronic comorbid conditions in Kenya based on the paradigm model as ascribed in Grounded theory analytical procedures(Strauss and Corbin, 1998).

In this study a descriptive explanatory model was developed. The model goes beyond description of a phenomenon to include relationship with other concepts, gives rationale for the relation and makes predictions about their exact relationship and addresses changes occurring in the phenomenon (Chinn and Kramer, 2008). This paper presents a conceptual model of management of chronic comorbid conditions in a simplified format for easy comprehension by all concerned personnel.

This model will be used in the next phase of this research to:

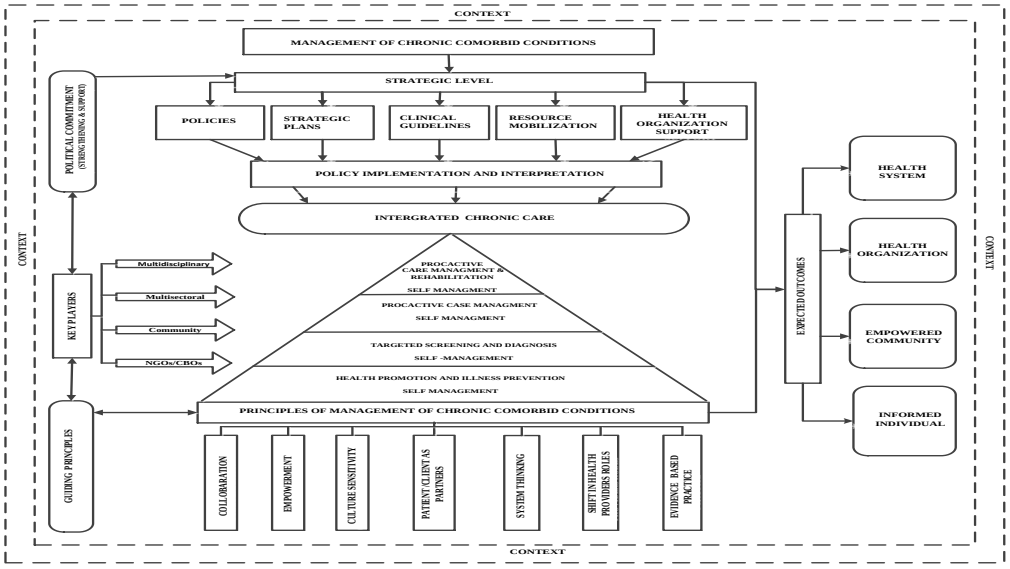
- Provide guidelines to multidisciplinary healthcare providers in management of chronic comorbid diabetes and hypertension among other conditions in PHC settings
- Provide a framework for policy review and implementation on management of chronic comorbid conditions in PHC settings and
- Guide nurses and other healthcare professionals on management of chronic comorbid conditions at PHC level.

Models or theories are made of core concept that has major concepts attached to it, followed by sub-concepts which make reference to the core concept as the phenomenon

of study. Directly attached to the core concept are the major concepts which have a direct influence on the management of chronic comorbid diabetes and hypertension.

The relevant sub-concepts to each major concept are explained immediately under the concept as structurally represented in figure 1 below.

Figure 1: Structural Presentation of Middle Range Theory of Management of Chronic Comorbid Conditions (MCCC MODEL).



Definition of Concepts in the Conceptual Model

i) Management of Chronic Comorbid Conditions(MCCC)

The core concept "management of chronic comorbid condition" is defined through its characteristics which emerged from the findings of the study. It is defined as the process of comprehensive care provision to people at risk of developing chronic conditions and those affected with comorbid chronic conditions. It was defined in relation to the nature of collaboration among multidisciplinary teams and patients to provide care and support to patients and their families. The collaboration between different sectors with the

Ministry of health, defined the nature of concerted efforts to prevent, treat and control chronic comorbid conditions. Further it was viewed as the incorporation of the community to take responsibility to prevent risk factors through behaviour change, providing support to the sick and sharing available resources.

Management of chronic comorbid conditions was defined in terms of provision of culturally sensitive care that is cognizant of individual patient's strongly held beliefs, expectation and practices, which are socially acceptable to them and their families culturally embedded and determined gender roles and interpretations of signs and symptoms, presented enhancers or barriers to management of comorbid conditions, communication with health providers and to some extent adherence to treatment plans. Management of chronic comorbid conditions was characterized by the continuum of care, which was portrayed in the form of timely accessibility and affordability of health care services across care settings. Central to management of chronic comorbid conditions process was the ability of patients to provide self-care or being assisted by family members in consultation with healthcare providers. The success and utilization of self – management skills were influenced by health determinants such as age, level of functionality, literacy and health literacy levels to acquire skills, the ability to set personal goals and make efforts to achieve them through shared decision making.

ii) The Context

Management of chronic comorbid conditions is influenced by the context under which health care service provision takes place, the system of operations and the community under which patients live and work. Context represents health policies, social and environmental contexts, which determine health service delivery within the healthcare system. These include related activities which have direct and indirect influence to management of chronic comorbid conditions in PHC. The following are sub-concepts of the context in the management of chronic comorbid conditions:

The Kenyan Constitution: accessibility of health care services to citizen is influenced by the right to health for all which applies to all stages of life cycle of all Kenyans. The right to health allows all patients to have access to free medical services in primary care services and community health services.

The health policy framework: the framework gives direction on the chronic care provision in the Kenyan health system, with emphasis is on the health promotion and diseases prevention. The health policy determines re-organization of healthcare to allow chronic care service delivery. The influence of health policy in chronic care is evidenced by the available strategic plans for chronic conditions across different levels of care in support of evidence based practices.

Developmental agenda for Kenya Vision 2030: One of the factors that have an impact on the health system is the government development agenda, which aims to propel Kenya from a low income country into a middle income country by 2030. Decentralization of chronic care services and advocacy to create awareness enhances possibility of improving health accessibility, reducing morality rates and health expenditure.

International initiatives and partnership: management of chronic comorbid conditions in a resource constrained environment is influenced by presence of international developmental partners. This is achieved through provision of training and capacity building in management of chronic comorbid conditions in primary health care. In the context of this study, initiatives and partnership are relevant to communities working in partnership with NGOs and international bodies, with the government in support of health promotion and lifestyle modification.

iii) Political Commitment

In this model, government commitment is a major concept on management of chronic comorbid conditions in primary health care. The commitment of both governments at the national and county at the strategic levels of management involved:

Development of policies and legislations: At the strategic level in this model under the Ministry of Health at the national government, legal health policies and frameworks are conceptualized, developed and reviewed, which affect healthcare services across the health systems, based on specific areas involved. For instance the Chronic Care Model, health system provides support to health organizations involved in chronic care through information and clinical support (Glasgow et al., 2001).

Clinical guidelines and protocols: management of chronic comorbid conditions require evidence based guidelines to give directions on how comorbid conditions should be managed, as co-existing conditions compared to single occurring conditions. Clinical guidelines provide statements and recommendations for health promotion and prevention, diagnosis, management, and treatment of comorbid conditions and the referral process to be followed to allow continuity of care and improved health outcomes.

Specific strategic plans: the strategic plans guided by the health policy framework forms the vehicle for implementation of the health policy in a systematic and responsive manner. These plans provide guidance on how to operationalized health services and give specific targets and indicators for monitoring and evaluation of health care services, risk factors and surveillance of those at risk.

Resources mobilization: In this model, resource mobilization at the strategic level cuts across the national and county governments. At the national level, financial planning for the ministry and the respective ministry in the county government takes place. The national government is responsible for mobilization of health human resources, both for

clinical and preventive health through capacity building and trainings on chronic comorbid conditions.

Health organizational support: In this model, the organization represents those activities which are targeting an improved service delivery at the operational level within the health system. It involves strengthening service delivery to patients with chronic comorbid conditions, through empowerment of both the health provider and patients as partners. For further information consult ICDM of South Africa and also reflected in the Kenya Essential Package of Health (KEPH), which are essential for health care service delivery across settings (Asmall and Mohamed, 2013, KMOH, 2006).

Regular essential medicine supply: in this model supply of essential medicine forms an essential aspect of health organizational support, which supports the integrated chronic health care interventions across the continuum of care.

iv) Policy Implementation and Interpretation

Health system in decentralized government requires that policies made at national level be implemented and interpreted or operationalized to suit the context of the specific counties and the population needs. Implementation is done at the community level through community committees, SCHMTs and CHMTs, who have direct influence on how integrated health care services are offered within the county.

v) Integrated Chronic Care Approach

Integration of chronic care guides the way health-care services are organized and managed to allow individuals to have access to the service whenever they need it and the way they require it delivered in order to meet the value they pay for. Asmall and Mohamed (2013), defined integration of chronic care as provision of all health services in terms of prevention, diagnosis, treatment and chronic care entailing long term follow-up and monitoring. Integration may be seen as a solution to health care fragmentation in a

resource constrained health care system and increased health care costs for patients who cannot afford the costs (Lorig and Holman, 2003, Unützer et al., 2013).

Primary prevention and illness prevention: integrated health services delivery in the context of this study is presented in the form of a pyramid of the public health approach with health promotion taking the base of the pyramid as the primary preventions.

Secondary prevention and targeted screening level: in integrated health services the next of the lower bases of the pyramid is the targeted screening and early detection of chronic conditions and those at risk of developing comorbid conditions.

Proactive case management of chronic comorbid conditions: closely linked to the secondary prevention is the proactive case management of individuals who are confirmed to have comorbid conditions, but with no identified complications. Proactive case management involves initiation of patients on combined therapy of both behaviour change and medications which could be multiple or single, injectable or oral medicines.

Tertiary prevention and proactive care management: tertiary level is characterized with appropriate referral of the high risk and complicated patients to specialized health care providers in the next level of management, where patients may benefit from. This can be achieved through preventive rehabilitation and physical rehabilitation services.
Self-management focused care. Self-management guided by the social ecological perspectives allow patients to acquire the expert role in self-assessment, monitoring and self-drug administration, which enable individual patients to cope living with comorbid conditions rather than learning to manage the conditions only (Greenhalgh, 2009).

vi) Key Players

Key players are the main stakeholders with direct influence on management of chronic comorbid conditions in PHC settings. The following formed the key players in the context of this study:

Multidisciplinary teams: a team of health care providers from different cadres and training, responsible for health care service provision to patients with chronic comorbid condition. They include nurses, doctors, clinical officers, nutritionists and public health officers among others.

Multisectoral policy makers: these are leaders and representatives from different government sectors affiliated to health who directly or indirectly contribute to health care service provision. This may be through funding of health care services, provision of nutritional advice and self-help projects, procurement and distribution of healthcare supplies.

The community: is the general population among which individual household and patients with chronic comorbid conditions belong, either as clients, healthy people at risk of developing chronic conditions.

Community based organizations/NGOs/Advocacy groups: these include development partners and key stakeholders who provide support to the integrated health service delivery.

vii) Guiding Principles of Chronic Comorbid Conditions Management

In this model, the following principles provide the foundation to base management of chronic comorbid:

*Collaboration***:** involves working together of different people from various fields of healthcare sector, health professionals, community, households and patients with an aim

of improving health outcomes through active participation in decision-making and setting clinical goals.

Culture sensitivity: for patients to receive holistic care which is person-centred as compared to condition-centred, care must be sensitive to the cultural beliefs, norms, practices and expectations of the patient and their immediate family members.

Empowerment: Empowerment is a social action process through which individual, communities and organizations gain mastery over their lives or practices in the context of social political environment to bring about equity and quality of life.

Patient /client as partners: Patients are embodied as partners in chronic care performing a greater portion of their own care at home and in consultation with health care provider. Patients take active roles in learning practices, assessment practices and adaptation practices for improved competence (Pomey et al., 2015).

Systems thinking: it is the combination of patients' needs and diverse aspects of care to offer holistic care instead of fragmented care. System thinking is cardinal to problem solving which require actors from multileveled systems to provide solutions (Greenhalgh, 2009).

Shifting health provider roles: the role of patients and their families in direct care provision necessitates the shift from the monopoly of care provision of health care providers, where they make all the decisions, neglecting patients and their families.

Evidence-based practices: effective management of chronic comorbid conditions in PHC should be based on the health care professional clinical expertise integrated with best acceptable clinical evidence, patients' values to make sound decisions during the management process of patients.

viii) Expected Health Outcomes

These are consequences arising from management of chronic comorbid conditions in primary health care settings, directly influenced by the empowerment process and interactional activities at the health systems. The outcomes are based on the social cognitive theory which makes assumption that interactions between personal, physical and environmental factors have an effect on behaviour change of an individual's, community and organizations. The expected outcomes in this model are grouped into four levels namely: Individual/household outcomes, community-based outcomes, health organizations outcomes and health systems outcomes.

Individual/household outcomes: these are outcomes which are directly experienced by a patient with chronic comorbid conditions and their immediate family members. These are activities which ameliorate the conditions and improve quality of life.

Community-based outcomes: these are health-related outcomes directed at the community and the available health resources. Collaborations require active participation and involvement of community members in decision-making on health-related issues, which directly affects the targeted community.

Health organizations outcomes: health organizations provide an environment where health care providers interact patients, other health care providers to provide essential health services for the management of chronic comorbid conditions. With adequate training of health care providers, supply of essential medicines and equipment across care settings.

*The health systems outcomes***:** these are proceedings of management of chronic comorbid conditions, which directly affect the health systems, in terms of strategic planning and resource distribution. The expected outcomes to health systems include increased

awareness of health policy makers, development of relevant health policies for comorbid conditions, training and curricula development for health professionals and CHWs on chronic comorbid conditions.

A Basic Assumptions of the Conceptual Model

The following assumptions resulted from management of chronic comorbid model in primary health care settings:

Management of chronic comorbid conditions is socially constructed and interpreted: Management of chronic comorbid conditions is a socially constructed phenomenon, as it is mainly determined by the social process of knowing how people's attitudes, knowledge and skills determine their behaviour change either positively or negatively. Conrad and Barker (2010) assert that chronic illnesses are socially constructed, based on how meaning is attached to diagnosis, assuming of the sick roles and the social interactions within the community. Similarly, Martin and Peterson (2009) observed that health care reforms, need to have a an understanding on how chronicity is explained socially to guide redesigning of health care systems and services to chronically ill patients and families in the community. Similar views have led to the modification of the ICCC model to suit multi-morbidity in countries undergoing transition(Oni et al., 2014).

Management of chronic comorbid conditions is politically controlled: Management of chronic comorbid conditions in the health care system is politically influenced, and health services provision is heavily dependent on governance and style of governance being practiced in the country. Political reforms influence decentralization of health services and delivery especially to marginalized groups (Jadad et al., 2010). Political stability and governance influences health funding, budgetary allocation, accountability, equality and equity of health resources (Hogerzeil et al., 2013, Muchomba, 2015).

Management of chronic comorbid conditions is embedded in active participation in decision making: Patients active participation is determined by health determinants (Longtin et al., 2010) and the role they play in the whole process of care, especially in planning and goal settings lead to improved adherence to treatment plan, lifestyle modification and self monitoring (Epstein and Street, 2011, Roumie et al., 2011).

Self-management for patients with chronic comorbid conditions may be conflicting if skills and information is delivered separately for each condition: to avoid giving conflicting information to patients and care givers, multidisciplinary teams need to work together to improve patients care outcomes and improve quality of life through supported self-care and management. There exists evidence on the need for concerted effort in provision of self-management to patients with comorbid condition in PHC (Gilbert, 1997, Tapp et al., 2012, Thorogood et al., 2007).

Management of chronic comorbid conditions is based on community involvement and participation in health issues: that community provides the perfect environment of chronic care provision. Involvement of the community and participation in program development, budgeting and implementation of health promotion and disease prevention programs increases sustainability of the programs and adherence to long term risk control initiatives(Jadad et al., 2010, Greenhalgh, 2009).

Management of chronic comorbid conditions requires timely and well-coordinated across care settings: patients with comorbid conditions or at risk of developing comorbid conditions require timely, planned and coordinated care across care settings. Thus time is a central factor in measuring continuity of care in terms of duration and experiences of the patient on the conditions and the number of times patients can access the health facility for chronic condition care services (Haggerty et al., 2012).

Conclusion

The model adds to new literature and knowledge on management of chronic comorbid conditions especially diabetes and hypertension, particularly in PHC settings. Management of chronic comorbid conditions need to be all comprehensive, incorporating culture sensitive services, collaboration with other health related sectors and emphasizing self-management focused care across levels of service delivery.

The model also serves as an eye opener to policy makers to consult with health care providers and patients' experts during review and development of health policies and guideline and or strategies in the health sector.

This study was conducted with substantive influence of the professionalism of nursing. Nurses form the bulk of health care providers in primary health care services. Given the opportunity to implement outcomes of this study within the devolved health sector, the model will improve nursing services at the outpatient level, and open further areas of study with special references to nurse, CHWs and nutritionists who take the active roles in nutritional aspect of care and follow-up of patients with comorbid diabetes and hypertension.

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