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Appraisal of Human-Centred Design as a Public Health Tool:

Curbing the Incidence of Lifestyle Diseases in Kenya

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Abstract

Recent studies in Kenya show that Non Communicable Diseases (NCDs), also referred to as lifestyle diseases, contribute to approximately 4 of every 10 adult deaths annually. The rising burden of lifestyle diseases is of particular concern among poor communities, partly because of lack of awareness and limited access to quality health care. These communities have minimal knowledge on preventive and curative services on these diseases and have to spend a higher proportion of their income on health care costs for lifelong conditions. Long term measures towards the prevention of lifestyle diseases need to be addressed as a matter of urgency in curbing their prevalence. Health education and promotion towards regular screening and health checks, means one can catch these diseases early and improve chances of reversal or complete healing. Human-centered design (HCD) is a promising approach for community engagement and health promotion program planning. Through review of literature, this study explored the role of HCD as a tool towards effective communication in the prevention and management of lifestyle diseases within Kenya. By applying unique approaches to understanding user needs, a human-centered approach in creating and implementing innovative programmes towards disease prevention and management was appraised. A desktop research was done that looked at a combination of published information from journal papers, reports, books and internet articles on the HCD toolkit and other preventive measures towards diseases prevention and management. This paper argues that cost-effective and feasible preventive actions for lifestyle diseases in Kenya, through the use of HCD in designing health programmes, will possibly help avert potentially catastrophic costs for communities through primordial prevention. Designing a successful health intervention can increase access and uptake of health care and services prompting behavior change and equally improving expected health outcomes.

Keywords: Design thinking, health programmes, health promotion, Human-Centered Design, lifestyle diseases, Nairobi-Kenya, Non-Communicable Diseases, public health.

INTRODUCTION

Nearly 80% of new reported Non-Communicable Diseases (NCDs) like Diabetes and Hypertension diagnoses in Low and Middle Income Countries (LMICs) like Kenya happen too late in the disease life-cycle, hampering treatment. The increasing prevalence of NCDs, commonly referred to as lifestyle diseases, in LMICs is a big challenge to governments, which are all still struggling with a myriad of communicable diseases (CDs) like Tuberculosis, HIV/AIDS and Malaria (Amuyunzu-Nyamongo, 2010; Oti et al., 2014). Historically, CDs have dominated public health concerns in LMICs. Recent studies show that lifestyle diseases in Kenya constitute a high cause of deaths with about 4 of every 10 adult deaths caused by these diseases (Phillips-Howard et al., 2014). Despite the Kenyan Government making lifestyle diseases a national priority, a higher fraction of the health budget is allocated to acute CDs.

There are compelling reasons for LMICs to invest in lifestyle diseases prevention, mainly because the majority of health development assistance goes towards infectious and maternal conditions. In sub-Saharan Africa, increase in cases of lifestyle diseases is projected to outpace the reduction of infectious diseases. These estimates have important economic implications for countries with already strained health resources. Therefore, low-cost prevention becomes of utmost importance to balance competing health concerns.

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Treatment of lifestyle diseases is usually long term and expensive, thus threatening patients' and nations' budgets and putting them at high risk for poverty (Probst-Hensch et al., 2011).

Limited public awareness and lack of knowledge about lifestyle diseases has been cited as a major influence in the attitudes and practices in the prevention and control of these diseases (Maina et al., 2010). Low level of knowledge by the community and health care workers has been seen as a major hindrance to effective health promotion for most chronic lifestyle diseases (Schillinger et al., 2002). The findings from studies done in Kenya by Maina et al. (2010) and Haregu et al. (2015) revealed that public awareness campaigns through effective communication channels would help bridge the knowledge gap on lifestyle diseases and in turn promote healthier lifestyles.

Sensitization programmes have been rolled out by various health stakeholders including the Ministry of Health and other Non-Governmental Organizations; but these have mainly been Primary (early screening) and Secondary (self-management) prevention. Primordial prevention is an avenue that has not been explored towards designing a comprehensive health promotion campaign towards curbing the incidence of lifestyle diseases and their associated risk factors (Probst-Hensch et al., 2011). Primordial prevention targets people pre-disposed to lifestyle diseases at the level of risk factors exposure (Mwai & Muriithi, 2015). At this point the risk of lifestyle diseases acquisition is reversible and awareness is one of the best preventive measures – best buys (Organization, W.H. 2015).

Perhaps, Public Health problems now call for systemic solutions that encourage change at individual, community and societal levels (Schwartz, 2016). Joint Health Promotion and Communication Programmes towards an all-inclusive and holistic campaign towards lifestyle diseases awareness is an unexplored channel within LMICs. In this regard, a cost-effective and feasible preventive action for lifestyle diseases in Kenya that will avert potentially catastrophic costs through primordial prevention is the most viable approach. Specifically, this paper explores the use of effective and targeted communication in the promotion of healthy lifestyles towards the prevention of lifestyle diseases through a human-centered design approach.

RESEARCH METHODS

A desktop study of published literature on preventive measures towards disease prevention and management of diseases, with specific interest to lifestyle diseases was conducted for this research. Using search engines like Google Scholar, JSTOR and HINARI, over thirty publications were reviewed and analyzed to determine and identify the most feasible approaches towards health promotion strategies in lifestyle diseases prevention.

RESULTS AND DISCUSSION

Rationale for Government and Stakeholder Intervention in Health Promotion

Prevention has repetitively been said to be better than cure. In Kenya for example, various measures have been explored by the government towards curbing the prevalence of lifestyle diseases. Awareness programmes have mainly used a 'top-down approach' – a term used in the fields of management and organization of an institution or structural unit. A 'top-down approach' has executives or people high in the hierarchy of administration make decisions about how systems run or should work for the people below them, without necessarily having them as part of the decision-making process (Stewart, Manges and Ward, 2015).

Literature gives several examples of programs, often run by governments or large inter-governmental organizations (IGOs); many of which are disease-specific or issue-specific, such as HIV Control, Malaria Prevention or Polio Eradication (Stewart, Manges and Ward, 2015). Though successful at some level, the approach has not been sustainable in prevention of disease by the community. Often, a top-down approach is used by public health stakeholders in tackling various health challenges. However, the weakness of this is that the stakeholders may not understand fully the problem on the ground and end up designing interventions that do not tackle the issue at hand.

A 'bottom-up approach' has been suggested in

many studies as a way of involving communities in decision making about their health choices and what works best for them. A bottom-up approach engages people at the grassroots levels in joint health campaigns, in causing a change within their settings and thus influencing an incremental change towards their intended goals. This usually engages front-liners within their communities, who include community members, leaders/elders as well as religious leaders. The aim of bottom-up approach is to increase local access to health at the primary level within communities.

Contextually, Community Members and Community Health Workers (CHWs) have been identified as a very critical group in raising awareness on various health issues within their communities (Mishra et al., 2015). However, their roles have not been fully exploited in the avenue of effective health promotion activities towards lifestyle diseases prevention. Having the community directly involved in key programme strategies revolving around health education, community dialogue and public commitment towards behavior change in LMICs settings, could be an avenue towards lifestyle diseases prevention and management. Focus on these key gatekeepers who uphold their communities' views and beliefs, whilst engaging them in aggressive health promotion activities could carry great weight within their community settings. **Figure 1** shows the hierarchy of how the two approaches work when all key stakeholders involved are lined up in the design of these health promotion programmes.

Design Thinking: A Tool for Public Health Intervention

Designing a successful public health intervention can increase access and uptake of health care and services, prompt behavior change and equally improve expected health outcomes (Riboli-Sasco et al., 2015). This is graphically explained in **Figure 2** developed by the Stanford Design School.

Design thinking is an approach that leads human-centered solutions by direct engagement with users in the health communication strategy process. End-users are involved in the research and design process of a concept as well as the prototyping of the design in an iterative cycle (Schwartz, 2016). By applying unique approaches to understanding user needs, design thinking takes up a human-centered design approach (also referred to as design thinking) in creating and implementing innovative programmes. This is done through integrating the needs of the people, the various types of technology and the requirements of the success of the intervention (Vechakul et al., 2015).

Human-Centered Design (HCD) approach looks at a participatory 'bottom-up approach' where the end users and other stakeholders play a role in the shaping of solutions dependent on their needs.

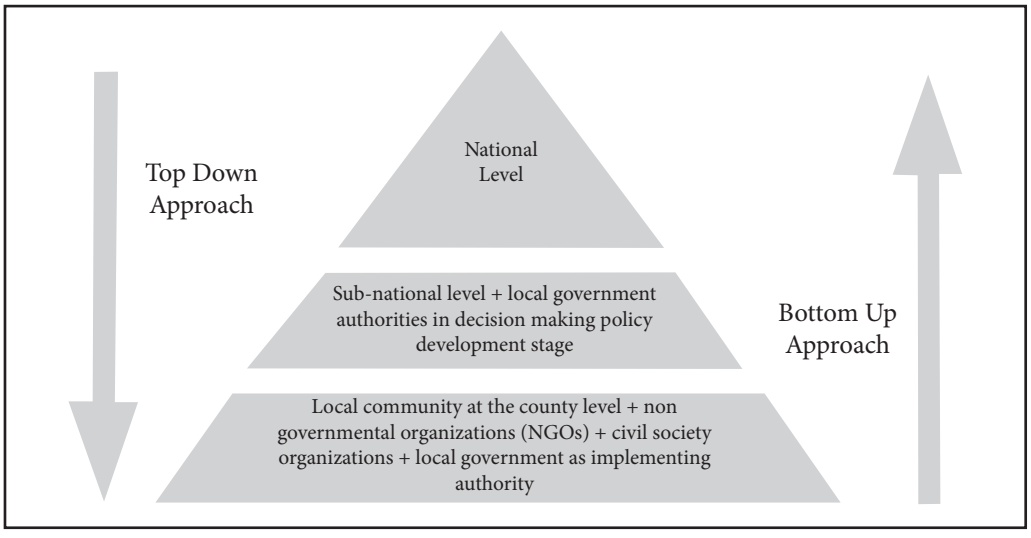

FIGURE 1
Comparison of key stakeholders in the value chain
Source: Author 2017

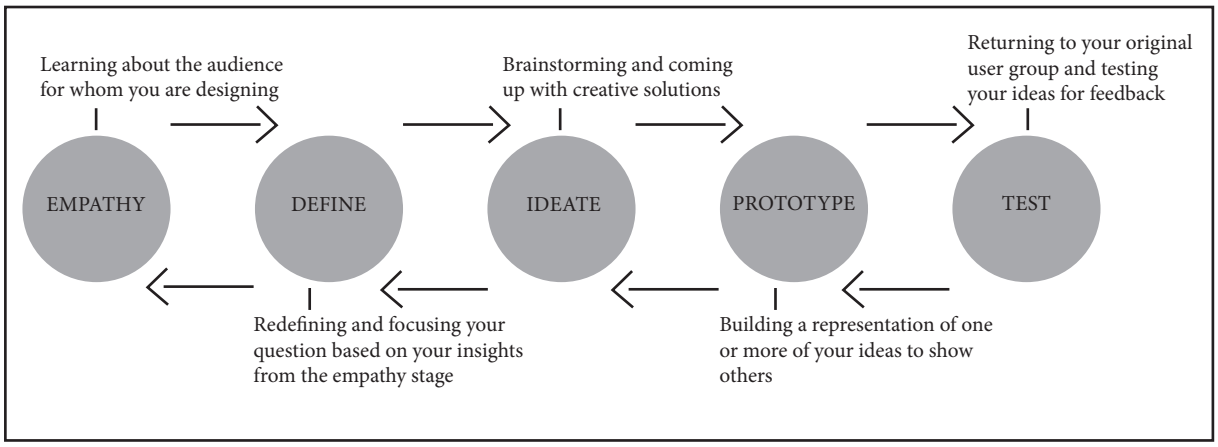

FIGURE 2
Design thinking process
Source: Createdu 2013

HCD starts at a small level so that a prototype is developed and tested and a proposed solution to the targeted population is influenced by the message developed. Focus is then laid on the suggested message. For example, one can start with a smaller section of a wider community, find an appropriate solution to that selected community and see how up-scalable this is to communities of similar profiling.

Behaviour Change Health Communication: A Public Health Intervention

Health Communication (HC) has been shown to increase the intended audience's knowledge and awareness of health issues, problems or solutions (Friedman et al., 2016; Freimuth & Quinn, 2004). HC can also influence perceptions, beliefs and attitudes that may change social norms, prompting action towards behaviour change, whilst refuting myths and misconceptions. Public health communication campaigns have been credited with promoting awareness about the risk of diseases – both chronic illnesses and infectious diseases (Guttman & Salmon, 2004; Noar, 2006). However, how effective these campaigns are, especially in changing health related attitudes and behaviours, has been a subject of debate.

Some major factors that have affected effective awareness and access to health education to communities include; irrelevant content in the Information, Education and Communication (IEC) material; conflicting health education messages; messages with language barriers and messages not considering the cultural beliefs of the target audience (Parker et al., 2012; Govender, 2014). Thus it is critical to involve the audience that the intervention is being designed for.

Findings based on a study conducted in Nairobi, Coast, Central and Eastern provinces in Kenya revealed a serious deficiency on knowledge about diabetes and related risk factors among community members towards lifestyle disease awareness. Revelations from the four provinces reflected a general lack of knowledge about the importance of living a healthy lifestyle that involved healthy diets, physical activity and health-seeking behaviour (Maina et al., 2010). This lack of knowledge was due to limited literacy level - the IEC material did not make sense to them and limited exposure to awareness campaigns, as well as health workers who were not well empowered and efficiently trained to tackle this disease. Going by this, it is important to identify interventions that reinforce people's attitudes despite their levels of knowledge of a particular subject.

Mass media campaigns and direct public education creates the needed awareness about NCDs and their risk factors. A diabetes awareness campaign and early screening and detection camp conducted in Chennai, India, dubbed 'Prevention, Awareness, Counselling and Evaluation' (PACE) Diabetes project – conducted between 2004 and 2007, showed a very significant increase in awareness of Diabetes and its risk factors. Though conducted in a small but busy city in India for over four years, the significance of the

marketing campaign was critical in showing that behaviour change interventions are effective and cost effective in the long term. A scale-up of such an intervention countrywide and in other LMICs would be effective in the fight against NCDs.

Principles of effective health campaign designs are critical in putting together a targeted, well executed health promotion strategy. In health education and communication, studies have shown that tailored communication material are generally more effective than non-tailored ones in helping individuals change health-related behaviours such as smoking, diet, physical activity, cancer and cholesterol screening and in turn enhance participation in health promotion programs (Hawkins et al., 2008; Kreuter et al., 2000; Lang, 2006; Searl et al., 2010). Tailored communication produces a message matched to the needs and preferences of individuals and this is very critical in designing health communication material.

Content matching, often thought of as the essence of tailoring, attempts to direct messages to individuals' status on key theoretical determinants such as knowledge, outcome expectation, beliefs and self-efficacy (Hawkins et al., 2008). With this background, campaigns should focus more on influencing proximal variables such as social norms, to bring about long-term behaviour change (Cavill & Bauman, 2004).

Creating an effective health communication message, specifically directed towards behaviour change, takes several things into consideration. Some of these include; the intended goal of the message; the target market of the message; the communication channel/medium that will carry the message and the motivational and personal relevance of the main information in the message. Both structural and content elements of messages determine how well messages are encoded, stored and retrieved at a decision point (Lang, 2006). Intended audiences need high quality information if they are to make informed decisions about their health (Griffin et al., 2003). Well-organized campaigns can have a positive effect on behaviour and more so targeted mass media campaigns have been used to inform patients and the public, often in promoting specific health behaviours or patterns of health service use (Coulter & Ellins, 2007; Gold et al., 2010; Gurman et al., 2012; Somannavar et al., 2008).

Supporting Effective and Efficient Interventions in Health Promotion

A combination of communication channels, such as mass media, interpersonal and communication channels enhances the effect of communication interventions. This maximizes the chance of exposure in general as no one channel reaches everyone (Krenn et al., 2014). The use of evidence-based leaflets for Family Planning Awareness in Wales, UK (O'Cathain et al., 2002), use of outdoor advertising media (OAM) for general health promotion in India (Raj et al., 2014), use of road show cancer-awareness campaigns in rural and urban UK (Smith et al., 2016) and the 'Wake-Up' Health Promotion in a South African University (Batidzirai et al., 2014) all showed that despite specific advertising media being used in health promotion in the different settings, there are recommendations that there is need for newer, innovative approaches in health promotion; a multi-sectoral, evidence-based health promotion and communication strategy, targeting the complex socio-economic and cultural changes at family and community levels.

Community-based interventions, for example involving community in framing and designing health promotion and communication messages, have had a major impact in the reduction of lifestyle diseases in LMICs like Indonesia and India (Krishnan et al., 2011). The communities in these regions played a role in the design and implementation of the community-based interventions that saw the effectiveness of these mediations, as they felt empowered to take care of themselves through behaviour change alongside the uptake of health-seeking services like early screening towards disease control and management.

Innovative communication strategies using community-based interventions have come to the limelight as a new approach towards NCDs prevention and control. Incentive-based programmes alongside mass media campaigns have shown to significantly reduce obesity and lifestyle diseases prevalence in LMICs (Lambert & Kolbe-Alexander, 2013). In South Africa for

example, the use of cash transfers to economically disadvantaged populations towards behaviour change and early screening has worked in the uptake of healthy lifestyles, as purely health promotion messages have not been very effective.

Community-based outreach and dialogues have been a new approach to reach individuals within a community. The role of community health workers has been very critical in the dissemination of health information and health referral system within marginalized communities. In a study done on Female Genital Mutilation (FGM) by UNFPA and UNICEF in 2016, the practice was highly prevalent in the Northern parts of Kenya. Through a campaign dubbed 'Champions of Change', the study engaged community health workers in driving a campaign towards taming of this practice. The community members who included men, women, circumcisers and religious leaders were jointly gathered together and educated on the demerits of this practice. Through the campaign, the various agents were provided with information that allowed shifts in attitudes towards curbing FGM. Programmatic interventions based on readiness of the community allowed members to adapt to the new norm of discouraging FGM and instead sought other modes of initiating young girls into adulthood.

Ideally, training and mentoring of community health care givers and volunteers within a community ensures continuous advancement in quality health care. According to Centre for Health Solutions (CHS) Kenya, promoting knowledge and capacity of health workers through continuous learning among them makes them competent through providing education and effective IEC material on new and developing areas in the field.

CONCLUSION

Arguably, most accessible health care programmes within a community setting, whether of high quality or not, is of no essence if the people in the area are not familiarized with them. An effective Behaviour Change Communication (BCC) programme should aim at raising awareness about healthy lifestyle choices alongside health-seeking services. Community-based interventions, through health programmes aimed at the whole community through their involvement in the design process would be one viable approach to help them in disease prevention and management of lifestyle diseases.

From the literature and discussion presented, this paper argues that when designing a health communication strategy, a co-created and co-designed approach by individuals within the target community alongside the related front-liners in the health system is the way to go. A well-structured public health campaign using HCD as a tool, can help communities achieve healthy lifestyle behaviour and increase uptake of health seeking services in curbing the incidence of lifestyle diseases.

RECOMMENDATIONS

Increasing awareness and designing effective health promotion messages can encourage healthy behaviour and curb or reduce rising lifestyle diseases incidences in Kenya. This can be done through use of innovative technologies and intervention in health communication. A combination of Human-Centered Design (HCD) and Behaviour Change Communication (BCC) strategies can solve various public health related issues. BCC programmes are designed to be an iterative process which involves the community affected in the design, development and pre-testing of the promotional material used towards health promotion. Alongside this, frequent monitoring and evaluation should be done to determine the pros and cons of the identified health promotion programme.

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