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Original Article

## The Capacity of Lower-Level Health Centres to Manage Noncommunicable Diseases in Uganda

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With funding from the Danish Civil Society Fund (CISU), supported by the Danish NCD Alliance (DNCDA) and Uganda Non-Communicable Diseases Alliance (UNDCA), the study aimed at assessing the capacity of lower-level health centres (HC III & HC IV) to manage Non-Communicable Diseases (NCDs) in Uganda. Specifically, the study assessed the capacity of the HC III and HC IV units to (i) detect the main NCDs (cancer, diabetes and heart disease); (ii) offer clinical care, including timely referral of patients with NCDs; and (iii) raise awareness, through health education and health promotion, of major risk factors for NCDs. The study focused mainly on cancer, diabetes and heart disease as the most prevalent NCDs. Using a cross-sectional study design that included both qualitative and quantitative methods, the study revealed that HCs III and IV had inadequate technology, medicine, facilities, policies, recordkeeping, and human resource capacity to manage NCDs and conduct effective health education and promotion. As such, the study recommended that the staffing norms of all levels of HCs be upgraded, funding be increased at the district level, the salaries and general working conditions of HC workers be improved, and all HC health personnel be trained in NCD management.

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## INTRODUCTION

Noncommunicable diseases (NCDs), especially cardiovascular diseases, cancer, chronic respiratory diseases and diabetes, are the world's leading causes of death, accounting for 36 million lives or 36% of annual global deaths (WHO 2013). According to the World Health Organization (WHO), in low- and middle-income countries, including Uganda, NCD fatalities account for 86% of all global NCD-related deaths between the ages of 30 and 70 (WHO 2013). Moreover, the WHO notes that NCDs alone are responsible for 35% of all deaths, and this figure is likely to increase in the near future. However, most of these deaths can be prevented if health systems respond effectively and equally to the needs of NCD patients (WHO 2014). However, this can only happen if policy and action in the health sector and other related sectors are supportive.

Uganda is a signatory to the Sustainable Development Goals (SDGs), and SDG 3 aims to "ensure healthy lives and promote well-being for all ages" (WHO 2014). Moreover, one of the indicators of SDG 3 is to "reduce by one-third premature mortality from NCDs through prevention and treatment, and promote mental health and well-being." Therefore, Uganda has an obligation to take NCDs seriously in terms of research and funding.

In 2013, according to the World Health Organization, the incidence of hypertension in Uganda, at an average of 24.3%, steadily approached that in the United States (WHO 2013). While the prevalence of diabetes mellitus was relatively low in urban (2.7%) and rural (1%) areas, these figures were likely to be actually higher because of the prevailing low levels of NCDs detected, partly due to inadequate numbers of medical personnel trained in NCDs detection and management, inadequate equipment and tools, and poor health service-seeking behaviour among Ugandans. Moreover, these figures were likely to

rise considerably due to increasing lifestyle changes (Bahendeka et al., 2016). In Uganda, the number of diabetes cases alone is estimated to reach 500,000. In 2015. In Kampala alone, an estimated 8% of the population was living with type 2 diabetes (VanGemert et al., 2015). Chronic obstructive pulmonary disease (COPD) in rural Uganda, where the prevalence was approximately 16.2%, seems to be more widespread than in high-income countries. Moreover, the epidemiology of cancer has shifted from a predominance of HIV-associated malignancies to those more typically associated with "Western lifestyles" (Parkin et al., 2010).

The Uganda Bureau of Statistics notes that NCDs and their risk factors are now major national problems arising from a combination of factors, especially unhealthy lifestyles (UBOS, 2010). In particular, Uganda's surging population, increasing urbanization, changing nutrition, increasingly sedentary lifestyles, and indoor and outdoor air pollution were among the factors contributing to the growth of Non-Communicable Diseases (NCDs) in the country (Schwartz et al., 2014).

Despite the burden of risk factors and associated diseases, as well as extensive experience in addressing chronic HIV infection, the Ugandan healthcare system, especially at lower levels, remains ill-equipped to address NCDs (Schwartz et al., 2015). Therefore, there is an urgent need to assess the capacity of lower-level health facilities to ascertain the magnitude of the gap in terms of the capacity to respond early, appropriately and effectively to NCDs in Uganda. Against this background, the Uganda Non-Communicable Diseases Alliance (UNCDA) sought to assess the capacity of Health Center III (HC III) and Health Center IV (HC IV) units to detect the 3 main NCDs (cancer, diabetes and heart disease); to offer clinical care, including timely referral of patients with NCDs; and to raise awareness through health

education and health promotion of major risk factors to the three main NCDs.

The Uganda Non-Communicable Diseases Alliance is an alliance of three entities, the Uganda Diabetes Association, the Uganda Heart Research Foundation and the Uganda Cancer Society, committed to leading the Civil Society Organization (CSO) response to NCDs. The UCDA was founded in 2010 in response to the global NCD epidemic, which was strikingly difficult, especially in low-income countries. These three associations work together to create synergies and avoid duplication in the fight against NCDs. The Alliance implements project activities across Uganda in branches at the district level. Currently, the Alliance is based in Kampala and has eleven (11) branches. The operations and programme activities of the UNCDCA are guided by a strategic plan (SP2017-2019) that outlines what the organization will contribute to advancing its response to the NCD challenge in Uganda. The UNCDCA is currently implementing a capacity development project with funding from the Danish Civil Society Fund (CISU) through the Danish Non-Communicable Diseases Alliance (DNCDCA). Using these funds, the UNCDCA conducted a study to assess the capacity of lower-level health facilities (HC III and HC IV) to support NCD patients in Uganda.

Uganda is experiencing an acute shortage of medical doctors in its public health sector. The World Health Organization (WHO) recommends a doctor-to-patient ratio of 1:1,000; according to Uganda's Health Sector Annual Performance Report, 2017/2018, the country's approved staffing position of 1,200 medical doctors for a total population of approximately 40 million translates into a doctor-to-patient ratio of 1:33,333. Worse still, all the 1,200 established positions are not filled. A recent study identified considerable resource gaps at all health facilities surveyed (Rogers et al. 2018). All the health facilities surveyed were found to have deficiencies in NCD screening and management capabilities. For

example, less than half of all Regional Referral Hospitals and General Hospitals had automated blood pressure machines, and random blood glucose was the only laboratory test commonly available at all surveyed health facilities. Moreover, the surveyed facilities had limited use of NCD patient registries and NCD management guidelines. Only 1 of the 8 HC IV units surveyed was found to use a registry to track patients with NCDs. Similarly, only 1 out of the 8 HC IV units had access to diabetes-management guidelines.

Prior to these findings, based on the very first NCD needs assessment conducted in Uganda in 2013, it was already known that none of the 54 Regional and General Hospitals or Health Center IV facilities "was found to meet WHO standards for essential tools and medicines needed to implement NCDs interventions" (Schwartz et al., 2014). Moreover, the same study established that many essential medicines were unavailable and that the available tools were not functional. For example, only 38% of the electrocardiogram machines available were functional. In addition, many of the HC IV clinical officers reported that they were not adequately trained to handle NCDs. Unfortunately, the assessment did not include lower-level (HC II and HC III) health facilities, which were closer, and therefore more accessible, to the vast majority of Ugandans. Five years later, it was deemed desirable to conduct a similar assessment, this time focusing on units HC III and IV.

In 2014, the WHO also noted that, in Uganda, the average availability of essential NCD medicines across all facilities was only 15% of the required medicines (WHO 2013). In terms of tools, a study conducted in 2015 noted that the tools necessary for the diagnosis and/or management of diabetes and CVD were available in only 34% and 44%, respectively (Katende et al., 2015). According to the same study, overall, there was poor readiness and preparedness to manage chronic disease patients in the outpatient units of both urban and rural health facilities in Uganda (Katende et al., 2015). Despite

these findings, the exact magnitude of the NCD problem, especially at lower levels of care, remains unknown. This was because only a few prior studies have assessed the capacity of public sector health facilities to provide NCD services. Even the Service Availability and Readiness Assessment (SARA), a WHO-endorsed, cross-sectional study that provides insight into overall health facility readiness, was limited in its acquisition of NCD-specific data. By the time this study was conducted, fewer than four SARA studies had been conducted in Uganda, and most of them focused on higher-level facilities (WHO, 2015). This lack of information about lower-level health facilities created an urgent need to assess the capacity of lower-level health facilities to manage NCDs by providing services to cancer, diabetes and heart disease patients. Therefore, the study sought to assess the capacity of HC III and HC IV units to detect the main NCDs, cancer, diabetes and heart disease; assess the capacity of HC III and HC IV units to offer clinical care, including timely referral of NCD patients; and assess the capacity of HC III and HC IV units to raise awareness through health education and health promotion on major risk factors for NCDs (Cancer, Diabetes and Heart Disease).

## APPROACH AND METHODOLOGY

### Study Design

The study adopted a cross-sectional study design using both quantitative and qualitative techniques. A cross-sectional survey design was adopted because it was deemed appropriate for establishing the capacity of health centres to manage NCDs through the study of a representative cross-section of the study population at a given point in time (Varkeviser et al 2003). The study was largely descriptive because the capacity of health centres to manage NCDs was eventually meant to be described. Finally, the study was also explanatory because the assessment of the capacity of the health centres would be incomplete and minimally useful, without explanations for the established capacity.

### Scope

With research ethics approval from Uganda's Mild May REC, the study targeted District Health Officers, the Officers-in-Charge of the selected HC units, Records Assistants in the selected HC units and NCD patients. The study focused on the capacity of lower-level health facilities (HC III and HC IV) to offer three types of services to NCD patients: detection of the 3 main NCDs; clinical care, including timely referral of NCD patients; and raising awareness through health education and health promotion on major risk factors for NCDs. The lowest-level health centres (HC II) were excluded because there were strong indications that the government was about to upgrade them all to HC III, which would then become the lowest-level, public health facility in Uganda. Spatially, the study was conducted in nine of the eleven districts in which the UNCDA has branches: Arua in the northwestern region, Gulu in central northern Uganda, Kasese in the west, Kassanda, Mubende and Nakasongola in central Uganda, and Luuka, Serere and Tororo in the east. Initially, the study was intended to cover eight districts, but because one of the districts, Mubende, had recently been split into two districts, with the creation of Kassanda District, the study covered one HC III in Mubende and one HC IV in Kassanda, where the UNCDA was active. Prior to the study, permission to perform the research was obtained, and regulatory authorities were obtained. Additionally, data collection tools were developed, trained, and pretested. After the data were collected, the data were analyzed, and the corresponding report was written. The entire exercise process lasted a total of 4 months, from September to December November 2018.

### Sample Size

The nine (9) districts that were targeted were predetermined and identified partly on account of the strategic partnership that UNCDA has with them and partly to ensure that all the major regions of the country (central, western, northern and eastern)



were represented. Within each of the nine districts, except for the districts of Kassanda and Mubende, one HC III and one HC IV were selected following the advice of the District Health Officer (DHO) and taking into consideration the ease with which the centres could be accessed within the short time available to the researchers. In the case of the Mubende and Kassanda districts, the latter of which had just been carved out of the former, it was administratively decided to use one HC III from Mubende and one HC IV from Kassanda because, when the UNCDA commenced operations in the area, the two districts were single districts. As a result, although the study covered nine (9) districts, only 16 (and not 18) HCs were covered. At each selected health centre, the study purposively selected at least two (2) officers; the overall boss, who thereafter allowed us to interview his/her records officer - because wanted to access their database. Given the limited resources and time, at each health centre, we also interviewed at least three (3) patients, each for cancer, diabetes and heart disease (these patients were the only ones readily available, with the energy, able and willing to participate in the study on that particular day).

### **Data Collection Methods**

The study used three methods of data collection—documentary review, semi-structured interviews, and observation—in a methodological triangulation framework. The documentary review method was used to collect secondary data from UNCDA programme documents and related literature from the Ministry of Health, the World Health Organization (WHO) and the internet. In particular, a WHO document (WHO, 2010) was used to determine the minimum WHO-recommended technologies, tools and medicines for primary care in NCDs. Other documents included the SARA Report. Semi-structured interviews were conducted to collect quantitative and qualitative data from District Health Officers (DHOs), Officers in charge of HC units, storekeepers of HC units and NCD patients. Additionally, observation was used to

evaluate the capacity of health centres to provide the services they were supposed to provide. The items observed included available infrastructure, staff and medical equipment and supplies. Each of the three methods was implemented by means of a corresponding data-collection tool: a document checklist, interview guides, and an observation checklist. The data collected were analyzed by means of frequency of occurrence and are presented in prose supplemented by tables, pie charts and graphs.

### **Quality Control & Data Analysis**

To ensure that valid and reliable data were collected, all the data collectors were trained by a team that included the Consultant and UNCDA staff and partners during a two-day workshop at the UNCDA offices in Kampala. During the workshop, mock interviews were used to pre-test the validity and reliability of the data collection tools, and minor improvements were made to the tools. The risk of misunderstanding questions and answers existed only for patients, most of whom did not speak English, and this risk was obviated or at least minimized by ensuring that each district data collection team had at least one person fluent in the dominant language of the district. While the quantitative data were analyzed using SPSS to generate percentages, the qualitative data were transcribed and categorized according to themes and subthemes to reveal tendencies and patterns.

## **RESULTS AND DISCUSSION**

### **Detecting Cancer, Diabetes and Heart Diseases**

The detection of any disease requires the presentation of signs or symptoms on the part of a patient, the presence or availability of health professionals capable of correctly interpreting these symptoms or signs, and the availability of equipment/tools and other materials that can be used to scientifically confirm or deny the existence of the suspected disease. It was these variables that, in pursuit of the first objective, were assessed. The most frequently detected new NCDs in the 16 HC

units over the previous 12 months included heart disease (27 patients), followed by cancer (25 patients) and diabetes (22 patients). Over half of the 25 cancer cases detected in the 16 HC units over the previous 12 months were cervical (8), breast cancer (7) or prostate (2) cancer, and more than 80% of the diabetes cases detected in the 16 HC units over the previous 12 months were type 2 (36.4%), type 1 (32%) or diabetes mellitus (13.6%). However, in eastern Uganda, a study conducted by Mayega et al (2013) found that diabetes prevalence was at 7.4 per cent among people aged 35-60 years was reported.

### **Main Types of NCDs Detected Over the Past Twelve Months**

As a result of their ability to detect at least some of the three main NCDs, some health centres identified the main types of at least some of the three NCDs that the study focused on. Over the previous 12 months, there was a wider variety of heart disease (19) than cancer (11) or diabetes (6). Overall, in terms of the total number of patients, HBP (10), cervical cancer (8), type 2 diabetes (8), breast cancer (7) and type 1 diabetes (7) were the leading NCDs in the 9 districts surveyed. However, a study conducted by Siddharthan et al (2021) in Uganda found that among self-reported diseases, hypertension (HTN) was most prevalent (6.3%). 1.1% of participants reported a diagnosis of diabetes, 1.1% asthma, 0.7% COPD, and 0.4% kidney disease. 2.4% of the population described more than one NCD.

### **Human Resource Capacity to Offer Clinical Care and Referral Services to NCD Patients**

From the point of view of formal medical training, seven (7) or 78% of the 9 DHOs in the study held a master's degree in public health or a related discipline, one (1) held a bachelor's degree, and the other one had an advanced diploma. Therefore, according to the staffing norms of the Ministry of Health, two (2) of the DHOs in the study were technically unqualified for their positions. While the most highly qualified officer-in-charge of an HC

was found to hold a master's degree, the majority of the officers had a diploma in clinical medicine as their highest qualification. Given that the minimum qualification for the position is a diploma in a relevant discipline, only two (2) of the officers in charge of the HC units in the study were not qualified for their positions. In addition to inadequate qualifications for some medical personnel, their capacity is more profoundly limited in terms of NCD management knowledge. According to one DHO, "*there is a lack of training and orientation for the health workers.*" This compounded the lack of capacity in terms of qualifications in medical education, whereby most HCs III and one HC IV were headed by diploma holders. Similarly, a study conducted by Mayega et al (2013) found that health systems in developing countries such as Uganda were incapable of providing the essential preventive and curative services for NCDs.

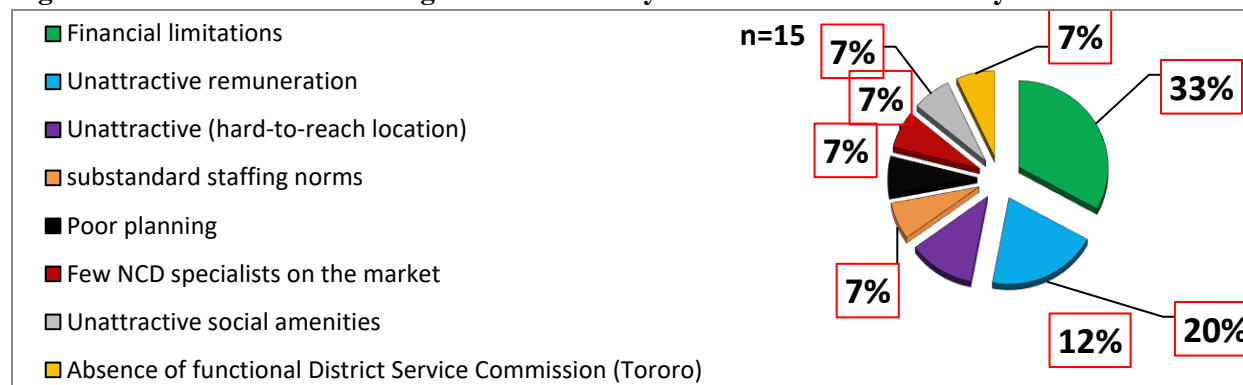
### **Missing Medical Professionals**

When the DHOs and officers-in-charge of HC units were asked to indicate the categories of health professionals that were either unavailable or in short supply, a total of 58 responses were generated, translating into 16 categories of health professionals. The categories most lacking were NCD specialists, including oncologists and cardiologists, who constituted 32.1% of the 58 responses. These were followed by medical doctors/officers, especially in HC III units, which, according to staffing norms, are reportedly not entitled to medical doctors. In third place are laboratory technicians, radiographers/radiologists, palliative care nurses and clinical officers. These are followed by midwives, nurses and pathologists. Tied in fifth place and cited only twice are data managers and counsellors, reflecting the relative failure of both DHO and HC administrators to appreciate the importance of data management and counselling in the battle against NCDs. The sixth and last positions are surgeons, pharmacists, haematologists, biopsy specialists (actually medical

doctors) and NCD educators, each of which was cited only once. According to the DHOs, this unavailability or shortage of health professionals is

attributable to 8 factors, which are summarized in Figure 1 below.

**Figure 1: Reasons for the Shortage/Non-availability of Medical Professionals by Rank**



As Figure 1 above indicates, the three leading factors accounting for the unavailability or shortage of health professionals are financial limitations, which translate into the government's inability to recruit necessary health professionals; unattractive salaries, which lead available health professionals to go into self-employment or seek employment in the private sector or outside Uganda; and unattractive, often hard-to-reach, HC locations, which many health professionals tend to shun. Other factors included inadequate staffing norms, according to which some categories of HCs were not supposed to have certain kinds of health professionals; deficient planning, which results in certain health professionals not being provided; and unavailability of NCD specialists on the market, either because not enough of them have been trained in the country or because the existing professionals prefer to work in the private sector or outside the country. Additional factors include unattractive social facilities or amenities at the HCs and, in the case of one district, the absence of a functional district service commission, which meant that there was no human resource planning, recruitment or deployment in that district. As a result, overwhelming numbers of patients are waiting to be treated at some health

centres due to staff inadequacy. This is highlighted in the observation of one of the data collectors in the study: *"There were very long lines of sick patients at the Outpatient Department, implying that the medical staff were insufficient for the number of patients."*<sup>1</sup> Likewise, Meghan et al (2012) found that indeed there was inadequate technical and managerial staff in the Ministry of Health (MOH) which meant that the MoH played a more supportive role rather than a direct hands-on technical role. This finding was supported by Rogers et al., (2018) who found that that all the 1,200 established positions were not filled and noted significant resource needs at all health facilities surveyed.

### **Availability of Essential NCD Primary Care Technologies, Tools and Medicines**

Because HC personnel need essential technologies, tools and medicines to manage NCDs, the study sought to identify the types of infrastructure, equipment and supplies that were available for the management of NCDs in the health centres.

### **Availability of WHO-Recommended NCD Technologies and Tools for Primary Care**

<sup>1</sup> Observation data

The officers in charge of the HC units named the available equipment and supplies in their respective districts and HCSs. The available items were then matched with the WHO-recommended lists of technologies, tools and medicines to establish the overall degree of availability of each basic or WHO-recommended item.

In terms of the availability of WHO-recommended NCD technologies and tools, the study captured only the number of HC units that had functional or usable items. Available but nonfunctional items were noted but regarded as effectively unavailable. For instance, while 2 of the 16 HC units (both of which were HC IV units) had no thermometer at all, the other 14 had a total of 63 thermometers; however, only 29 of them were functional, and one HC unit had no stethoscope. Moreover, while the 16 HC units had a total of 41 BP measuring devices, 6 of the devices were not functional, one had 2 nonfunctional BP measuring devices, four had no measurement tape, and all 16 had 64 weighing machines; twenty (20) of these machines were nonfunctional, and one (1) HC unit had no functional weighing machine. Only three (3) of the 16 HCs had spacers for inhalers, and they were all HC IV units; three (3) of the 16 HC units had no glucometers, and two (2) HC units had glucometers but no corresponding strips. Additionally, five (5) of the 16 HC units, including two (2) HC III and 3 HC IV units, had no urine protein test strips; eleven (11) HC units, including seven (7) HC III and four (4) HC IV units, had no urine ketone test strips; and ten (10) of the 16 HC units, including seven (7) HC III and three (3) HC IV units, had no evidence-based clinical protocols. Six (6) of the HC units, including five (5) HC IV units and one (1) HC III unit, had no patient clinical records; five (5) of the HC units, including three (3) HC III units and two (2) HC IV units, had no medical information; and seven (7) of the HC units, including (4) HC III units and three (3) HC IV units, had audit tools; the remaining units did not. Overall, the average functional availability of the two sets of WHO-recommended minimum technologies and tools was 59%, or 41%, below the

WHO minimum. Likewise, Schwartz et al., (2014) found that none of the 54 Regional and General Hospitals or Health Center IV facilities surveyed met WHO standards for essential tools and medicines needed to implement NCDs interventions.

### ***Other Essential Facilities for Clinical Care and Referral Services for NCD Patients***

Data from interviews with DHOs and HC officers-in-charge revealed that out of the 16 HCs surveyed, only six (6) had ambulances, and of the 6 ambulances, two were improvised—one being a pickup vehicle and the other a Suzuki service utility vehicle. One HC ambulance had been donated by a politician, and had restrictive conditions of use attached to it, prompting the Officer-in-charge of the HC to refer to it as a “political ambulance.” None of the HCs had vehicles for transporting supplies or staff, and all the HCs used contracted *boda-bodas* to transport medical supplies, and sometimes the patients. The study also established that the *e-health* strategy stipulated by the Ministry of Health to interconnect all the HCs in each district had not been fully implemented and that all 16 HCs used their personal computers to keep medical data available. Only two (2) out of the 16 HCs reported having an e-system of interconnecting between the local HCs and top national health authorities. There was no e-system to link patients to health personnel, and there were no plans to develop an internet-based health platform apart from using public social media.

### ***Reasons for Inadequacy/Unavailability of Equipment and Supplies***

The study findings also established why some equipment and supplies necessary for detecting and managing NCDs were unavailable. According to the 10 DHOs in the study, the main reason for the unavailability of equipment was inadequate funding (60%), followed by lack of electricity (10%), theft of equipment (10%), poor planning (10%), and poor maintenance of equipment (10%). Together, the



DHOs and officers-in-charge of the HC units attributed the unavailability of equipment and supplies mainly to financial limitations, which accounted for 60% of the reasons cited. The other factors, each cited only once, were lack of electricity, which rules out the acquisition or use of certain types of equipment; theft of equipment and supplies; poor planning, which results in certain vital equipment and supplies not being budgeted for; and poor maintenance of equipment, which renders some equipment nonfunctional. At one HC in northern Uganda, a brand new oxygen machine was not being used because a small but vital key was missing. Together with the officers-in-charge of HC units, DHOs, named “inadequate funding” and “financial limitations” (for the same reason), are the main reasons for the inadequacy or unavailability of equipment and supplies; this implies that, in the opinion of both categories of respondents, inadequate funding is responsible for the inadequacy or unavailability of equipment and supplies.

#### ***Availability of WHO-Recommended Essential NCD Primary Care Medicines***

To establish the degree of availability of essential NCD primary care medicines in the 16 HCs surveyed, the study team, working with the HC Records Assistants, used an observation checklist that included the essential medicines for NCD primary care interventions. A total of six (6) of the WHO-recommended medicines (*angiotensin inhibitor, isosorbide dinitrate, glyceryl trinitrate, beclometasone, heparin* and *Senna*) were not available at any of the 16 HC units surveyed. Even

*aspirin* was available at only 2 of the 16 HC units, and three items (*beta-blockers (atenolol), insulin* and *erythromycin*) were each available at only 3 of the HCs. In all, half (8) of the HCs did not have more than half (17) of the WHO-recommended medicines, and the average availability of all 34 items on the WHO list was only 32%. This implies that, on average, the HC units have only approximately one-third of the minimum, WHO-recommended medicines.

The above findings were complemented by qualitative data from patients. According to one cancer patient in the central region,

*“The ‘doctor’ did not give me any medicine, probably because my cancer was so advanced that it required the kind of medication and expertise that could not be available at such a low-level health centre. All they could do was to refer me to a bigger facility capable of handling my situation”.*<sup>2</sup>

Again, these findings complement Schwartz et al., (2014) who established that many vital medicines in Uganda were unavailable and that the available tools were not functional.

#### ***Availability of Power and Water***

Given that most NCD technologies and tools cannot function in the absence of electric power and water, our assessment of the adequacy of NCD technologies and tools included establishing the availability of electricity and water in the HCs, which is summarized in Table 1 below by HC category.

**Table 1: Availability and Sources of Power and Water by HC Category**

S/N	HC Category	Main Power Source			Main Water Source		
		HEP	Solar	Generator	Pipe	Rain	Borehole
1	HC III	3	4	00	1	1	3
2	HC IV	6	1	1	5	2	0
<b>Total</b>		<b>9</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>3</b>	<b>3</b>

<sup>2</sup> Interview with a cancer patient at a HC in the Central Region

As Table 1 above shows, only 9 of the 16 HC units surveyed had hydroelectric power, and in the case of one HC, the power was highly unreliable; additionally, 5, mainly HC III units, relied exclusively on solar power. This means that 2 (13%) of the 16 HC units had neither hydroelectricity nor solar power, and seven (44%) out of all the HCs surveyed had no hydroelectricity. Regarding water availability, only 6 (38%) of the 16 HC units, mainly HC IV units, had piped water provided by the National Water and Sewerage Corporation (NWSC), 3 (19%) of the HC III units relied exclusively on borehole water, and another 3 (19%) HCs, including two HC IV units, relied exclusively on rainwater, with all the attendant inconveniences during the dry season.

### **Raising Awareness of Major Risk Factors to NCDS, Through Health Education and Health Promotion**

Objective 3 of this study was to assess the capacity of the HC III and HC IV units to raise awareness of major risk factors for NCDs through health education and health promotion. Fourteen (88%) of the 16 HC units conducted health education and health promotion activities.

#### **Health Education**

##### ***Conceptualization of Health Education***

The World Health Organization defines health education as “any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes”.<sup>3</sup>

The DHOs were asked to define health education, and their definitions fell under 5 different categories or concepts: 1) disseminating information about lifestyles and how to live a healthy life; 2) empowering people with relevant information about

a disease and general well-being; 3) giving clients the knowledge to enable them to make informed medical decisions geared to improve their health status; 4) giving information on health-related issues to foster individual or community behavioural change; and 5) demystifying health-related myths and enhancing hygiene and sanitation. Overall, these definitions highlight the dissemination of information or knowledge to enable people to lead healthy lives. When the same question was posed to the officers-in-charge of HCs, they fell under 4 categories: 1) providing information about health to a community to improve their health; 2) sensitizing the public to live a healthy life, i.e., preventing diseases and reducing NCD risk factors; 3) disseminating messages on health-related issues, which can help people improve their health; and 4) disseminating knowledge about particular disease conditions, causes, signs, management and preventive measures. The keywords in these definitions are “disseminating information and knowledge”, “disease”, “health”, “individual”, “community”, “hygiene”, “sanitation”, “sensitization” and “lifestyle”, agreeing with what the WHO refers to as “*learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes.*”<sup>4</sup> Therefore, we conclude that both the DHOs and the officers in charge of HC units had a technically acceptable understanding of health education.

##### ***Health Education Subject Matter***

To determine the topics covered in the health education provided, the 14 offices-in-charge of HC units that conducted health education were asked to name the topics covered in their health education activities. Their answers revealed that NCDs (29%), maternal and child health (14%), and nutrition (9%)

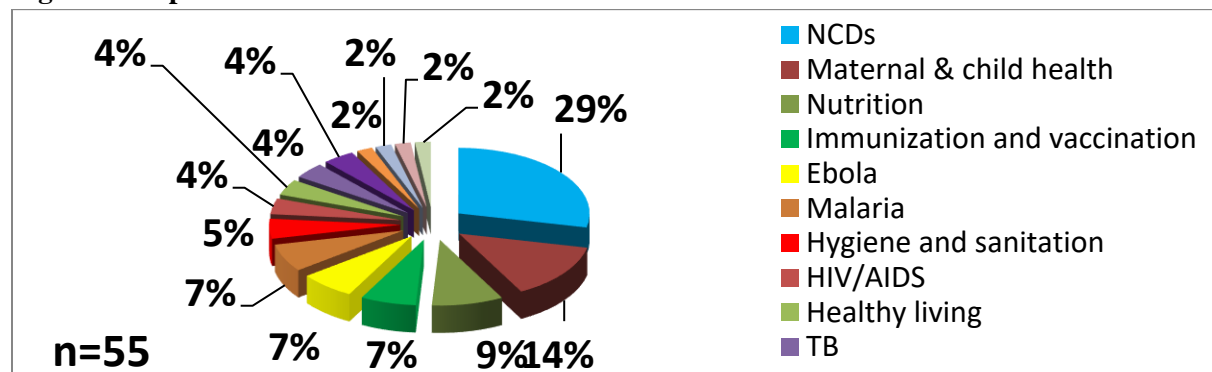
<sup>3</sup>[https://www.who.int/topics/health\\_education/en/](https://www.who.int/topics/health_education/en/).

<sup>4</sup> WHO: Health Education: [https://www.who.int/topics/health\\_education/en/](https://www.who.int/topics/health_education/en/)

were the three leading topics covered. These were followed by immunization and vaccination and infection with Ebola and malaria, all of which were

tied at 7%. Figure 2 below summarizes the topics covered in health education by percentage of occurrence.

**Figure 2: Topics Covered in Health Education**

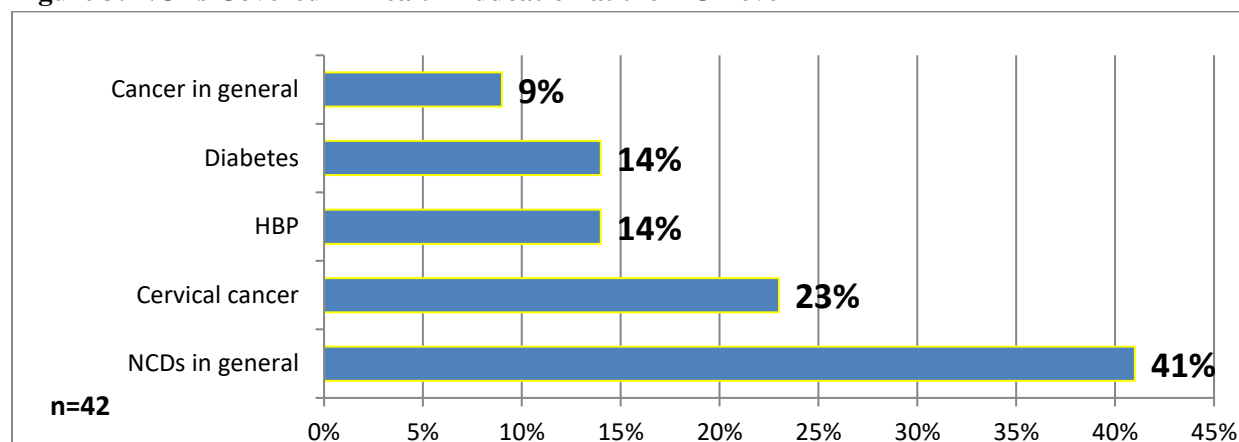


The study also revealed that, in most cases, the topics covered in health education depended on the knowledge, competencies and experience of the available staff. Therefore, the fact that only 16 (29%) of the total number of health education topics cited were about NCDs implies a shortage of HC medical staff with enough NCD knowledge and experience to conduct NCD education.

As Figure 2 above shows, of the 55 items cited as topics covered in health education, only 29%

concerned NCDs. This suggests that although NCDs are the most frequently covered topic in health education, they have not received enough attention because of their growing share of responsibility for morbidity and mortality in the country. The 16 NCD topics reportedly covered in the health education activities of the HC III and IV units included NCDs in general, cancer in general, cervical cancer, HBP and diabetes, and their frequency of occurrence is summarized in Figure 3 below.

**Figure 3: NCDs Covered in Health Education at the HC Level**



*Health Education Providers/Facilitators*

**Table 2: Number of Officers in Charge of HC Units Who Attended/Did Not Attend In-service NCD Training During the Previous 12 Months**

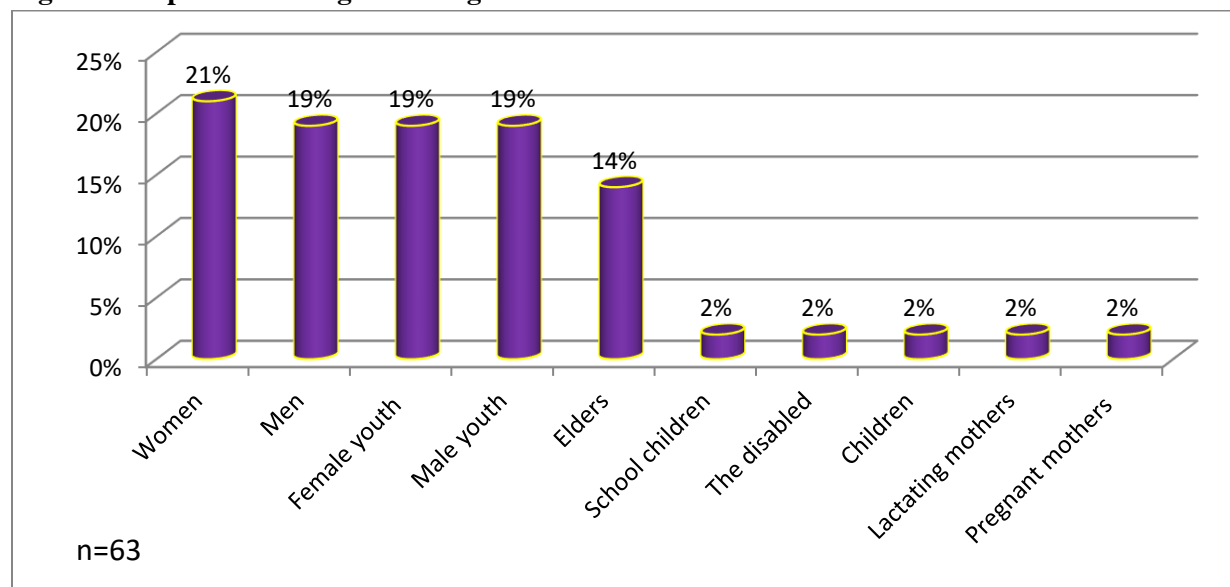
S/N	HC Category	Attended	Did not attend	Total
1	HC III (8)	8	00	8
2	HC IV (8)	6	2	8
<b>Total</b>		14	2	16
<b>Percentage</b>		88	12	

The study also sought to identify the categories of people who conducted health education activities at the HC level, and it was established that health education was conducted by health inspectors, health educators, counsellors, doctors, midwives, health assistants, health workers and enrolled nurses. Others were health educators, assistant health educators, clinical officers, nurses, visiting teams and VHTs. Having established that the topics covered in health education depended on the knowledge, competencies and experience of available staff, the study also sought to determine whether HC staff had attended any in-service training on NCDs. As Table 2 shows, 88% of the 16

officers reported having attended in-service training on NCDs.

### *Health Education Beneficiaries*

The study also sought to identify the categories of the population targeted by the health educators in the 14 HC units that conducted health education. When asked to name the categories of their community populations that participate in or benefit from their health education activities, the 14 officers generated 63 answers, subsumed under 10 population categories, which are shown in Figure 4 below, together with their frequencies of occurrence.

**Figure 4: Population Categories Targeted in HC Health Education Activities**

As Figure 4 above shows, women were the leading population category targeted by the health education provided by HC units, constituting 21% (n = 13) of all the participants in health education. Women are very closely followed by men, female youth and

male youth, all of whom are tied in second place, and each of whom makes up 19% (n = 12) of the targeted population. However, given that both lactating and pregnant mothers are also women (unless some of them happen to be actual or



expectant mothers), the total frequency and percentage of women could be 16 and 25%, respectively, which would increase the numerical dominance of women among the population categories targeted in HC health education activities. Apart from the fact that the combined percentage of women, female youth, lactating mothers and pregnant mothers (44%;  $n = 28$ ) exceeded that of men and male youth (38%;  $n = 24$ ), the data reveal no significant gender dimension; this is probably because elders, school children, disabled people and children are not disaggregated by gender.

It was found that each HC surveyed conducted their own health education activities on an irregular basis, without a coordinated programme. As one officer in charge of an HC unit admitted, health education on NCDs was conducted only when there was an NCD. Only one HC in central Uganda reported having conducted daily health education on drug abuse and tobacco use. Another HC in eastern Uganda reported conducting weekly health education on cervical cancer. In one district in northern Uganda, raising awareness of risk factors for NCDs was performed once every three months.

### *The Impact of Health Education*

Interviews with Officers-in-Charge from HC units revealed that twelve (12) or 86% of 14 Officers-in-Charge, whose HCs provide health education, reported that their health education had produced an impact, while only two (2) or 14% reported no impact. The impact of health education reportedly manifested as improved health service-seeking behaviour, a reduction in the incidence of common diseases and mortality rates, an increase in awareness about NCDs, a reduction in the number of HIV suppressors, and increased detection of new cases. One of the two officers in charge, who reported no impact attributable to health education, explained that this was because NCDs were not yet handled discretely or systematically. In his own words,

*“We have not yet witnessed any impact here; but with time, the impact will be visible. Currently, NCDs are not specifically handled here: sometimes it's once or twice a month, and in most cases, they are incorporated in other topics; but if we focus on them, the impact will be seen”.<sup>5</sup>*

### *Strategies for Improving Health Education on NCDs*

**Table 3: Respondents' Suggestions For Improving the Effectiveness of Health Education, by Rank**

Rank	Suggestions	Frequency		Total (%age)
		DHOs	HC Staff	
1	Provision and use of more and better IEC materials	00	5	5 (19%)
2	Provision of more frequent NCD education for health workers and community members	00	4	4 (15%)
3	Recruitment and training of more health education workers	00	3	3 (11%)
4	Holding more community dialogue meetings on NCDs	2	00	2 (8%)
4	Improving mobilization and sensitization skills of health educators	1	1	2 (8%)
4	Motivating health educators and VHTs by providing them with transport and other inducements	1	1	2 (8%)
4	Increasing funding for health (NCD) education	2	00	2 (8%)
5	Disseminating health education reports more widely	00	1	1 (4%)

<sup>5</sup> Interview with an HC Officer-in-Charge in Eastern Uganda

Rank	Suggestions	Frequency		Total (%age)
		DHOs	HC Staff	
5	Involving political leaders, including LCIs	00	1	1 (4%)
5	Integrating NCD education into routine HC activities	00	1	1 (4%)
5	Conducting more radio talk shows on NCDs	1	00	1 (4%)
5	Introducing talking compounds in community schools	1	00	1 (4%)
5	Prioritizing health (NCD) education	1	00	1 (4%)
<b>Total</b>		<b>9</b>	<b>17</b>	<b>26 (100%)</b>

Finally, both the DHOs and the officers in charge of the HC units were asked to suggest means of rendering health education activities more effective. As Table 3 shows, the three leading proposals were the provision and use of more and better IEC materials, the provision of more frequent NCD education for health workers and community members and the recruitment and training of more health education workers.

### Health-Promotion

Fourteen (88%) of the 16 officers in charge of HC units reported that they conduct health promotion activities, while the remaining (2 or 12%) indicated that they do not.

### *The Concept of Health Promotion*

The WHO defines health promotion as “*the process of enabling people to increase control over, and to improve their health.*”<sup>6</sup> To achieve the third objective of the study, both the DHOs and the officers in charge of HC units were asked to define health promotion. The DHOs construed health promotion in four different but related ways: 1) as a strategy of empowering communities to manage their own health problems through their own interventions, using their own resources; 2) as the process of increasing community awareness of health programmes; 3) as the process of increasing awareness of good behaviour promoting healthy living, e.g., good feeding, hand-washing and regular screening; and 4) as the act of supporting people to

put measures in place to ensure that the population is free of disease and is able to control infection and live a good and productive life. Therefore, according to WHO standards, the definitions of health promotion advanced by DHOs are technically acceptable.

For their part, the officers-in-charge of HCs defined health promotion as 1) the process of delivering health messages that improve the health status of a community, 2) the process of empowering the community with necessary skills and knowledge to improve their hygiene and sanitation, and 3) the process of improving the quality of the community by encouraging good health practices and discouraging bad ones. Like their DHO counterparts, the officers-in-charge of HCs conceived of health promotion in terms of efforts to improve the health of communities through community empowerment by means of awareness creation, the promotion of health-friendly behaviour, and the discouragement of anti-health behaviour. Therefore, we conclude that, according to WHO standards, the officers in charge of HCs, like DHOs, have an acceptable understanding of health promotion.

### *The Subject Matter of Health Promotion Activities*

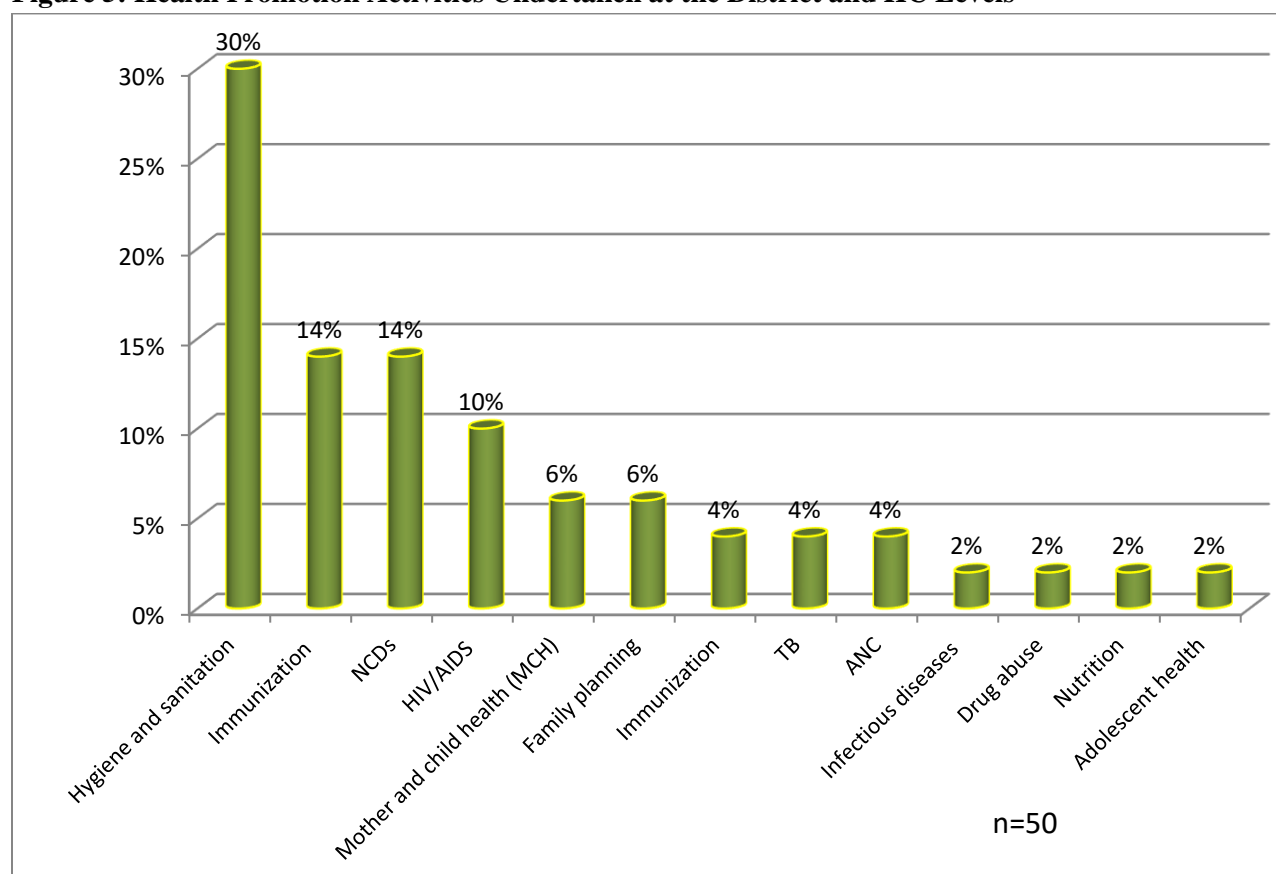
The 14 officers-in-charge of HC units, who reported implementing health promotion, indicated that their health promotion activities take a wide range of forms and include an equally wide variety of

<sup>6</sup> [https://www.who.int/topics/health\\_promotion/en/](https://www.who.int/topics/health_promotion/en/)

activities, which are summarized in Figure 5 below. As Figure 5 shows, hygiene and sanitation were by far the most common activities undertaken, accounting for 30% of the total number of activities cited. This was distantly followed by immunization and NCDs, each accounting for 14%, and

HIV/AIDS (10%) was in third position. Mother-and-child health was tied to family planning (6%) in the fourth position, and immunization, TB and ANC took the fifth position at 4% each. The people in the last position were infectious diseases, drug abuse, nutrition and adolescent health.

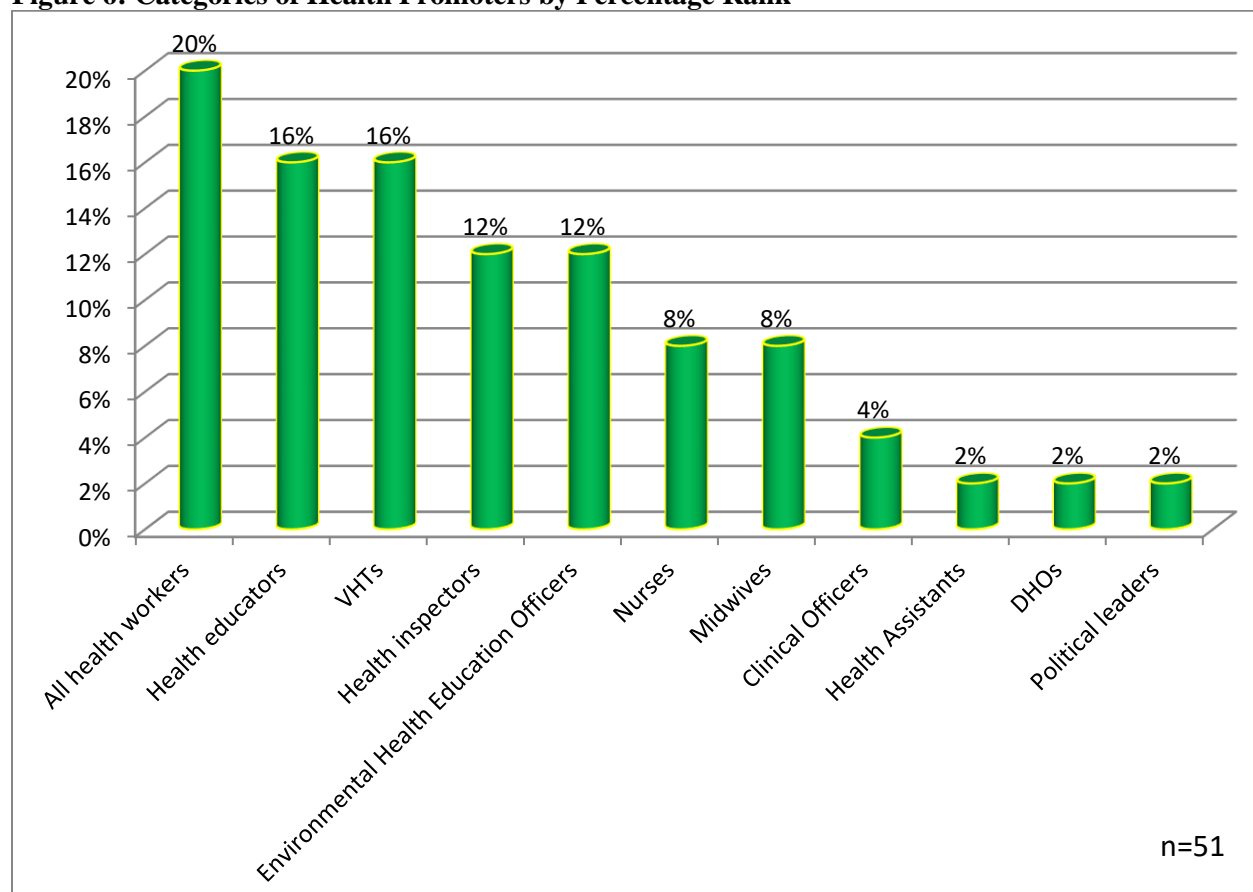
**Figure 5: Health Promotion Activities Undertaken at the District and HC Levels**



### **Health Promotion Facilitators**

The study also sought to identify the categories of people who conducted health promotion activities at both the district and HC levels. In all, eleven (11) categories of health promotion facilitators, some of which overlapped, were identified and are presented in Figure 7 below. As Figure 6 below shows, according to the majority of the respondents, the leading health promoters were “all health workers”. This was significant because, by virtue of their

professions, all health workers are duty-bound to promote health; this finding suggests that the health workers in the surveyed districts and HC units were living up to their calling. This category is the second most common category, followed by “health educators and VHTs”. In the twelfth and last position were political leaders. What all these findings highlight is that all health workers, as well as political leaders, in the surveyed districts, participate in health promotion. Political leaders are most likely involved in community mobilization.

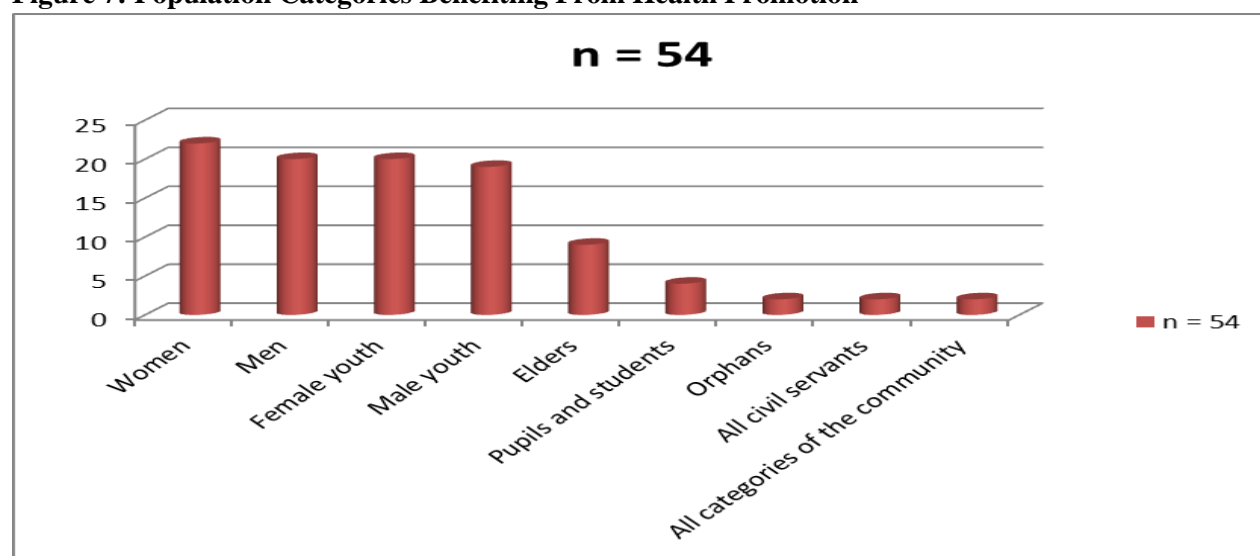
**Figure 6: Categories of Health Promoters by Percentage Rank**

### ***Heath Promotion Beneficiaries***

The study identified nine (9) population categories that were targeted by or benefited from, health promotion activities. These included women, men, female youth, male youth; elderly people, pupils and students, orphans, all civil servants, and all categories of the community population, as summarized in Figure 7 below. As Figure 8 shows,

women were the leading population category targeted by health promotion activities at the HC level, constituting 22% of all the categories of the community population. Women are followed by men (20%), female youth and male youth at 20% and 19%, respectively. The elderly, pupils and students, orphans, all civil servants and all categories of the community population comprised 9%, 4%, 2%, 2% and 2%, respectively.



**Figure 7: Population Categories Benefiting From Health Promotion*****The Impact of Health-Promotion Activities***

Apart from one officer in charge of an HC unit, all the other 15 reported that their health promotion activities had produced a positive impact. Across all the HCs surveyed, a total of 35 pieces of “evidence”

of a positive health promotion impact were reported by the officers in charge of HCs. All this “evidence” was subsumed under 11 types of evidence whose relative frequency of occurrence is summarized in Table 4 below.

**Table 4: Reported Evidence of the Impact of Health Promotion by HCs, by Rank**

Rank	Evidence of impact	Frequency	%age
1	Increased demand for health services	12	60
2	Improved hygiene and sanitation	2	10
2	Reduced mortality rates due to common diseases	2	10
3	Higher latrine coverage	1	5
3	Reduced incidence of common diseases	1	5
3	Increased quantity of dispensed medicine	1	5
3	Reduced number of critical NCDs cases	1	5
<b>Total</b>		<b>20</b>	<b>100</b>

As Table 4 above indicates, the most frequently cited piece of evidence was increased demand for health services (12 or 60%), followed by improved hygiene and sanitation together with reduced mortality rates due to common diseases, each accounting for 2 or 10%, respectively. These two criteria were followed by higher latrine coverage, a reduced incidence of common diseases, an increased quantity of dispensed medicine, and a reduced number of critical NCD cases, each of

which represented 1 or 5% of the total number of pieces of evidence provided.

**CONCLUSION**

This study sought to assess the capacity of the HC III and HC IV units to (i) detect the main NCDs (cancer, diabetes and heart disease); (ii) offer clinical care, including timely referral of patients with NCDs; and (iii) raise awareness, through health education and health promotion, of major risk

factors for NCDs. Based on the findings, the study makes the following conclusions:

- ❖ The most frequently detected new NCDs in the 16 HC units over the previous 12 months included heart disease (27 patients), followed by cancer (25 patients) and diabetes (22 patients). And, according to the staffing norms of the Ministry of Health, two (2) of the DHOs in the study were technically unqualified for their positions. While the most highly qualified officer-in-charge of an HC was found to hold a master's degree, the majority of the officers had a diploma in clinical medicine as their highest qualification.
- ❖ The missing medical professionals categories most lacking were NCD specialists, including oncologists and cardiologists, who constituted 32.1% of the 58 responses. The leading factor accounting for the unavailability or shortage of health professionals and NCD essential medicines was financial limitations. Similarly, the average functional availability of the two sets of WHO-recommended minimum technologies and tools was 59%, or 41%, below the WHO minimum. Moreover, in all, half (8) of the HCs surveyed did not have more than half (17) of the WHO-recommended medicines, and the average availability of all 34 items on the WHO list was only 32%.
- ❖ Regarding water availability, only 6 (38%) of the 16 HC units, mainly HC IV units, had piped water provided by the National Water and Sewerage Corporation (NWSC), 3 (19%) of the HC III units relied exclusively on borehole water, and another 3 (19%) HCs, including two HC IV units, relied exclusively on rainwater, with all the attendant inconveniences during the dry season.
- ❖ Regarding health promotion, both the DHOs and the officers in charge of HC units had a technically acceptable understanding of health education. The impact of health education

reportedly manifested as improved health service-seeking behaviour, a reduction in the incidence of common diseases and mortality rates, an increase in awareness about NCDs, a reduction in the number of HIV suppressors, and increased detection of new cases.

- ❖ Most significantly, all health workers, as well as political leaders, in the surveyed districts participated in health promotion. Political leaders are most likely involved in community mobilization.

## RECOMMENDATIONS

To improve the capacity of HCs III and IV to detect the three main NCDs, to provide clinical care and referral services to NCD patients and to conduct health education and health promotion on NCDs based on the findings and conclusions, the study makes the following recommendations:

- The Ministry of Health should increase funding at the district level, improve the salaries and general working conditions of medical staff, upgrade the staffing norms of HC units, and train health personnel in NCD management.
- The staffing norms of HCs should be upgraded so that all HC units have at least one medical doctor, and all medical personnel at each HC unit should be trained in NCD detection, prevention and management.
- The salaries and general working conditions of health personnel should be improved to attract, hire and retain competent health personnel, especially in rural areas.
- A sufficient amount of modern medical technology, especially WHO-recommended technologies, should be available at all times and for all HCs.
- The procurement process should be improved to ensure that necessary NCD detection and management technologies and medicines are available at all times.

- In view of the near-total absence of systematic record-keeping and data analysis that was observed at all HC units, every HC unit should have a competent data manager capable of transforming raw data into information so that the government and all stakeholders can correctly perceive the prevalence of the NCDs in time and take appropriate action.
- Each HC unit should be provided with reliable sources of power (hydroelectricity or a powerful generator) and portable water to operate during the dry season.
- Management information systems already planned by the Ministry of Health should be implemented to improve the efficiency and effectiveness of diagnosis, treatment, patient care and referral of NCD patients and to facilitate the sharing of research knowledge and emerging technologies from medical institutions in Uganda and abroad.
- The Ministry of Health should design a comprehensive, coordinated routine NCD-specific health education programme at the HC level, with routine training of medical personnel on the content of the health education curriculum and the methods of educating the public; additionally, health promotion materials should be made available to all HC personnel.
- Given the very low levels of formal education observed among patients, NCD-related health education and promotion activities, especially in rural areas, should be conducted in indigenous languages, and beneficiaries should be targeted on the basis of their respective degrees of vulnerability to specific NCDs. To enhance sustainability, pupils and students should be targeted.
- Given that all the HC units lacked monitoring and evaluation reports of their health education and promotion activities, all the NCD health education and promotion activities should be systematically monitored and evaluated to improve accountability and performance through learning.
- Considering that theft of equipment and medicine is one of the factors accounting for the limited capacity of HCs to perform their functions and given that medical records are confidential, the security of medical equipment, medicines and records should be improved.
- The Ministry of Health should provide policy guidelines to improve the management of the referral system and the distribution of medical supplies, especially between district headquarters and HC units, and the guidelines should include monitoring and evaluation to improve performance and accountability.

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