"CHRONIC DISEASE AMONG THE AGED WHO REPORTED AT CAPE COAST METROPOLITAN HOSPITAL"

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ABSTRACT

Significant changes have occurred in the pattern of disease and population structure. As a result, chronic diseases are becoming major public health burden in Ghana, which is grabbed with difficulties of communicable diseases. Facility-based data was used to analyse the types of chronic disease reported in 2004 and 2009. It was realised that hypertensive heart disease was highly reported among the aged (2009 – 45.3%). This was followed by chronic heart diseases (average of 13.2%). Chronic respiratory diseases were least reported (eg. 2009 – 3.3%). Female out number male (eg. 2004 – 62.8%) and the 60-75 year group (young-old) represented the largest proportion for the chronic disease challenge. In conclusion, chronic diseases were high among young-old female than male but the proportion of the male seemed increasing between 2004 and 2009. To encourage healthy aging, much attention should be given to issues of chronic disease in the health facilities.

INTRODUCTION

In past few decades, significant changes have occurred in the pattern of disease and population structure in developing countries. These changes have resulted from the effects of social, economic and technological developments as well as from specific health and population programmes. As a result of these changes, chronic diseases are gradually becoming a dominant disease burden in developing countries, not forgetting the communicable diseases which developing countries are struggling to curb. Chronic conditions are explained by the World Health Organization (WHO) as requiring ongoing management over a period of years or decades and it covers a wide range of health problems which go beyond the conventional definition of chronic illness, such as heart disease, diabetes and cancer (WHO, 2008). These conditions require complex interventions over a long period of time. But with regards to this study, it is the long lasting and ongoing management of a disease that do not have a definite cause and most at times, it is as a result of degeneration, that is, any degenerative diseases that has been reported more than twice at the health facility. Chronic diseases are now the leading causes of death and illness in the world, accounting for 68 percent of deaths in the world and 60 percent of disability-adjusted life years (DALYs) in the world (Anderson & Chu, 2007 and Anderson, 2009). All population groups are affected especially the aged males but according to Appelros, Stegmayr & Terent (2009) females chronic illness (stroke) are more severe than males. On the contrary, screening and treatment results are considerably worse for the aged and the poor in societies (Lozano et al 2009) due to perceptions and poverty.

In African countries, ageing-related issues have low priority in many governmental sectors (Mkai & Ngalinda, 2000; Van der Heever & Booysen, 2000; Madzingira, 2000; Katsriku, 2000). This low priority may be due to inadequate information relevant to the population and its

situation (Apt, 1997). But, the older population of sub-Saharan Africa is projected to increase from 30.4 million to 56.5 million in the next 25 years (US Census Bureau, 2000). It has also being projected that for the next 25-year period, the older population of Ghana will increase significantly (US Census Bureau, 2000). Ageing of the population poses significant problems to the healthcare system, including increased costs, inappropriate modes of service delivery and problems of chronic disease prevention. Therefore, Gillis (1992) stated that healthy ageing is largely determined on social, economic opportunities, health status and access to health care over the life course. Worldwide, older persons carry a greater share of the burden of chronic disease. According to HelpAge (2009), some 63% of older people still find it hard to access healthcare and 72% do not have enough income to access basic services such as water, electricity, food and decent housing. In such situations, chronic diseases tend to be complex conditions especially with advances in age; they are often long-lasting and persistent in their effects and can produce a range of complications (Australian Institute of Health and Welfare, 2002). The gains in life expectancy as well as improvement in medical advancement, sanitation and nutrition in most developing countries has resulted in the progression of chronic illness especially hypertension (Ukraintseva, 2000).

A number of studies also suggest that non-communicable diseases will soon be the most important cause of morbidity and mortality in all developing countries (Agyei-Mensah, 2004: UN, 2005, Addo, Smeeth & Leon, 2007). Chronic non-communicable diseases are currently the main cause of both disability and death worldwide (WHO 2005). The expectation is that the proportion of chronic disease would be comparatively greater in developing countries in some years to come (Murray and Lopez, 1997). This is because developing countries have a greater stock of mortality and morbidity from infectious diseases that are curable by improvements in

nutrition and sanitary standards and by relatively simple medical means. It is also expected that there would be disparities between male and female chronic diseases burden due to biological make up and gender roles associated with African communities (Doyal, 2001). WHO also projects that 28 million people in the sub-Saharan Africa will die from a chronic disease over the next 10 years (WHO, 2005). Also, to referee from the UN (2005) projections, by the middle of this century, the number of elderly people in the world will exceed the number of young people. Therefore, the rate of increase of deaths from chronic diseases will outstrip that from infectious diseases, maternal and perinatal conditions, and nutritional deficiencies. These would be more than four-fold in the next 10 years, most significantly, deaths from diabetes will increase by 42% (WHO, 2005).

Available literature shows that with appropriate interventions and services, chronic diseases can be prevented (Wagner, 1998; Glasgow, 2001; WHO, 2003). Chronic diseases are mostly curable when identified earlier but others are incurable. The situation of chronic disease in Africa is quite different. For instance, with respect to cancer in Africa, by the time of diagnosis, 80% to 90% of patients have incurable, with only 10% to 15% being curable when given appropriate treatment (WHO, 20005). This is attributed to poor and unattended medical checkups (Strong, 2005). This shows that the population in the sub-Saharan Africa is not benefiting much from primary prevention and cure (WHO, 2002)

The Ghana Health Service (2003) noted that hypertension affects nearly one out of every five Ghanaian adults. The 2008 Ghana Demographic and Health Survey shows that 1 in 10 Ghanaian women is malnourished and 3 in 10 women are overweight or obese. That is, there are more obese women (30.0%) than malnourished women (9%) in Ghana. Thus, some people in Ghana are becoming susceptible to hypertension due to unhealthy lifestyles (Cappuccio et al,

2004). From an international perspective, it appears that not enough focus is being placed on chronic disease in Ghana (World Bank, 2004). However, the Ministry of Health in Ghana announced a paradigm shift in 2005 from "curative to preventive services" and aims to empower communities to adopt healthy lifestyles. In spite of this recognition, the health system in Ghana is still struggling to catch up with basic issues such as vaccine coverage and sanitary standards. As pointed out by Nugent, (cited in Kokotailo & Hill, 2005) it was quite astonishing how quickly chronic diseases have overtaken infectious diseases in developing countries. Chronic disease has been labeled as disease of the affluence in most African countries (de-Graft Aikins, 2007). This is because the phenomenon is common among the rich in sub-Saharan Africa. For example, obesity is considered as a sign of riches (high standard of living). This perception undermines the ability to address the burden associated with chronic diseases.

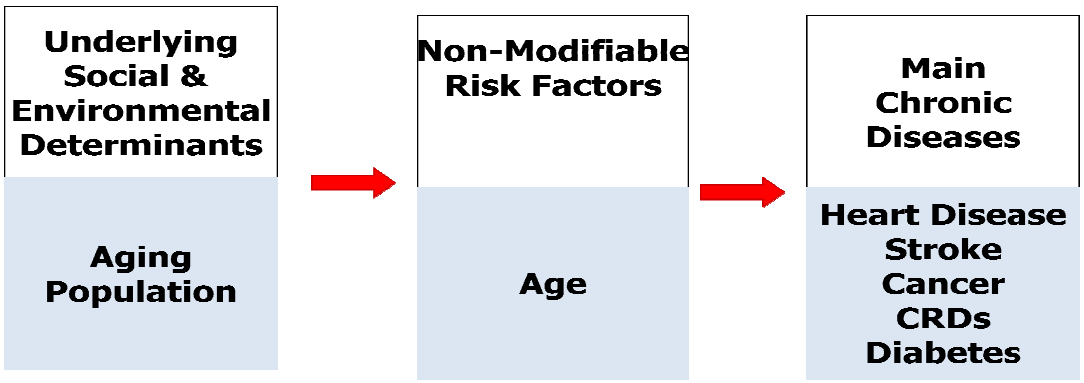
There is inadequate information on chronic diseases and aging in Ghana (Saleh, 2002; Agyemang, Bruijnzeels & Owusu-Dabo, 2006). The few that exist on aged related diseases focused on selected areas such as; Diabetes in Accra by Dodu, (1966); obesity in Accra by Amoah (2003); cancers in Accra by Baako, & Badoe (2001); hypertension in Ashanti region by Cappuccio (2004). Risk factors associated with chronic disease and cost of medication and treatment for chronic disease (Amoah, Owusu et al 1998); burden of chronic disease on populations (Badasu, 2007) and treatment for chronic diseases (Ofei, 2005; Hesse, 1997). Therefore, this study will contribute to this growing literature on prevalence of chronic diseases in Ghana by analysing the prevalence of chronic diseases among the aged who reported at Cape Coast Metropolitan hospital. A hypothesis was therefore stated as 'there is no significant relationship between age, sex and chronic diseases' to establish the link between sex, age and chronic diseases.

Conceptual framework

Chronic conditions as defined by the World Health Organization (WHO, 2008) as the ongoing management over a period of years or decades and cover a wide range of health problems which go beyond the conventional definition of chronic illness, such as heart disease, diabetes and stroke. These conditions require a complex response over an extended time period which involves coordinated inputs from a wide range of health professionals and access to essential medicines and monitoring systems, all of which need to be optimally embedded within a system which promotes coordination, continuity of care and patient participation. The world has undergone a swift epidemiological transition towards non-communicable and chronic diseases. Chronic diseases are now the leading causes of death and illness in the world, accounting for 68 percent of deaths in the world and 60 percent of disability-adjusted life years (DALYs) in the world (Anderson & Chu, 2007 and Anderson, 2009). As a person ages, the organs and cells undergo subtle physiologic changes, even in the absence of disease. For instance, the muscles of the aged heart may relax less completely between beats and as a result, the pumping chambers become stiff and may work less efficiently. Research has also shown that no single theory or model can fully explain a phenomenon and as such, three theories and one model were used to explain the basic variables of the study. The demographic transition theory by Thompson explains the changes in the population structure and size over the time. The epidemiological transition theory by Omran also concentrates on the changes in the cause of death, that is, change from predominantly infectious and parasitic diseases to chronic diseases. The nutrition transitional theory by Popkin also combines both the demographic transition and the epidemiological transition theories and dwells much emphasis on changes in activities and diet over the years. The element and progression of chronic disease adapted from Baberio, which

is the conceptual framework for the study also explain the changes in disease through advances in aged. The model combines both biological and environmental factors to determine the pattern of disease between 2004 and 2009. Figure 1 shows the adapted element and progression of chronic disease model from Baberio.

Figure 1: Element and progression of chronic disease model



Source: adapted from Barbiero (2002)

Study design

The study seeks to describe the hospital records as in its natural state without influencing it in any way. Cross sectional design is usually conducted to estimate the prevalence of the outcome of interest for a given population (Gay & Airasian, 2000). This design is a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way (Shuttlewortg, 2008).

Target Population

Cape Coast Metropolitan Hospital constitutes the study area for the research. The target population is the aged (60 years and above) who reported at Cape Coast Metropolitan Hospital in 2004 and 2009. This is because the study focuses on prevalence of chronic disease among the aged and according to National Center for Health Statistics (2000) aging is positively associated with chronic disease.

Study Area

- **Cape Coast Metropolitan Hospital and its Location Characteristics**

Cape Coast Metropolitan hospital is the second largest hospital in Central Region and the main referral hospital for clinics and health centres in Cape Coast metropolis. It is one of the three hospitals (Cape Coast Regional Hospital and University of Cape Coast Hospital) in the metropolis which offers both in-patients, out-patient and emergency services. It is located at Bakaano- a suburb of Cape Coast. It is observed that Cape Coast Metropolitan Hospital has a location advantages which makes it attracts numbers of clients from the nearby districts, especially the Komend-Edina-Eguafo-Abrem (KEEA) district. This is because the KEEA district broke from the Cape Coast Metropolis and as a young district; they are face with some difficulties including healthcare delivery services. The district hospital for KEEA district is Ankafo Mental Hospital. Ankafo Mental Hospital is a leprosarium centre and as a result there is a stigma that anybody who visits the hospital has a mental problem which most societies in Ghana frowns upon. The road leading to the Ankafo Mental Hospital is not of a straight course from the district capital (Elmina) compare to Cape Coast Metropolitan Hospital which happens to be on the road side and at centre of Cape Coast. Also, Cape Coast Metropolitan Hospital used

to be the regional hospital and as such it has facilities wealth that status. Therefore, the facility offers an appreciable number of services with adequate number of doctor, nurses and state of the art facilities as compared to other health facilities.

- **Background of the Cape Coast Metropolitan Hospital**

Cape Coast Metropolitan hospital was opened in 1938 and it was located somewhere in Kotokuraba. In 1950 as a way of improving the health of the people of Cape Coast, the hospital was moved from its location to ultra-modern building at Bakaano and therefore became the regional hospital of Central Region. At its inception, Cape Coast Metropolitan hospital had less than 10 beds and treated up to 70 patients daily. At that time, Cape Coast Metropolitan hospital was described as the finest hospital in the Central region, on account of its impressive array of fine buildings and a cadre of competent staff, who provided excellent medical care to the population of Central region in general, and the city of Cape Coast, in particular (GHS, 1998).

The hospital belongs to, and is controlled by, the Ministry of Health. In 1966, a Nurses Training College was opened at Cape Coast Metropolitan hospital to train a higher level of Staff Registered Nurses (SRNs) for the hospital, and for the entire country. Throughout the years, there had been a running debate among the medical establishment about whether the hospital should also be training doctors and medical assistants. From 1957 to 1998, the facility experienced a rapid development and expansion. The expansion of the hospital resulted in an increase in the number of beds to from about 70 to 200. Several specialties and sub-specialties, befitting the status of Cape Coast Metropolitan hospital among the apex health facility in Ghana, were added to the traditional departments of Medicine, Surgery, Pediatrics and Obstetrics and Gynecology. It was within this period that the public health unit was opened at the hospital. But,

in 1998, the Cape Coast Regional Hospital was established at Abura and therefore the status of the Cape Coast Metropolitan hospital as a regional hospital changed to a district hospital.

It functions as a district hospital changed to municipal and now to metropolitan depending on the status of the Cape Coast city. The Cape Coast Metropolitan hospital has nearly 380 beds (2009 estimates). The facility has more than 219 staffs of which 5 are medical doctors, a dental surgeon, 50 nurses and other administrative staffs. Cape Coast Metropolitan hospital serves as the ultimate referral institution for patients from all health facilities in the metropolis and at times receives referred patients from Cape Coast Regional Hospital when the facility is over burdened. The Cape Coast Metropolitan hospital has an average population of 140,000 and receives a yearly attendance of 80,000 to 100,000 patients including an average of 6,000 in-patients. Cape Coast Metropolitan hospital has primary goals: the provision of high quality medical care and teaching. The hospital has specialised units: Surgery (an average of 700 surgeries per year including caesarian section), Medicine, Paediatrics, Obstetrics (closely 2,000 deliveries a year), Gynaecology and Dentistry. These services are offered under the following wards: female ward, male ward, children ward, dental ward, surgical ward and maternity ward.

Data collection and management at Cape Coast Metropolitan Hospital

The data collection was carried out after entry permission was approved by the Medical Superintendent of the Cape Coast Metropolitan Hospital. Data were obtained from the facility's consulting room records, in-patient records and emergency records books. These information were taken from two different years: 2004 and 2009. The consulting room records book contained the information on the outpatients, while the in-patient records book contained. Lastly, the emergency records were on those who reported as urgent cases: these patients could be either

out-patient or in-patient depending on the severity of the case. The following information were extracted: age, sex, address/residence, diagnoses, cost, prescription, occupation and remarks. In addition to these information provided in the records book, the cases column also provide information indicating new and old cases. Cost, occupation and remarks were partially filled, that is, it was not completely filled for all patients. Some patients had no information on cost, occupation and remarks. Due to this, age, sex, address/residence and diagnoses were taken leaving out name to observe autonomy. As the study focused on age and chronic diseases, data was extracted for the people aged 60 and above. All chronic diseases were extracted and these included Hypertensive heart disease (severe and mild), stroke (severe and mild), heart failure, cardiac arrhythmia, and other cardiovascular attacks. Also, different types of cancer was obtained from the hospital records (breast, lung/liver, uterus, prostate, etc), diabetes such as type 1 diabetes and type 2 and asthma and inflammatory diseases as the chronic respiratory diseases. More importantly, the issue of duplication was the major challenge in the extraction of the data from the records book. It was controlled by going through the medical folders of patients to be aware of the number and date of visits made by the patient.

Ethical consideration

The topic and the facility based data collected for the study was approved by the ethical review board of University of cape Coast. In addition to this, other ethical protocols were observed. The hospital records are very sensitive materials since it contains vital information and medical history of people. Therefore, basic ethical principles were observed to keep this document safe and confidential. An introductory letter from the Department of Population and Health was given to the Cape Coast Metropolitan Health Directorate since the Cape Coast Metropolitan Hospital is under the authority of the Cape Coast Metropolitan Health Directorate

to acquire the entry permission. The introductory letter gave the study the ethical right to carry out the research at Cape Coast Metropolitan Hospital.

With regards to confidentiality of the study, patients depend upon the Cape Coast Metropolitan Hospital for confidentiality of their medical records since the records are not meant for public consumption. Data collected was for purely academic purposes and therefore it was . This would in attempt promote and preserve confidence without exaggerating the accuracy or explanatory power of their findings. Anonymity of the data collected from the Cape Coast Metropolitan Hospital was assured by not writing the names of patients corresponding to their records. With this nature of data, findings cannot be known to a particular person.

In all, social science research is to remain of benefit to society and the groups and individuals within it, so as to make social researchers conduct their work responsibly and in light of the moral and legal order of the society in which they practice. Researchers have a responsibility to maintain high scientific standards in the methods employed in the collection, analysis of data and the impartial assessment and dissemination of findings.

RESULTS

The results focus on the types of chronic disease and the background characteristics of patients who reported at Cape Coast Metropolitan Hospital in 2004 and 2009. The background characteristics such as age and sex were analysed in correlation to the reported chronic diseases. The chronic diseases were grouped into two major diseases namely: Heart related chronic diseases (HRCDs) and Non-heart related chronic diseases (NHRCDs). The HRCDs included chronic heart diseases (CHD), cerebrovascular heart diseases (stroke) and hypertensive heart diseases (HHD) where as the NHRCDs were cancer, diabetes and chronic respiratory diseases (CRD).

Types of chronic disease reported at Cape Coast Metropolitan Hospital

- **Heart related chronic diseases (HRCDs)**

Heart related chronic disease (HRCD) is a broad term for a variety of diseases affecting the heart. With this study, the *Chronic Heart diseases (CHD)* included *cardiomyopathy* (heart muscle disease), *Stroke (*cerebrovascular accident*)* and *Hypertensive heart disease (HHD)*. The HRCDs were categorized into three thematic areas: HHD, CHD and stroke. Under each types of HRCD, it had various sub-divisions, that is, different ways it manifest in the aged population. People with heart diseases are often at risk of sudden cardiac death and *cardiovascular diseases* which is a disorder that affects the heart itself and/or the blood vessel system, especially the veins and arteries leading to and from the heart (Agyemang *et al*, 2009). Researches on heart diseases suggest that women with cardiovascular disease usually suffer from types which affect the blood vessels while men usually suffer from forms that affect the heart muscle (Appelros *et al*, 2009). The results of chronic diseases reported by the aged are depicted by Table 1.

Table 1: Types of heart related chronic diseases, 2004 and 2009

HRCD	Types	Aged Pop	Year			
			2004		2009	
			Male (%)	Female (%)	Male (%)	Female(%)
Stroke	Mild stroke	Young-old	25.0	9.1	11.5	9.8
		Old-old	0.0	20.0	0.0	0.0
	Severe Stroke	Young-old	75.0	90.9	88.5	90.2
		Old-old	0.0	80.0	100.0	100.0
	Total (N)	*Young-old*	*8*	*11*	*26*	*51*
		Old-old	*0*	*5*	*4*	*8*
CHD	CA	Young-old	42.1	47.8	9.1	19.6
		Old-old	20.0	83.3	0.0	12.5
	Heart failure	Young-old	10.5	13.0	11.4	0.0
		Old-old	40.0	0.0	5.6	14.2
	Other CVA	Young-old	47.4	39.2	79.5	80.4
		Old-old	40.0	16.7	94.4	83.3
	Total (N)	*Young-old*	*19*	*23*	*44*	*56*
		Old-old	*5*	*12*	*18*	*24*
HHD	Hypertension	Young-old	70.0	82.8	74.4	75.3
		Old-old	60.0	55.8	73.1	62.9
	Severe Hypt	Young-old	30.0	17.2	25.6	24.7
		Old-old	40.0	44.2	26.9	37.1
	Total (N)	*Young-old*	*60*	*116*	*90*	*158*
		Old-old	*10*	*43*	*26*	*70*

Facility based data from Cape Coast Metropolitan Hospital, 2004 and 2009

HRCD – Heart Related chronic Disease

CHD – Chronic Heart Disease

HHD - Hypertensive Heart Disease

CA - Cardiac Arrhythmia

In 2004, the most reported HRCD was HHD and it was categorized into two: hypertension and severe hypertension. Among the young-old with hypertension, it was documented that 82.8% were females and 70% were males. Severe hypertension stood at 30% for young-old males and 17.2% among the young-old females. On the other hand, old-old aged reported 60% hypertension among the males and 55.8% for females. Severe hypertension was quite high among the old-old aged (40% and 44.2% for old-old males and old-old females respectively) in 2004. Alternatively, hypertension was also the major HHD burden in 2009, it identified 75.3% of the young-old females to be burdened with HHD. The old-old aged also reported 62.9% for females and 73.1% for males. Severe hypertension recorded 37.1% as its highest HHD burden among the old-old females.

Three main types of CHD were identified among the aged who reported HRCDs in 2004, these are cardiac arrhythmia, heart failure and other cardiovascular accidents (CVA). Among the reported CHD burden, the young-old aged bore cardiac arrhythmia (CA) as its major CHD challenge: 42.1% young-old males and 47.8% young-old females suffered from CA. Among the young-old aged, CVA reported 47.4% for the males and 39.2% for the females. The rest of the young-old aged suffered from heart failure. However, the old-old aged also had a share of the CHD burden, that is, the old-old female recorded 80% of the cardiac arrhythmia burden. The old-old male reported 40% heart failure and 40% for other CVA. It was also realised that no old-old female reported heart failure. But, in 2009, CVA was the main CHD challenge, it accounted for

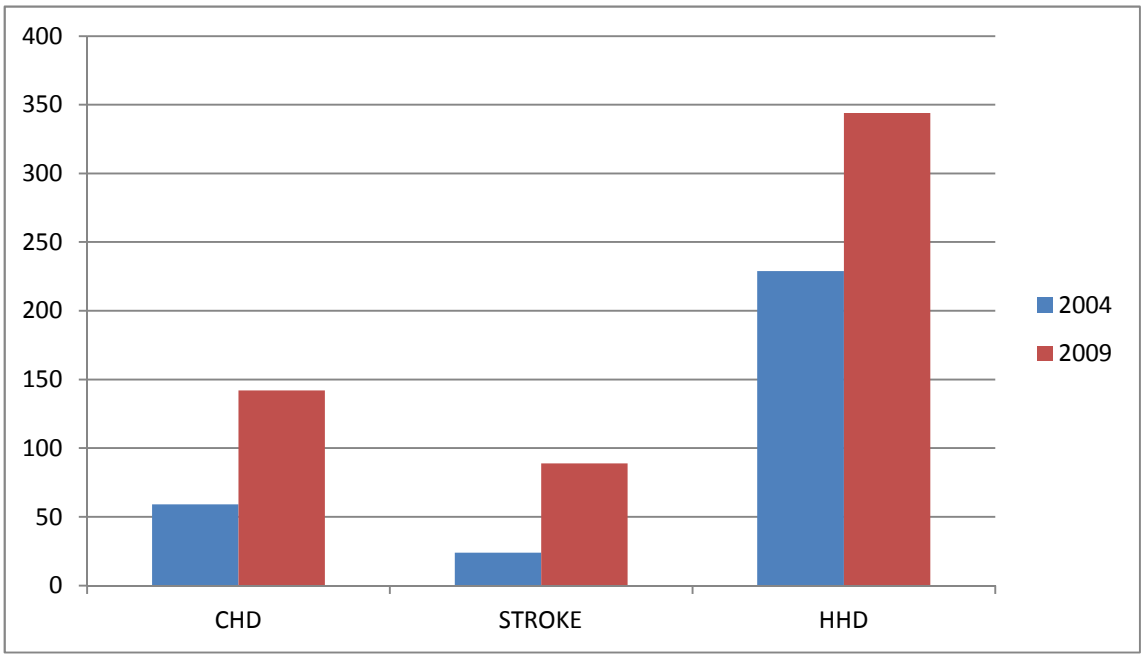
94.4% of the CHD burden for the old-old males and 80.4% for young old females (Table 1). Heart failure was the second highest CHD burden, it carried 14.2% of the CHD challenge for the old-old females and 11.4% for young-old males. No young-old female reported heart failure. Cardiac arrhythmia was the least CHD reported among the aged: 19.6% among the young-old female while the old-old male reported no cardiac arrhythmia disease.

The types of stroke identified were severe stroke and mild stroke. Among the aged who were diagnosed of stroke, 8 were male and 16 were females in 2004. Out of 8 stroke young-old male victims, 75% suffered severe stroke while 25% bore mild stroke. No old-old male was diagnosed of severe stroke where as out of the 5 old-old females 80% reported severe stroke and 20% mild stroke. Young-old females were heavily challenged with severe stroke (90.9%). In 2009, it was established that all the severe stroke cases were reported by old-old males and females. But with the young-old aged, it was realised that 11.5% male and 9.8% females suffered mild stroke. The young-old aged also reported 90.2% and 88.5% for female and male respectively in 2009.

Trend of HRCD reported at Cape Coast Metropolitan Hospital

The trends for the HRCDs were similar for both 2004 and 2009. Figure 2 shows that out of reported HRCDs burden, it was established that HHD cases were more reported than all the other HRCDs among the aged in 2004 and 2009. This was followed by CHD and finally stroke as the smallest HRCDs burden. In 2004, HHD recorded about 225 cases among the aged as compared to about 340 cases in 2009. The most significant change occurred among the aged who reported CHD, it increased from about 60 cases in 2004 to about 190 cases in 2009. Stroke cases also increased from about 40 cases among the aged in 2004 to about 90 cases in 2009

Figure 2: Trend of HRCD in 2004 and 2009



Sources: Facility based data from CCM Hospital, 2004 and 2009

HHD - Hypertensive Heart Disease

CHD – Chronic Heart Disease

- **Non-heart related chronic diseases (NHRCDs)**

The results of the study identified three NHRCDs in the reported cases among the aged. The NHRCDs were cancer, diabetes and chronic respiratory diseases (CRD). Cancer in this study comprised both general malignant cancers and sex-specific cancers. The sex-specific cancer includes prostate cancer and scrotal/penile cancer for males whereas cervical cancer, cancer of uterus and ovarian cancer occur among females. Other cancers for both sexes were breast cancer, colon cancer, skin cancer and lung cancer. Mostly, type 2 diabetes and type 1 diabetes were the categories for diabetes. Also, the severity of diabetes was noted, where severe

diabetes was separated from the types of diabetes. CRD comprised asthmatic attacks and chronic obstructive pulmonary disease (COPD).

In 2004, a total of 16 males and 19 females reported cancer as compared to 53 males and 91 females in 2009. However, the young-old aged (38 males and 72 females) toped in the reported cancer cases in both years. Among the old-old male who reported other cancers, it was a major disease burden in 2004 as well as 2009. It burdened all the old-old males in 2004 whereas in 2009, it recorded 68.4% among the young-old males as its major disease burden. This was followed by 66.7% for old-old female in 2004 as compared to 63.3% old-old females in 2009. Other cancers tagged 50% and 61.5% of the young-old male and young-old female respectively. On the other hand, both young-old females and old-old males recorded the same proportion for other cancers (66.7%).

It was noted that only few young-old male were burdened with lung/liver cancer (3%) in 2004 whereas 10.5% young-old male and 5.3% female reported lung/liver cancer in 2009. No female reported lung/liver cancer in 2004. Breast cancer which is common among females tagged 15.4% and 16.7% of the young-old female and old-old female respectively in 2004. On the other hand, in 2009, victims of breast cancer stood at 21.1% for old-old females as well as 12.5% young-old females with no male breast cancer. Also, few young-old male suffered from scrotal/penile cancer (7.1%) and prostate cancer (21.4%) in 2004. Alternatively, 7.9% young-old males and 6.7% old-old males obtained scrotal/penile cancer burden in 2009. Prostate cancer was a burden for both the young-old males (13.2%) and the old-old males (6.7) in 2009 as compared to 21.4% young-old males who reported prostate cancer in 2004. The age reported 15.4% cervical cancer for the young-old female whereas both the young-old female (7.7%) and old-old female (16.7%) suffered from cancer of the uterus in 2004. But, in 2009 the highest cervical

cancer burden was 13.9% among the young-old females and 5.3% old-old. About 10% of the old-old females were tagged with cancer of uterus in 2009 as compared to16.7% old-old females as shown by Table 2.

Table 2: Types of NHRCDs

NHRCD	Types	Age Pop	Year			
			2004		2009	
			Male (%)	Female(%)	Male (%)	Female(%)
Cancer	Scrotal/penile ca	Young-old	7.1	0.0	7.9	0.0
		Old-old	0.0	0.0	6.7	0.0
	Other cancers	Young-old	50.0	61.5	68.4	66.7
		Old-old	100.0	66.7	66.7	63.2
	Prostate cancer	Young-old	21.4	0.0	13.2	0.0
		Old-old	0.0	0.0	6.7	0.0
	Cervical cancer	Young-old	0.0	15.4	0.0	13.9
		Old-old	0.0	0.0	0.0	5.3
	Lung/liver ca	Young-old	3	0.0	10.5	5.3
		Old-old	0	0.0	20.0	0.0
	Cancer of uterus	Young-old	0	7.7	0.0	5.6
		Old-old	0	16.7	0.0	10.5
	Breast cancer	Young-old	0	15.4	0.0	12.5
		Old-old	0	16.7	0.0	21.1
	Total (N)	*Young-old*	*14*	*13*	*38*	*72*
		Old-old	*2*	*6*	*15*	*19*
Diabetes	Type 1	Young-old	10.5	0.0	2.6	4.3
		Old-old	0.0	0.0	0.0	4.0
	Type 2	Young-old	84.2	100.0	76.3	81.4
		Old-old	83.3	75.0	90.0	92.0
	Severe diabetes	Young-old	5.3	0.0	21.1	14.3
		Old-old	16.7	25.0	10.0	4.0

	Total (N)	*Young-old*	*19*	*15*	*38*	*70*
		Old-old	*6*	*4*	*10*	*25*
CRD	Asthma	Young-old	75.0	85.7	90.9	88.5
		Old-old	100.0	33.3	70.0	69.2
	COPD	Young-old	25.0	14.3	9.1	11.5
		Old-old	0.0	66.7	30.0	30.8
	Total (N)	*Young-old*	*8*	*7*	*11*	*26*
		Old-old	*2*	*3*	*10*	*13*

Facility based data from Cape Coast Metropolitan Hospital, 2004 and 2009

NHRCD – Non-heart related chronic diseases

CRD – Chronic Respiratory Disease

COPD – Chronic Obstructive Pulmonary Disease

A total of 25 males and 19 females reported diabetes cases in 2004. Only 6 males and 4 females constituted the diabetes burden for the old-old category. On the other hand, 48 males and 95 females reported diabetes in 2009. Type 2 diabetes was the major diabetes burden among the aged. The young-old females bore the entire type 2 diabetes burden (100%) whereas 75% old-old female recorded diabetes in 2009. In 2004, 84.2% young-old males and 83.3% old-old males carried the type 2 diabetes burden (Table 2). The results indicate that type 2 diabetes was the main diabetes burden among the aged in 2009. The highest diabetes burden was type 2 diabetes among 92% of the old-old females in 2009. Table 2 establishes that no old-old female reported type 1 diabetes with the only exception for females in 2009. About 25% old-old females were burdened with severe diabetes in 2004 whereas only 4% reported severe diabetes in 2009. Severe

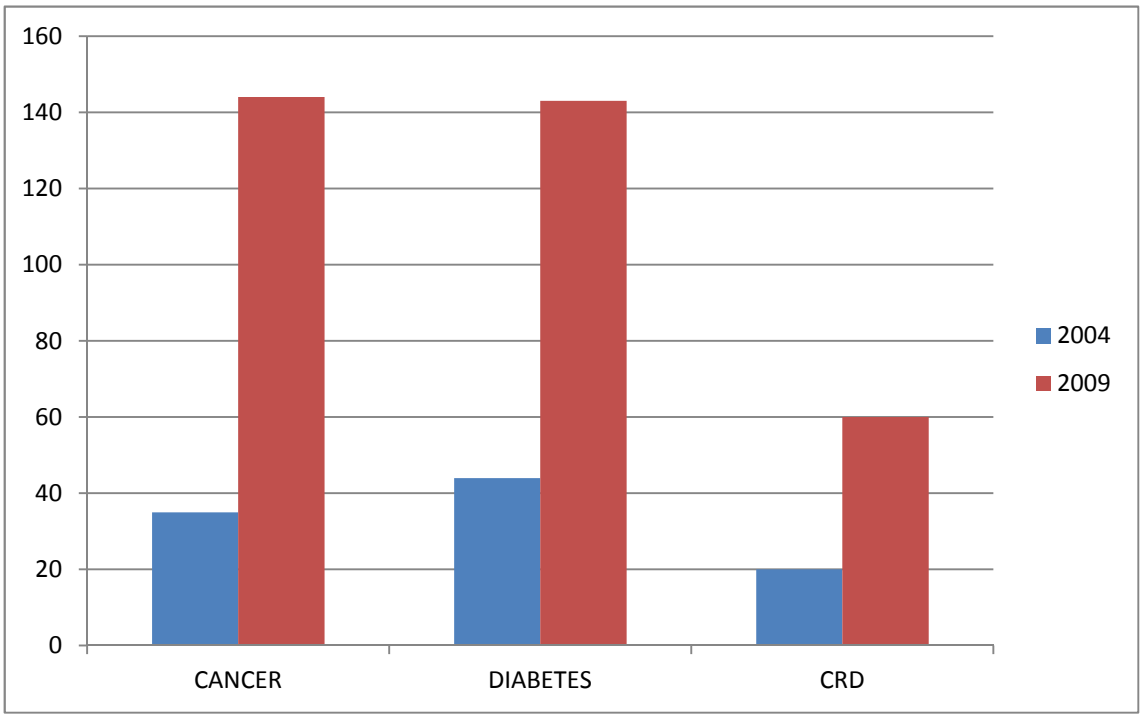
diabetes tagged both the young-old males (5.3%) and the old-old males (16.7%) in 2004. In 200, 21.1% young-old males and 10% old-old males suffered from severe diabetes.

In 2004, all the bronchitis asthma cases were reported by old-old male for the old-old male category. Most of the aged who were burdened with CRDs suffered from bronchitis asthma. In 2004, about 75% of the young-old males suffered from bronchitis asthma whereas 25% young-old males bored the COPD challenge. On the other hand, bronchitis asthma burdened 90.9% young-old males in 2009. It was depicted by Table 2 that 85.7% young-old females suffered from bronchitis asthma while 66.7% old-old also carried the COPD disease burden in 2004. On the contrary, the old-old aged also reported bronchitis asthma among 70% males and 69.2% females as compared to COPD burden in 2009 which was relatively high as compared to 2004 COPD burden. COPD tagged 30% old-old males and 30.8% old-old females in 2009.

Trend of non-heart related chronic diseases

It has been established from the results that that diabetes was the most reported NHRCD (fig. 3). It burdened more aged in 2004 as well as 2009. Diabetes increase more than three-folds from 2004 to 2009: around 45 cases in 2004 to 142 cases in 2009.This high increases in diabetes was closely followed by cancer cases. Cancer reported about 48 cases in 2004 and increases to about 143 cases in 2009. Also, a similar upward trend was observed for CRDs in 2004 and 2009. CRD rose from 20 cases in 2004 to 60 cases in 2009. The upward trend of NHRCD recorded very high proportions and therefore suggests that proper attention should be given to prevention and control of NHRCDs at the Cape Coast Metropolitan Hospital.

Figure 3: Trend of other non-heart related chronic disease



Source: Facility based data from CCM Hospital, 2004 and 2009

CRD – Chronic Respiratory Disease

The relationship between age-sex and chronic diseases

Aging is known to be associated with chronic diseases such as heart diseases, stroke, HHD, cancer, diabetes and CRDs. In accordance with the element and progression of chronic disease model guiding the study, multiple regression was employed to assess the extent to which selected independent variables influence chronic disease among the aged who reported at Cape Coast Metropolitan Hospital. One of the objectives of the study was to analyse the association of age-sex on chronic disease of aged who reported among at Cape Coast Metropolitan Hospital. Multiple regression was used following the example of Madrigal (1993) and Haley et al. (2005). This statistical analysis was also performed in order to test the hypothesis that

Ho: There is no significant relationship between age-sex and specific chronic disease among the aged reporting at Cape Coast Metropolitan Hospital.

Independent variables drawn from the element and progression of chronic disease model guiding the study and some main chronic disease variables were analyzed using the stepwise multiple regression method of SPSS version 16 to determine their relative contribution. The purpose of this section of the study is to determine the significant variables on age-sex and also the nature of relationship the dependent variable have with the independent variables. Applying the linear regression model to the data yielded the results is shown in Table 3.

Table 3: Multiple Regression Analysis of age-sex-place of residence and specific chronic disease

Variables	B	Std. Error	Beta	t-ratio	Sig.
Constant	4.632	.319	-	14.508	.000
Sex	.611	.135	.121	4.519	.000
Age	-.101	.150	-.018	-.675	.050

Facility based data from Cape Coast Metropolitan Hospital: 2004 and 2009

r= 0.121, r^2= 0.015, F=6.837,

Significant Level set at 0.05

Even though the fairly low r^2 (12%) suggests that a good deal of the variance is not accounted for by the independent variables examined, the results do suggest the importance of age and sex influencing chronic disease among the aged who reported at Cape Coast Metropolitan Hospital. This substantiates Baberio's (2002) view that age and sex are non-

modifiable factors among the population affecting chronic diseases and that, advances in aging positively influence chronic disease while a specific sex is at disadvantage of some specific chronic diseases. The probability values of the regression model indicate that two variables have significant impact on the aged who reported chronic disease at Cape Coast Metropolitan Hospital. Specifically, significant relationships were established between chronic and the age and sex of respondents. As evident from Table 3, the probability values (P-values) of these independent variables are less than the significant level set (0.05).

In accordance with the element and progression of chronic disease model guiding the study and chronic disease among the aged who reported at Cape Coast Metropolitan Hospital; the following hypothesis was tested and the findings summarised as follows:

- *Ho: Rejected: There is no significant relationship between age-sex and specific chronic disease among the aged reporting at Cape Coast Metropolitan Hospital.*

On the whole, the result of the multiple regression analysis strongly confirms two of the hypotheses stated in the theoretical framework. Apart from this, the relative importance of the independent variables was examined. Based on the beta standardized coefficients, "sex" was identified as the most influential variable among factors which influence chronic disease chronic diseases. This confirms the findings of most reports which suggest that chronic diseases and particularly sex specific chronic diseases are become a major issue in the progression of chronic diseases in health facilities (Paeratakul, 1999; Baberio, 2002; Appelros, Stegmayr & Terent, 2009). In the context of the chronic disease reported at Cape Coast Metropolitan Hospital, there were huge disparities in chronic disease reported at the health facility. Females were noted to have reported most of the chronic disease at Cape Coast Metropolitan Hospital. The age of

respondents was also the next influencer of chronic disease among the aged reporting at cape Coast Metropolitan Hospital (Table 3).

The section of the chapter has provided an insight into the determinants of chronic disease. It commenced with the assessment of age and sex of respondents. It then looked at the relationship between age and sex.

DISCUSSIONS

The results of the study identified three main HRCDs in both 2004 and 2009. It was established that HHD was the most reported HRCD among the aged. Studies done on chronic diseases have shown that HHD is an immediate risk factor for chronic diseases and therefore it affects the aged at late adulthood or early old age (American Heart Association, 2010 and Baberio, 2002). HHD burdened more young-old aged than old-old aged. This may suggest that life expectancy is low among the young-old aged and Ukraintseva (2000) found in a study that that HHD is a risk factor for chronic diseases and it is more likely that it would decline as one advances in age. This may also result from over or/and under reporting of age by the aged. HHD was followed by CHD and stroke which challenged more old-old than young-old aged.

It was realised from the results that the young-old aged reported more HRCDs than the old-old aged. The possible reason to this effect may be that most of the aged who reported HRCDs were mostly within the young-old age cohort since life expectancy is relatively low in Ghana, that is, around 58 year for males and 59 for females. Notwithstanding this finding, it was established that the old-old aged population increased between 2004 and 2009. This signifies that there has been a relative improvement in life expectancy among the people who reported at the health facility between 2004 and 2009. This study identified a clear distinction between males

and females, the results noted that more females were burdened with HRCD as compared to males. For instance, out of the 312 HRCDs reported in 2004, about 67% were females. The disparity in sex may be based on the fact that males and females have varying health needs, as Doyal (2001) suggested that men and women have different health care needs and hence require different health care services. Although both males and females are at risk of HRCDs, males had a particular sensitivity in the reported cases like stroke and this was argued by Appelros, Stegmayr & Terent (2009) who opined that male stroke victims outnumber females worldwide, but women are more severely ill with stroke and therefore report frequently than males.

In 2004 male reported more NHRCD than females while in 2009, females outnumbered males in the reported NHRCD cases. It was obtained from the results that more young-old aged reported NHRCDs than the old-old aged. Among the young-old, a maximum of 41 males and 35 females reported NHRCD in 2004. Table 10 showed that among the young-old males, diabetes was highly reported as compared to cancer cases and CRD. Female young-old also reported diabetes as it major NHRCD burden. It was established that the young-old aged were more burdened with NHRCDs than the old-old aged. This may affirm Kokotailo & Hill (2005) argument that patient over 80 years with asthma, cancer and diabetes had higher risk-adjusted fatality. It may also be explained as life expectancy is relatively low among Ghanaians, the aged who reported NHRCDs would fall under the 60-75 years age cohort. It therefore pre-suggests that more aged patient would not live to celebrate their 76+ birthday. Unlike 2009, the 2004 results indicated that more males reported NHRCDs than females. NHRCDs cases increased significantly from 2004 to 2009 and this indication might be associated to a number of reasons: the aged population might have increased significantly, there might have poor routine medical check-ups, there might have increased in poor nutrition and environmental condition and maybe

a change in life style behaviours. This result could also be associated with over/under reporting of NHRCDs reported at the cape Coast Metropolitan Hospital.

SUMMARY

The reported cases of chronic disease in the health facilities give a clearer picture of what is happening in the current epidemic of chronic diseases. The identities of those affected aged are now better recognized, that is, the aged most disadvantaged of chronic diseases as result of advances in age and other factors gradually are increasing but irrespective of these increases, the rate at which the chronic diseases are overtaking other diseases in the less developed and transitional societies are quite surprising. Apart from Sub-Saharan Africa, chronic disease is the main cause of death all the other regions of the world, with the most number of deaths occurring in developing countries. Sadly, those in most need of chronic care are least likely to be able to afford and access quality health care since chronic care is cost effective and time consuming. The World Health Organization is charged with deciding whether to marshal resources to prevent and treat chronic illness and how to best implement such health programs. This will require taking into account global political context and local complexities that must be addressed to practically to achieve greater coverage of the world's poor for chronic disease patients. It is now up to the local health care system to come up with an efficient, realistic and successful resolution to this pressing global crisis. In Ghana the Ministry of Health is working tediously to deal with issues of chronic disease. Within the past decade, the ministry has tried to advocate and educate the public about the importance of adopting healthy life style (that is, from curative to prevention).

The prevalence of chronic disease, based on the results is increasing with significant changes between 2004 and 2009. In a country with poor routine collection of primary diagnosis

data, estimating disease prevalence using facility based data may be a pragmatic means of monitoring and studying the trends and patterns of chronic disease prevalence in an aged population. The methodology offers the possibility of yearly comparison of chronic disease prevalence in reported cases. A major challenge for the Cape Coast Metropolitan Hospital is to manage health care provision optimally: this is in order to improve the health status of growing numbers of older persons and to deal with chronic disease and disability troubling the aged effectively and efficiently.

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