

## The Nutrition Situation of the Elderly in Ghana: A Case Study

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**Abstract:** The nutrition and overall state of health of the elderly in the Ghanaian society is a serious issue which warrants urgent attention. This paper reports the nutrition circumstances of the elderly visiting a center in Accra, Ghana. Information on socio-demography, lifestyle behaviors, dietary habits, state of health, level of physical activity, and food and nutrition security were collected through in-depth interviews. The participants were made up of 10 males and 36 females (n = 46) and aged 60 years and above. Over half (61%) of the participants experienced some degree of food insecurity with 75% of this group being food insecure with moderate hunger while 4% were food insecure with severe hunger. The study showed food insecurity was skewed towards females. Intake of food was marginal and most (males = 50%; females = 94.4%) skipped meals due to lack of money. Loss of spouse, low education and gender were found to have an influence on food insecurity among the subjects. Majority (76.1%) of the subjects had fair health status with females experiencing more disease conditions than males. Use of multiple drugs was more prevalent among females than males. Almost all subjects were independent in performing all daily activities, except for dressing and washing of self. Nutrition education for the aged is warranted. Furthermore, policies that will target the general populace to ensure healthy aging cannot be overemphasised.

**Key words:** Case study, elderly, food security, health, nutrition

### INTRODUCTION

Adequate nutrition and good health are the rights of all individuals, which form the basis for the development of a nation. The elderly population forms a very heterogeneous group of people that vary greatly in their social, economic and lifestyle situations, functional capacity, and physical conditions. Due to these differentiating factors, each person ages at a different rate within cells and organ systems (Frankle and Owen, 1993). Thus, chronologic age is a poor indicator of physiologic age, as it is not always a measure of physical health and zest for life (Krinke, 2008). Aging cannot be stopped but the process can considerably be slowed down through healthy lifestyle choices and behaviors (Ahluwalia and Ahluwalia, 2005; Reese, 2007).

The functional capacity and health of the elderly depend, to a greater extent, on their nutritional status and food security, which are the cornerstone in determining nutritional well-being. The International Conference on Nutrition (ICN), held in Rome in 1992, defined food security as 'access by all people at all times to the food needed for a healthy life' (FAO/WHO, 1992). The elderly are particularly vulnerable to food insecurity due to their reduced income and physical capabilities, as well as increased rates of some chronic diseases, which predispose them to poverty. The focus now is to increase the span of healthy life, that is, life that permits

independent function, not just a longer life (Frankle and Owen, 1993). This is expressed in the universal motto for applied gerontology as add life to years, rather than years to life. This concept is known, technically, as compression of morbidity (Fries, 1980) or the extension of the health-span (Cinader, 1989). A nutritionally adequate diet is considered a critical component of a lifestyle aimed at promoting healthful and active aging (Bartali *et al.*, 2003).

The impact of advancement in medicine, paramedical sciences and technology, is an increase in life expectancy globally (Roberts and Rosenberg, 2006). In 1989, WHO Expert Committee on the health of the elderly reported that by the year 2000 about 67% of the world's 600 million elderly people would be living in developing countries, compared with about 50% in 1960 (Barba and Rubico, 1997). In Ghana, the situation follows a similar trend with about 5% of the population constituting the elderly; and this proportion is expected to increase in subsequent years (Ghana Demographic and Health Survey, 2003). What is alarming about these demographic trends is the reflex pattern of attending to maternal and child health to the exclusion of other population groups that need to be addressed (Solomons, 1997).

Usually, the elderly has low economic status as a result of reduced work capacity. Many of them survive under the benevolence of family, community and charitable organizations. They are most unlikely to eat a balanced diet to meet the nutrient needs of their changing

physiologic state. This makes them vulnerable to poor nutrition and health. Asenso-Okyere *et al.* (1997) attested that the elderly are mostly food insecure and this food insecurity spans across food availability, accessibility and utilization. The accessibility is an index, which includes the functional capabilities to obtain the food whereas the utilization considers the physiological ability to digest and assimilate nutrients for proper health (Bellin-Sesay, 2008; Ruel *et al.*, 1998).

In Ghana, few studies have been done on the elderly. There are also no government-run institutions in the country that cater for the elderly; however, a few Non-Governmental Organizations (NGOs) have realized the plight of this vulnerable group and have set up centers where they visit to meet some of their daily needs. One of such centers is the Center of Hope in Accra. The aim of this paper was to assess the nutrition situation of the elderly who visited this center

Understanding their true-life situation and nutrition is the key to planning appropriate intervention programmes and also to educate the general populace to change lifestyle behaviors to ensure successful aging. Findings from this formative research will not only support advocacy towards policy on nutrition for the elderly but will also inform other researchers and organizations in planning programmes for similar groups elsewhere.

## MATERIALS AND METHODS

**Study design, setting and population:** A cross-sectional study design was used and the study took place at the Center of Hope in Accra between December 2008 and March 2009. This church-run center is not a residential home but serves as an open house for the poor. The elderly group visits the Center weekly for prayer session and meeting. They are usually assisted with food and clothing whenever resources are available. The study participants included elderly persons of both sexes who had been regular members of the "HelpAge" group at the Center for over a year. In accordance with the WHO definition of "older person" (WHO, 2001), the study criterion was that study participants be aged 60 years and above. This inclusion criterion conveniently resulted in a total participant number of forty six (46). This elderly group formed part of the regular groups of the Center among others such as the handicapped, street children, HIV/AIDS patients, cured lepers and a host of the marginalized who visited the Center daily. Participants in the study were those who had consented and volunteered to take part in the study.

**Instrument and data collection:** A semi-structured questionnaire was developed from standard instruments, pretested and used to collect information on socio-

demography, physical and social activities, dietary habits, food security, medical history and health concerns. A ten-item food security module, adapted for the purpose of this study from the U.S. Food Security Survey Module (FSSM), was used to categorize food secure and food insecure individuals within the group. All interviews were conducted in-person by trained personnel.

**Data analyses:** The data obtained were entered into SPSS version 16 for analyses. Descriptive statistics (means, frequencies, percentages) were used to show the distribution of participants according to variables of interest such as age, sex, marital status. Some selected variables identified by researchers to influence food insecurity were analyzed in comparison to levels of food security by the use of percentages. All individuals who expressed some level of food insecurity ranging from 'food insecure without hunger' to 'food insecure with severe hunger' were grouped as 'food insecure'.

## RESULTS

**Background characteristics:** The 46 participants were made up of 10 males and 36 females and were between ages 60 to 99 years (Table 1). More than half of the participants (26) had lost their spouses. There was disparity between male and female participants with regards to level of education and profession. All the 10 males had attained some level of education up to secondary school level and had had white colour jobs; while 63.9% females had no formal education and were mostly traders.

Half of the male participants received regular monthly income from salaried jobs or pension while over 50% of all participants, both male and female, received income support from other sources such as family members. Majority of females (72%) had dependents ranging from one to five or more as compared to their male counterparts (60%). Total income spent on food monthly by participants was equal to or greater than the amount generally reported by the participants as their total monthly income (Table 1).

With regard to housing, more male participants (70%) than females (44.4%) were in rented accommodation. A few of the females (13.9%) lived in traditional extended family houses.

**Food security:** Table 2 depicts the food security profile of the participants. More females than males expressed anxiety about how to make their food money go further. A total of 13 participants (12 females and 1 male) could not afford balanced meals. Sixty-seven percent of participants indicated that in the last month they had run out of money needed to prepare a meal and simply did not have the money to buy more. Skipping meals, due to lack

Table 1: Background characteristics of participants

Variable	N (%)	
	Male	Female
<b>Age</b>		
60-69	3 (30.0)	16 (44.4)
70-79	6 (60.0)	13 (36.1)
80-89	1 (10.0)	5 (13.9)
90-99	0 (0.0)	2 (5.6)
<b>Marital status</b>		
Single	0 (0.0)	2 (5.6)
Married	6 (60.0)	8 (22.2)
Divorced	0 (0.0)	4 (11.1)
Widowed	4 (40.0)	21 (58.3)
Separated	0 (0.0)	1 (2.8)
<b>Educational level</b>		
None	0 (0.0)	8 (80.0)
Basic	2 (20.0)	23 (63.9)
Secondary	13 (36.1)	0 (0.0)
<b>Previous occupation</b>		
Teacher	0 (0.0)	2 (5.6)
Trader	0 (0.0)	24 (66.7)
Farmer	0 (0.0)	1 (2.8)
Civil servant	8 (80.0)	4 (11.1)
Other	2 (20.0)	5 (13.9)
<b>Housing</b>		
Owned	3 (30.0)	15 (41.7)
Rented	7 (70.0)	16 (44.4)
Other	0 (0.0)	5 (13.9)
<b>Sources of income (n=43)</b>		
Salary	2 (20.0)	2 (5.6)
Family	2 (20.0)	18 (50.0)
Pension	3 (30.0)	1 (2.8)
Trade	0 (0.0)	4 (11.1)
Other (friends, church, rent)	0 (0.0)	3 (8.3)
Two or more sources	3 (30.0)	5 (13.9)
<b>Number of dependents on income (n=46)</b>		
0	4 (40.0)	10 (27.8)
1	1 (10.0)	7 (19.4)
2	3 (30.0)	8 (22.2)
3	1 (10.0)	2 (5.6)
4	0 (0.0)	5 (13.9)
5 or more	1 (10.0)	4 (11.1)

Table 2: Food security profile among the elderly

Item	Yes responses (%)	
	Male	Female
Worried food would run out	7 (70.0)	27 (75.0)
Could not afford balanced meals	1 (10.0)	12 (33.3)
Food did not last	6 (60.0)	25 (69.4)
Skipped meals	4 (40.0)	25 (69.4)
Skipped meals often	1 (10.0)	9 (25.0)
Ate less than should	4 (40.0)	24 (66.7)
Hungry but did not eat	3 (30.0)	20 (55.6)
Lost weight, not enough food	3 (30.0)	23 (63.9)
Did not eat whole day	1 (10.0)	15 (41.7)
Did not eat whole day often	0 (0.0)	2 (5.6)

of money, was mostly observed among female participants. About half (3 males and 20 females) reported experiencing hunger and attributed their loss of weight to not having enough to eat and 2 participants stated they went a whole day without eating. Table 3 summarizes the four classes of food security observed among the elderly in relation to gender. Only 18 participants (39.1%) were

Table 3: Class of food security among the elderly

Level of food security <sup>1</sup>	N (%)	
	Male	Female
Food Secure <sup>a</sup>	5 (50.0)	13 (36.1)
Food Insecure Without Hunger <sup>b</sup>	2 (20.0)	3 (8.3)
Food Insecure With Moderate Hunger <sup>c</sup>	2 (20.0)	19 (52.8)
Food Insecure With Severe Hunger <sup>d</sup>	0 (0.0)	2 (5.6)

1: food security categories are based on Table 2.

a: < 3 positive responses, b: 3-5 positive responses, c: 6-8 positive responses, d: >8 positive responses

Table 4: Dietary habits of the elderly

Variable	N (%)	
	Male	Female
<b>Appetite</b>		
Good	5 (50.0)	19 (52.8)
Fair	5 (50.0)	15 (41.7)
Poor	0 (0.0)	2 (5.6)
<b>Avoid eating certain foods</b>		
Yes	7 (70.0)	13 (36.1)
No	3 (30.0)	23 (63.9)
<b>Reasons for avoiding certain foods</b>		
Heart burns, chest pains	0 (0.0)	3 (8.3)
Health problems	2 (20.0)	2 (5.6)
Cost	1 (10.0)	1 (2.8)
Nausea, stomach ache	4 (40.0)	4 (11.1)
Just do not like it	0 (0.0)	3 (8.3)
Not applicable	3 (30.0)	23 (63.9)
<b>Number of meals eaten per day</b>		
One	0 (0.0)	2 (5.6)
Two	5 (50.0)	8 (22.2)
Three	5 (50.0)	26 (72.2)
<b>Food transfer in past week</b>		
Yes	3 (30.0)	13 (36.1)
No	7 (70.0)	23 (63.9)
<b>Consumption of street foods</b>		
Yes	4 (40.0)	12 (33.3)
No	6 (60.0)	24 (66.7)
<b>Fluid intake (250 ml cup)</b>		
One – two	1 (10.0)	3 (8.3)
Three – four	2 (20.0)	7 (19.4)
Five – six	4 (40.0)	5 (13.9)
More than six	3 (30.0)	21 (58.3)
<b>Skipping breakfast per week</b>		
0-2 times	8 (80.0)	33 (91.7)
3-5 times	0 (0.0)	2 (5.6)
6-8 times	2 (20.0)	1 (2.8)
<b>Skipping lunch per week</b>		
0-2 times	9 (90.0)	32 (88.9)
3-5 times	0 (0.0)	4 (11.1)
6-8 times	1 (10.0)	0 (0.0)
<b>Skipping dinner per week</b>		
0-2 times	9 (90.0)	33 (91.7)
3-5 times	0 (0.0)	1 (2.8)
6-8 times	1 (10.0)	2 (5.6)

food secured with the rest being food insecure at different levels.

Food security levels were further categorized by some significant variables (data not shown). Age had an influence on food insecurity with severity increasing with advancement in age, that is, participants within the age range 90 to 99 were food insecure. However, 52% of the participants who were food secure were between 70 to 79

Table 5: Food and nutrient supplement intake among the elderly

Item	Frequency N (%)				
	Never	Once a week	2-3 times per week	3-4 times per week	Daily
Fruits and vegetables	6 (13.0)	17 (37.0)	11 (24.0)	6 (13.0)	6 (13.0)
Legumes and nuts	5 (11.0)	20 (43.4)	10 (21.7)	8 (17.4)	3 (6.5)
Fish and meat	7 (15.2)	18 (39.0)	6 (13.0)	5 (11.0)	10 (21.7)
Fats and oils	17 (37.0)	15 (32.6)	4 (8.7)	2 (4.3)	8 (17.4)
Roots and tubers	8 (17.4)	13 (28.2)	11 (24.0)	8 (17.4)	6 (13.0)
Cereals and grains	5 (11.0)	11 (24.0)	11 (24.0)	7 (15.2)	12 (26.0)
Alcoholic beverages	35 (76.1)	10 (21.7)	1 (2.2)	0 (0.0)	0 (0.0)
Non-alcoholic beverages	11 (24.0)	18 (39.0)	7 (15.2)	4 (8.7)	6 (13.0)
Vitamin and mineral supplement use	28 (61.0)	13 (28.2)	2 (4.3)	0 (0.0)	3 (6.5)

Table 6: Lifestyle and social activity patterns of the elderly

Variable	N (%)	
	Male	Female
<b>Smoking</b>		
Yes	2 (20.0)	0 (0.0)
No	8 (80.0)	36 (100.0)
<b>Alcohol intake</b>		
Yes	2 (20.0)	6 (16.7)
No	8 (80.0)	30 (83.3)
<b>Attendance of public gatherings</b>		
Weekly	9 (90.0)	33 (91.7)
Quarterly	0 (0.0)	1 (2.8)
Yearly	1 (10.0)	2 (5.6)
<b>Visit of friends</b>		
Never	3 (30.0)	13 (36.1)
Sometimes	7 (70.0)	21 (58.3)
Often	0 (0.0)	2 (5.6)
<b>Feel lonely</b>		
Never	4 (40.0)	15 (41.7)
Sometimes	5 (50.0)	17 (47.2)
Often	1 (10.0)	4 (11.1)
<b>Go marketing</b>		
Yes	6 (60.0)	24 (68.6)
No	4 (40.0)	12 (33.3)

years. Participants, who were food insecure with moderate hunger, were in the age range 60 to 69 years. Married participants (19.6%) were mostly food secure compared to the rest. Participants who were classified as food insecure with moderate hunger had the highest percentage of dependents (37%) ranging from one to greater than 5, while those who were food insecure with severe hunger did not have any dependents. Concerning gender, the proportion of males found to be food secure were about twice as much (60%) as the females (33.3%)

Transfers of food did seem to have a considerable impact on food insecurity. Participants who received food transfers were mostly food secure (62.5%). With regard to the number of main meals taken per day, the occurrence of food insecurity seemed to increase with decrease in the number of meals. Participants who regularly consumed street foods were all food insecure. Feelings of loneliness, health status, being on medication and dental problems all impacted food security negatively.

**Dietary behaviour:** Half of the participants reported having good appetite (Table 4). Comparatively, 70%

males to 36.1% females avoided certain foods with most giving health related reasons for avoiding those foods. Majority reported eating three meals a day and consumption of street foods was reported by a third of the participants.

Majority of the participants did not skip breakfast, lunch and dinner. For days that meals were skipped, more males (50%) than females (36.1%) attributed the cause mostly to lack of money to purchase food. Foods consumed not less than thrice a week were mostly cereals and tubers (30.5%) (Table 5). This was followed by fish, meat, and fruits and vegetables (26%) and legumes 24%. Fluid intake of more than six cups of water a day was very encouraging among the participants. Consumption of non-alcoholic beverages was 21.7%. Nutrient supplement use was very minimal (6.5%) among the participants.

**Lifestyle and activity pattern:** Lifestyle and social activity patterns of the elderly revealed that a vast majority of participants (80%), both males and females, neither smoked nor took in alcohol (Table 6). Attendance of public gatherings (such as church services) was well patronized. Almost all participants (90%) reported a weekly participation in these gatherings. However, predominantly males reported of feeling lonely sometimes. More than half of the participants (62.5%) were capable of marketing for themselves.

Table 7 outlines the physical activity and activity of daily living patterns among the elderly. Majority (71.7%), both males and females, were engaged in daily walking. Half of the female participants did daily cooking and an encouraging proportion of males (20%) either cooked daily or not less than three times a week. Activities like washing of clothes and cleaning were mostly done by females (67.4%). A more vigorous activity like gardening/weeding was carried out by a small proportion (6.5%) of the participants. A few participants (13%) more often or always had to be assisted in performing one or two activities of daily living like getting dressed or washing of self.

**Health:** In general, a little less than a quarter reported of being in good health while 87.5% said their health was fair or poor (data not shown). More females than males reported of being in 'good health', while more males than

Table 7: Physical activity and activity of daily living behaviors of the elderly

Variable	N (%)	
	Male	Female
<b>Frequency of walking</b>		
Never	0 (0.0)	0 (0.0)
Sometimes	3 (30.0)	9 (25.0)
3-4 times per week	0 (0.0)	1 (2.8)
Daily	7 (70.0)	26 (72.2)
<b>Frequency of cooking</b>		
Never	5 (50.0)	6 (16.7)
Sometimes	3 (30.0)	9 (25.0)
3-4 times per week	1 (10.0)	3 (8.3)
Daily	1 (10.0)	18 (50.0)
<b>Frequency of washing clothes</b>		
Never	5 (50.0)	9 (25.0)
Sometimes	4 (40.0)	13 (36.1)
3-4 times per week	0 (0.0)	4 (11.1)
Daily	1 (10.0)	10 (27.8)
<b>Frequency of cleaning/sweeping</b>		
Never	6 (60.0)	11 (30.6)
Sometimes	3 (30.0)	8 (22.2)
3-4 times per week	0 (0.0)	2 (5.6)
Daily	1 (10.0)	15 (41.7)
<b>Frequency of weeding/gardening</b>		
Never	7 (70.0)	32 (88.9)
Sometimes	2 (20.0)	2 (5.6)
3-4 times per week	0 (0.0)	1 (2.8)
Daily	1 (10.0)	1 (2.8)
<b>Need help to get dressed</b>		
Never	8 (80.0)	33 (91.7)
Sometimes	2 (20.0)	2 (5.6)
Often	0 (0.0)	0 (0.0)
Always	0 (0.0)	1 (2.8)
<b>Need help in washing self</b>		
Never	9 (90.0)	29 (80.6)
Sometimes	0 (0.0)	3 (6.5)
Often	0 (0.0)	1 (2.8)
Always	1 (10.0)	3 (8.3)

females said they were in 'fair health'. Majority of the participants (71.7%) reported having a chronic disease condition, 73% of whom suffered more than one chronic condition, and this was more prevalent among the females. The most prevalent chronic diseases were arthritis (60%), hypertension (43.5%), and heart disease (24.4%).

The current use of medication, for any illness, was more prevalent among the females. About one-fifth of the subjects were taking two medications while 53.5% were taking three or more. Predominantly, males reported of hearing difficulty while over half (64%) of female participants had sight problems. A few of the participants (10.9%) used dentures.

## DISCUSSION

**Background:** Food insecurity has been linked to socio-demographic and economic conditions that limit the household resources available for food acquisition (Alaimo *et al.*, 1998; Nord *et al.*, 1999). This study incorporated these predicting factors together with

lifestyle patterns, health status, physical activity and dietary patterns to assess the nutrition situation of the elderly visiting the Center of Hope, Accra.

The group that participated in the study was predominantly females. The disproportion in numbers between elderly male and female reflects the fact that females are more open to expressing their needs than males. Another reason could be that females live longer than males (Schlenker, 1992; Brown *et al.*, 2008). Low income is a common problem among the elderly, especially females. This, coupled with increasing health needs, result in greater monetary resource needs (Lee and Frongillo, 2001; Heuberger, 2009). These may partly explain why the female population was higher. Over half of the female elderly participants were widowed while more than half of the males were still living with their spouses. Hokby *et al.* (2003) and Iwashyna and Christakis (2003) associated widowhood with increased disability, morbidity and mortality in both elderly males and females. The findings in this study followed a similar trend in that almost all of the few who reported functional limitation or disability were widowed.

Marital status is also thought to have a justifying influence on healthy aging, especially in older men. Reasons attributable to this trend may involve decreased social isolation, spousal aid in procuring foods, cooking, and serving meals; or increased care giving in general (Schone and Weinick, 1998). Consistent with this view, findings from the study show that 60% males were married and 60% males experienced food security. It is, therefore, likely that all or a greater proportion of married males are food secure. Conversely, Larrieu *et al.* (2004) pointed out that unmarried or widowed men living alone are more likely to have poorer intakes which affect their nutritional status. This study did not include parameters, like anthropometric and biochemical measurements, to directly assess nutritional status; however, findings from the study were that participants who generally experienced food insecurity were mostly widows, and females complained of weight loss due to lack of food. These, therefore, are indicators of undernutrition and a poor nutritional status (Lee and Frongillo, 2001). Food insecurity was however observed in a smaller proportion of married participants (17.9%).

Consistent with the findings of Ross and Mirowsky (1999) males who were educated were also more food secure, had less chronic diseases, were income and pension earners, and had well informed nutrition education in comparison to the females. On the other hand, the less educated had increased risks for nutritional deficiency as well as poorer overall health (Ross and Mirowsky, 1999) and may explain the observations with female participants in the study. Most of the elderly persons however relied on social support systems, such as the nuclear and extended families, churches, altruistic

persons and charitable organizations for their sustenance. The benefits of these social support systems are emphasized by Newsom and Schulz (1996) and Unger *et al.* (1999) who reported that the negative effects of functional impairments on food insecurity could be moderated by the quality and quantity of social supports elderly persons have. However, the buffering effect of social support for those elderly persons who have functional impairments remains unclear.

**Food security and the elderly:** Unexpectedly, participants in the age range 60 to 69 years were exceedingly food insecure and were, mostly women and widowed. According to Heuberger (2009), women become widows early and struggle through life alone, thus large proportions of elderly females are living without the assistance or company of a spouse. Waite (2004) put the situation into perspective by stating that the situation faced by the older men on the dimension of companionship is substantially better than that faced by older women, because most men remain married until they die, while most women experience the death of their husbands and end their lives as widows.

Street food consumption did not differ markedly among participants who were food secure or food insecure. However, food transfer seemed to be an added bonus for food secure individuals as they were mostly seen to receive food transfers from family members, particularly their children. This gives a good indication that the social support system has a positive effect on food security. According to Tweeten (1999), such transfers must occur between the 'haves' and 'have nots' to provide food security. Asenso-Okyere *et al.* (1997) commented that in the past the extended family system ensured that no family member went hungry and adequate care was provided for the sick, but these responsibilities have become more centered within the nuclear family with increased urbanization and other factors.

**Nutrient supplement intake:** Consistent with other studies, supplement use was more prevalent among women than men (Hartz *et al.*, 1998; Schwarzpaul *et al.*, 2006). Studies have shown that micronutrient status changes with age (Ahluwalia and Ahluwalia, 2005; Heuberger, 2009) for vitamin D, vitamin B<sub>12</sub>, and calcium due to the decline in absorption, use, or activation of these nutrients (Bueche, 2009; Brown *et al.*, 2008). Schwarzpaul *et al.* (2006) also documented that men most often supplemented magnesium, vitamins C and E while women mostly supplemented magnesium, vitamin E and calcium. Vitamins A and E are antioxidants, which are believed to protect the cells from free radical damage, hence, prolonging life (Ahluwalia and Ahluwalia, 2005). Nevertheless, the elderly are likely not to consume enough nutrient dense foods to meet their requirements

for beneficial nutrients like vitamin D, vitamin B<sub>12</sub> and calcium (Wardlaw *et al.*, 2004), hence, the need for supplement intake. In this study, 39% of the participants used supplements with frequency of intake ranging from once a week to daily.

**Lifestyle and social patterns:** Majority of the participants did not take in alcohol neither did they smoke tobacco. Some studies suggest that moderate alcohol consumption compared to abstention was beneficial for healthy aging (Guralnik and Kaplan, 1989; Brown *et al.*, 2008). The interactions between alcohol intakes at varying levels with diet, exercise, and other issues are extremely complex. Because of the fact that older adults are at risk of falls, take many different medications, and suffer from a variety of conditions, Heuberger (2009) suggested that, it would be better if alcohol intakes were avoided in later years of life. In view of these complex issues regarding the intake of alcohol, moderation is the key and is consistent with the behaviour of the participants in this study. According to Brown *et al.* (2008) any type of alcohol 'in moderate amounts' can be preventive against stroke while excessive amounts increase risks drastically.

With regard to smoking, a substantial body of literature associates non-smoking with healthy aging (Haveman-Nies *et al.*, 2003; Newman *et al.*, 2003; Ford *et al.*, 2000; Guralnik and Kaplan, 1989). Almost all the participants were actively engaged in social activities like weekly church going, weekly attendance of HelpAge meetings and other social organizations as well. This practice enhances socialization and keeps them healthy. The effect of such behaviours is put in view by Boyle (2003) who reported that older persons thrive in situations where love, understanding, shared responsibility, and mutual respect are nurtured.

**Physical activity behavior and health outcomes:** Generally, female elderly participants were more physically active as compared to their male counterparts. This is probably because the females were more engaged in household activities such as, cooking and cleaning, which the male is likely to refrain from because it is a 'woman's job'. Daily walking was the most prominent activity of the participants and walking has been shown to improve quality of life (Schlenker, 1992) and also has the potential to control blood glucose levels of carbohydrate rich foods if it is done after eating (Hjstmark *et al.*, 2006; Colberg *et al.*, 2009; Nygaard *et al.*, 2009). Clearly since walking is a preferred choice it should be encouraged among the elderly to help especially those who are diabetic. The study revealed that disorders common among the participants were arthritis, diabetes and hypertension and these are among the most frequently reported disorders among the elderly (Joyce *et al.*, 2005). These non-communicable chronic diseases can be

improved through good nutrition and simple physical activity such as walking (Hickson, 2006; Reese, 2007; Nygaard *et al.*, 2009). It is important that the elderly eat healthy so as to maintain their nutritional status.

Another point worth mentioning is that despite these chronic disease conditions experienced by the participants, majority did not seek frequent medical attention, but were, however, mostly on regular drugs. Majority (mostly females) took a minimum of three drugs which are consistent with findings elsewhere (Mitchell, 2004; Bales *et al.*, 2004). This could probably mean that many were taking over-the-counter medications. The drug-nutrient-interaction may also impact their nutritional status (Eriksson *et al.*, 2005). The study also showed that participants who did not seek frequent medical attention were predominantly food insecure as compared to those who did. This could mostly be due to lack of money. In many cases, the elderly with multiple health problems would have to make a decisive choice between the purchase of drugs or food due to low income. Dental problem was also found to be associated with food insecurity. More than three-fourth of participants who had chewing difficulty experienced some level of food insecurity. As such participants sometimes skipped meals or reduced their intake because they had difficulty in chewing. Nevertheless, over half of participants who used dentures were food secure. This trend could be attributed to the fact that the use of dentures increased their eating capacity. Appollonio *et al.* (1997) reiterated that dental conditions such as missing teeth and ill-fitting dentures could make chewing difficult which negatively affects the eating of an individual.

#### CONCLUSION AND RECOMMENDATION

Food insecurity may be a crucial problem among the elderly in our society taking the elderly of Center of Hope as a reference point. The main determinants of food insecurity for this elderly group, as observed from the present study, were identified as: age, gender, income spent on food, fair/poor appetite, number of meals per day, regular consumption of street foods, frequency of eating lunch, loneliness, chronic disease conditions, chewing difficulties, regular medications, and inability to seek medical attention. These findings demonstrate the need to address the problem of food and nutrition insecurity among the elderly in developing countries. There is an urgent need for national nutrition and health policies that target the general populace to ensure healthy aging.

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