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FACTORS IMPACTING ON THE NUTRITIONAL STATUS OF POPULATION AGED 45 YEARS AND ABOVE IN NAIROBI: A CROSS SECTIONAL STUDY

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ABSTRACT

Objective: To provide data on nutritional status and risk factors affecting the population aged 45 years and above for health policy development and program planning.

Design: A cross sectional study

Setting: Dagoretti sub-County of Nairobi County.

Subjects: Two hundred and eighty nine (289) purposefully selected households (29.8% males and 70.2% females) aged 45 years and above.

Main outcome measures: Quantitative household data were collected using a semi-structured questionnaire. In-depth interviews and focus group discussions were used to collect qualitative data. Information on selected demographic and socio-economic household characteristics, health and food security was documented. Nutritional status was assessed using body mass index (BMI) and mid-upper arm circumference (MUAC).

Results: The study established that majority of this population faced many nutrition risks including lack of access to finances 161(58.5%), ill health 70(25.5%), rejection by community and relatives 26(9.5%) and taking care of grandchildren 10(3.6%) abandoned or orphaned by HIV/AIDS. Malnutrition using MUAC was 18.8% while by BMI was 11.4%. Of the population assessed, 46.4% had normal nutritional status while 40.9% were overweight, and 12.7% underweight, with more females (48.0%) than males (25.9%) being overweight.

Conclusion: Under nutrition and obesity are problems facing this population group aged 45 years and above in Nairobi. There is need for policy makers and programme managers to develop interventions aimed at minimising the effects of risks faced by this population in order to improve their well being.

INTRODUCTION

According to UN demographic projections, the world population aged 65 years and above is increasing rapidly. In 2010, the estimated population aged more than 65 years globally was 524 million which represents 8% of the total world population. It is estimated that by the year 2050, there will be about 1.5 billion people above the age of 65 years worldwide which would be accounting for 16% of the world population. Majority of older people are in less developed countries (1). The older population in Africa currently is estimated to be increasing by 2.27% annually. It is estimated that the number of old people aged over 60 years will reach 64.5 million in 2015, 103 million in 2030 and 205 million by 2050 (2).

In Kenya, the population aged 60 years and above is about 1,688,000 making up 4.2% of the population (3).

Most of the old people in developing countries enter old age after a life of poverty and deprivation, with poor access to healthcare, and diet inadequate in quality and quantity. Majority of these old people suffer from various problems ranging from extreme poverty, ill-health, poor nutrition, lack of adequate care, shelter, clothing, isolation, mental and physical abuse. Many of them also suffer from age related health problems such as hypertension, diabetes, cancer, tuberculosis, arthritis and ophthalmologic diseases especially poor eyesight. (4)

The prevalence of HIV infection among youth aged 20 to 34 years in urban areas in Kenya is about

18%. (5) The youth and young adults infected with HIV / AIDS are likely to die or unable to earn a living. This coupled with the rural-urban migration, is likely to force older people to continue working into old age. (6) The HIV-AIDS pandemic, with its social problems has left the responsibility of caring for AIDS orphans mainly to the aged members of our society. Many of the problems of the aged in Kenya are compounded by the fact that the main customary traditional support system, the nuclear and extended family system, has been eroded over the years. (7) Furthermore, many young people are migrating with their families to the urban areas in search of gainful employment, leaving their parents alone in rural areas. (8)

Good nutrition has been expressed as a right in international human instruments since 1924, and has been confirmed through numerous declarations and conventions such the 1948 Universal Declaration of Human Rights, the 1966 International Covenant on Economic, Social and Cultural Rights, the 1979 Convention on Elimination of all forms of Discrimination Against Women, the 1989 Convention on the rights of the Child and the 1992 Declaration on Nutrition. (9)

The study was carried out in Dagoretti Sub County of Nairobi County. The purpose of this study was to determine the nutritional status and associated risk factors among populations as they progress to old age, and also as they reach old age. The goal was to provide data that may be useful for policy development and program planning.

MATERIALS AND METHODS

A cross-sectional study was carried out in Waithaka and Riruta locations of Dagoretti division in Nairobi County, as part of a wider study. The two locations were conveniently selected, as it was the program area of Helpage Kenya. These are the areas in which it was possible to find the people of the selected age groups at home, based on the fact that the survey could only be conducted during the day.

Quantitative data was collected from 289 households using a semi-structured questionnaire. The questionnaire was only administered to those households with persons aged 45 years and above who were present at the time of data collection. In-depth interviews and focus group discussions were used to collect qualitative data. Information on selected demographic and socioeconomic household characteristics, risk factors, health and food security was documented. Two focus group discussions were conducted in total - one in each location. Information on risk factors was collected using a standard checklist, developed by helpage international. The participants were drawn from community members, both male and female aged 45 years and above who were not included in the household survey. Each focus group discussion comprised male and female participants

drawn from among the elderly in the community, a moderator and two notes takers. The focus group discussions were conducted in an exclusive place. Introductions were done and the purpose of the group discussion explained clearly. These created an atmosphere that allowed for freedom of expression amongst the participants. In-depth interviews were conducted with selected key informants from the community opinion leaders as well as health facilities, using a structured interview guide.

The nutritional status was assessed using Body Mass Index (BMI) and Mid-Upper Arm Circumference (MUAC). The measurements taken for assessment of nutrition status included weight, height, arm span and mid-upper arm circumference. However, the arm span was only taken for the elderly who could not stand straight. The cut-off points for BMI were 18.5 Kg/m^2 , and the classification of nutritional status was done according to WHO recommendations. (10). The Research Assistants were Year three and four dental students from the University of Nairobi Dental Hospital. They were trained on the data collection tool as well as nutrition assessment. A pilot study was carried out to pre-test the research instruments, and necessary modifications made prior to actual data collection.

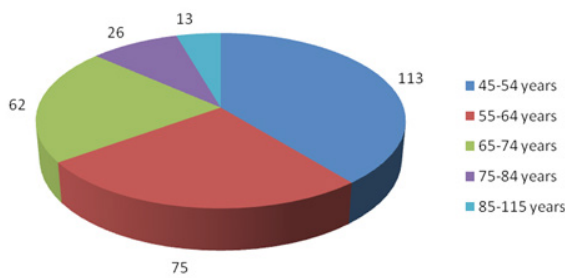
Data collected was coded before entry into the computer, based on the set objectives. After data validation, analysis was done using SPSS/PC programme, and conclusions drawn from the study findings. The analysis included frequencies and descriptive statistics. Focus group discussions and in-depth interviews were analyzed manually, triangulation done and conclusions drawn from the findings.

The study was conducted within the program area of Helpage Kenya as part of the organization's activities. The purpose was for program redesigning to allow for expansion of interventions. Therefore ethical clearance was not necessary. However, the Divisional administration in the area of study was informed, and they consented. The participants were however required to give consent before they took part in the study.

RESULTS

Demographic characteristics of the study population A total 312 households were visited, 23 questionnaires were not included in the analysis due to incompleteness leaving 289 respondents giving a response rate of 92.6%. Those interviewed included 63% from Waithaka location and 37% from Riruta. Majority of the respondents were females 70.2%, while males were 29.8%. Of the respondents, 39.1% were aged between 45-54 years, 26.0% aged 55-64 years and 65 years and above were 34.9%. The mean age was 60.6 years with a standard deviation of 12.6 and a range of 45-115 years (Figure 1).

Figure 1
Study population distribution



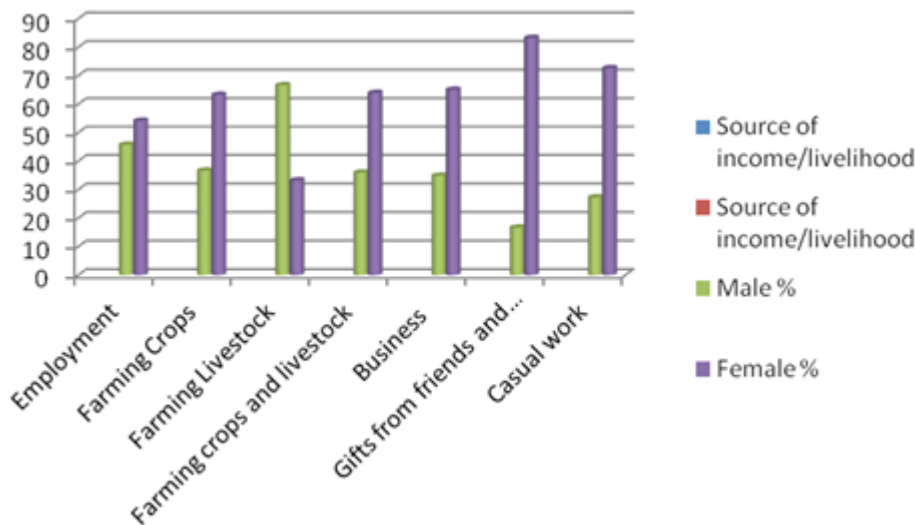
Of the respondents 42.9% had never been to school, 8.3% had completed primary education, 9.0% had joined secondary school but only 7.6% had completed secondary school. Only 2.1% had gone beyond secondary level of education.

With regard to marital status, 48.1% of them

were married, of whom 135 were in a monogamous marriage and 4 were polygamous. About 33.2% were widowed, 12.8% single. and 5.5% were either separated or divorced. Majority of the households were female-headed (54.5%), while 45.7% were male-headed. About a quarter, 24.2%, of the elderly were living alone, 22.5% were living with one other person. The mean household size was 3.26.

About 46.0% of the respondents were not in any form of employment. The various forms of occupations included 9.7% in formal employment, farmers 12.5%, 12.5% housewife/ farmers, business 11.4%, and 8.0% in self-employment (Figure 2). The main sources of income and livelihood for the households included business 22.0%, crop farming 17.1%, and formal employment 16.8%, while 16.8% survived on gifts from friends. Other sources of income were casual work, 15.4%, farming crops/ livestock keeping, 8.7% and livestock keeping 3.1%. (Figure 2).

Figure2
Main source of Income/Livelihood for respondents (n=289)



Food security: About 118(40.8%) of the respondents owned land for cultivation. The mean land size was 1.42 acres (SD 0.146), of which the mean portion of land under cultivation was 1.00 acre. The food crops grown by the households include potatoes, vegetables, maize, beans, fruits, sugarcane, peas, sweet potatoes, millet, cassava and sorghum. Only 23(20.5%) of those who grew food said the food was enough to meet the family needs. The households employed various methods of obtaining food, 180(63.2%) of the respondents bought their food from the market and shops, while 92(32.3%) and 10(3.5%) got food from the farm and charity respectively. Casual work and food for work contributed 1(0.4%) each (Table1).

Table 1
Distribution of respondents by sources of food n=285

Main source of food	Number (%)
Purchase from the market/shop	180 (63.2)
Farming/harvest	92 (32.3)
NGO/charity	10 (3.5)
Casual work	1(0.35)
Food for work	1 (0.35)
Others	1 (0.35)

The respondents kept the following livestock; cows, goats, sheep, chicken, pigs, rabbits and geese / ducks, from which they obtained meat, milk and eggs as well as selling them for money. Only 36(12.5%) had control over the household money and 204(70.6%) indicated they had low budget for food. The respondents indicated that the money available could not purchase enough food to feed the family and they sometimes had to forego some meals. The little available food had to be shared among the family members especially children. They reported that they could not eat when the children cry near them due to hunger.

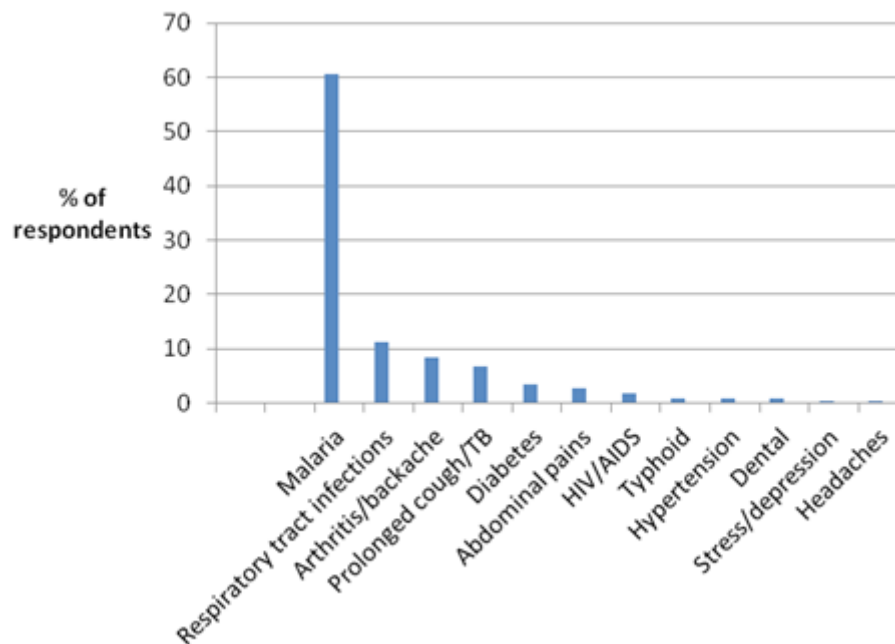
Health and morbidity: Majority of the respondents said that there was a health facility nearby (93.3%). with 200(76.6%) stating they paid for the services at the facility. During the Focus Group Discussions, most complained that they had difficulties accessing health care due to poverty. They were expected to seek treatment at local private clinics, mission hospitals or the Kenyatta National Hospital, which is a referral

hospital where they had to pay for the services. The elderly were also not given preferential treatment over other people.

Of the total population of elderly seeking health care in the facility at the local city council health dispensary, the elderly comprise about 20% of the total patients, while in the mission hospital 7 to 10 % of the patient population are the elderly.

The perceived common diseases affecting the adults in the community included malaria as indicated by 166(60.6%), upper respiratory tract infections (cough/ chest pain) 31(11.3%), arthritis/backache 23(8.4%) and prolonged cough/TB (6.6%). Other less commonly perceived health problems included diarrhoea /vomiting 7(2.6%), HIV / AIDS 5(1.8%), abdominal pains 7(2.6%), stress / depression 1(0.4%), diabetes 9(3.3%), typhoid 2(0.7%), hypertension 2(0.7%), headache 1(0.4%) and dental diseases 2(0.7%). Other health problems reported in the focus group discussions include neurological problems, eye, asthma and problems passing urine (Figure 3).

Figure 3
Reported health problems affecting the respondents (n=289)

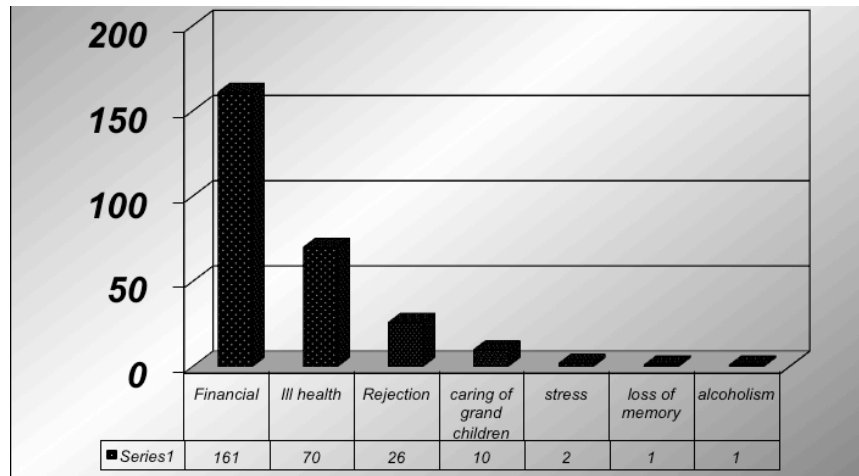


The participants in the focus group discussions attributed these health problems to chemical residues in food such as fertilizers, pesticides and food preservatives, stress, lack of enough food and inadequate health care.

In-depth interviews with key informants at the health facilities revealed that the common illnesses affecting the elderly who seek treatment include: degenerative disorders/ arthritis, rheumatism, diabetes, hypertension, constipation, diarrhoea, dental, sexually transmitted infections, eye and psychological problems. The possible factors contributing to ill health in the elderly were reported as: lack of medicine, difficulties in explaining their health problems properly, lack of highly skilled medical personnel to handle complicated cases, lack of food, inadequate shelter, low income, difficulties in feeding due to dental problems and lack of palatable food for the elderly.

Nutritional risk factors: The major problem faced by the respondents was reported as access to finance 161(58.5%), followed by ill health 70(25.5%). Other problems included rejection 26(9.5%) by community and relatives, taking care of grandchildren 10(3.6%) some abandoned or orphaned by HIV/ AIDS and stress 2(0.7%), memory loss 1(0.4%) and alcoholism 1(0.4%) (Figure 4).

Figure 4
Problems faced by the elderly (n=289)



The results from focus group discussions confirmed that lack of access to income/ resources, access to food, access to health care, psychological problems, loneliness, feeling of abandonment and the burden of caring for the grandchildren. The respondents reported they found it difficult to get the young people to listen to them since the latter feel that they know more than them and so need no advice. The respondents felt that some of their children were disrespectful and gave birth and then abandoned their children with them without any support. This also led to family tensions, as the men felt neglected as the women took care of the grandchildren. This problem was compounded further by the habit of grabbing of property by the paternal side after the demise of the male parent and the children's care was taken over by the maternal family.

As a coping strategy, the respondents said they were forced to work long after their retirement, with some joining merry-go-round groups, which they reported that sometimes people disappeared with the money they had contributed.

The respondents reported that those of them who did not have "rich" children to support them or livestock received neither assistance nor respect from the community. They were not given positions of responsibility as they were perceived to be least resourceful and only fit for small or unimportant roles.

In key informant interviews with community leaders the major problems faced by the respondents were identified as selective eating habits, dental problems, lack of shelter and lack of support from the children financially and also in the day-to-day chores. Others included sickness as they had no money for treatment even at the government hospital, lack of clothing and had to rely on donations, poverty, loneliness and difficulty in accessing food. Community perception was that as people age they are generally not listened to by the community, but the few who are wise consult them for advice or counselling.

One of the key informants at the health facility indicated that due to the rampant poverty, some of the respondents had been forced into prostitution as a coping mechanism.

Nutritional Status: The mean body mass index (BMI) was 24.9 and the level of global malnutrition (severe and moderate malnutrition) was 11.4% using a BMI cut off of <18.5. Overweight was present in 40.9% of respondents, with more females than males being overweight. The mean MUAC for the group was 29.2 and the cut off points used were <22 cm for women and <23 cm for men. The anthropometric cut offs used were according to WHO recommendations. (9) Table 2 shows the mean anthropometric measurements and the nutritional status of the respondents by gender, while Table 3 shows the BMI by age groups.

Table 2
Mean anthropometric measurements and nutritional status (N=289)

	Mean Weight (Kg)	Mean Height (cm)	Mean BMI	Mean MUAC	BMI categories (% of respondents)					MUAC categories (% respondents)
					<16	16 to18	18.5 to	25 to	30 +	
						.49	24.99	29.99		
Male	62	165	22.8	27.7	4.7	10.6	58.8	20.0	5.9	9.4
Female	63.4	156.4	25.7	29.8	3.0	7.0	42.0	27.0	21.0	7.4
All	63	159.2	24.9	29.2	3.5	8.1	47	24.9	16.5	18.8

Table 3
Body Mass Index by age groups (n=285)

BMI Category	45-54 Years N=110 % of respondents	55-64 years N=74 % of respondents	65+ years N=101 % of respondents	Total n
<16 10	10	80	10	
16-18.49	30.4	30.4	39.2	23
18.5-24.99	36.1	27.8	36.1	133
25-29.99	50.7	19.7	29.6	71
>/=30	37.5	31.3	31.3	48

The factors that had a significant relationship with BMI included; poor strength, poor manual dexterity, poor coordination, physical disability, recent injury, poor eyesight, poor mobility, housebound, lack of exposure to sunlight and low budget for food (Table 4).

Table 4
Nutritional status and risk factors

		BMI Categories						Chi square	P value
		Underweight		Normal		Overweight			
		n	%	n	%	n	%		
FA: needs help with feeding	yes	2	22.2%	3	33.3%	4	44.4%	1.345	0.510
	no	30	10.9%	129	47.1%	115	42.0%		
FA: poor strength	yes	16	24.6%	29	44.6%	20	30.8%	15.844	<0.0001*
	no	16	7.3%	103	47.2%	99	45.4%		
FA: poor manual dexterity	yes	11	35.5%	14	45.2%	6	19.4%	22.276	<0.0001*
	no	21	8.3%	118	46.8%	113	44.8%		
FA: poor coordination	yes	6	54.5%	3	27.3%	2	18.2%	21.394	<0.0001*
	no	26	9.6%	129	47.4%	117	43.0%		
FL: living alone	yes	5	10.6%	25	53.2%	17	36.2%	1.004	0.605
	no	27	11.4%	107	45.3%	102	43.2%		
FL: no regular caregiver	yes	7	9.0%	36	46.2%	35	44.9%	0.728	0.695
	no	25	12.2%	96	46.8%	84	41.0%		
FL: looking after grandchildren	yes	13	12.3%	45	42.5%	48	45.3%	1.197	0.550
	no	19	10.7%	87	49.2%	71	40.1%		
FL: adult children far away	yes	10	9.3%	57	53.3%	40	37.4%	3.413	0.491*
	no	22	12.6%	74	42.5%	78	44.8%		
disability - physical disability	yes	11	36.7%	7	23.3%	12	40.0%	23.028	<0.0001*
	no	21	8.3%	125	49.4%	107	42.3%		
disability - recent injury	yes	6	27.3%	7	31.8%	9	40.9%	6.509	0.039*
	no	26	10.0%	125	47.9%	110	42.1%		
disability - poor eyesight	yes	22	16.9%	58	44.6%	50	38.5%	7.654	0.022*

	no	10	6.5%	74	48.4%	69	45.1%		
disability - poor mobility	yes	15	24.6%	23	37.7%	23	37.7%	13.864	0.001*
	no	17	7.7%	109	49.1%	96	43.2%		
disability - housebound	yes	7	53.8%	2	15.4%	4	30.8%	25.073	<0.0001*
	no	25	9.3%	130	48.1%	115	42.6%		
disability - lack of exposure to sunlight	yes	3	100.0%	0	.0%	0	.0%	23.783	<0.0001*
	no	29	10.4%	132	47.1%	119	42.5%		
no control over household money	yes	8	22.2%	16	44.4%	12	33.3%	5.134	0.077
	no	24	9.7%	116	47.0%	107	43.3%		
low budget for food	yes	26	12.9%	100	49.8%	75	37.3%	6.763	0.034*
	no	6	7.3%	32	39.0%	44	53.7%		

*P-value < 0.05 (significant).

DISCUSSION

The aim of this study was to determine the nutritional status and factors affecting the nutritional status of the population aged 45 years and above in Dagorettisubcounty of Nairobi County, with a goal to provide data for health policy development and program planning. A mixed method design was used to collect both qualitative and quantitative data. A total of 289 respondents were interviewed in the households, with an age range of 45-115 years.

Socio-demographic characteristics: Illiteracy levels were high with 43% of the respondents having never been to school, with only 8.3% having completed primary education. The mean household size was 3.3, while 24% of the respondents were living alone.

The major problem reported by the respondents was limited access to finances, 58.5% of the respondents. This shows similarity to past studies in which it has been reported that most people in developing countries normally have no access to resources as they age, and there is usually no established social care programs for old persons. The fact that the respondents had to take care of grand children who had been orphaned or abandoned made the situation worse. (4)

Nutritional status: The level of under nutrition using the MUAC was 18.8% while by BMI it was 11.4%. There were more males than females classified as malnourished. The level of overweight was high at 40.9% with more females than males being overweight. These results compare well with past studies which have shown that obesity is more common among elderly women than men. (11). However, the problem of overweight was more common in the age groups 45-54 years, while underweight was more common in the age group 65 years and above. Both under nutrition and obesity were problems faced by this population group in this study. These findings compare with

similar studies done in Kenya and other countries, in which the prevalence of malnutrition among free living elderly ranges between 5 to 10% (12). When there is food insecurity, studies have found that as people get older, they are normally discriminated against in the intra-household food distribution. Furthermore, elderly persons usually have selective food habits that lean on financial status, physical and functional ability, physiological and psychological status. (13) Most diets of elderly persons are composed of carbohydrate and therefore lack diversity, this coupled with absence of rigorous physical activities could have contributed to overweight in the study population. The elderly also suffered social, physical and emotional problems which could interfere with their appetite, ability to acquire and prepare food, thus reduced food intake. (14) The problem of overweight coupled with a sedentary life could be a risk factor for chronic illnesses among the elderly. (15)

The factors contributing significantly to the nutritional status included poor manual dexterity, physical disability, poor coordination, low budget for food, recent injury, poor eyesight, poor mobility, being housebound, lack of exposure to sunlight and their children living far. Studies have shown that functional ability among the aged can have an impact on the nutritional status. (16) Most nutrition interventions in Africa mainly focus on children and pregnant / lactating women, whereas elderly people are left out since they are not considered as a priority group.

In conclusion, the study established that many people in the age group of 45 years and above face several risk factors that affected their nutritional status. The level of malnutrition using the MUAC was 18.8% while by BMI it was 11.4%, 46.4% had normal nutritional status while 40.9% were overweight, with more females (48.0%) than males (25.9%) being overweight. We recommend that there is a need to develop policies on social care for elderly persons at risk of poor nutrition and ill health. Health and

nutrition policies need to address the risks faced by populations as they age in order to mitigate against poor health and nutritional status.

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REFERENCES

1. UN. The United States. Global health and aging. WHO. 2010; pg 8.
2. United Nations. (2011). World population prospects: The 2010 revision. New York: Department of Economic and Social Affairs, Population Division.
3. KNBS. The Kenya Demographic and Health Survey 2008. pg 13-14
4. UN. Fourth Report on the World Nutrition Situation 2000. p 19
5. Ministry of Health. Kenya Aids Indicator Survey 2012. Pg 56.
6. National Council for Population and Development. Kenya Population Situational Analysis. 2013. Pg. 130.
7. Mbugua and Tata, J. Early Childhood Care and Education in Kenya. 2012
8. Francis, E. Making a living. Changing livelihoods in rural Africa. Psychology Press, Amazon.com. 2000. Pg. 117.
9. UNICEF/GOK. Situation Analysis of Women and Children in Kenya 1998. p214-216
10. WHO. Adults 60 years of age and older. In Physical Status: The Use and Interpretation of Anthropometry, Report of a WHO Expert Committee, Technical Report Series No. 854, Ch. 9, Geneva: WHO. 1995.
11. Cederholm, C. and Hellerstrom, K. Nutritional status in recently hospitalized and free-living elderly subjects: *Gerontology* 1992. B:105-10
12. Horwath, C.C. Nutrition Goals for elderly adults: A review. *The Gerontologist*. 1991. 31: 811-821
13. Russell, R.M. and Sahyoun, N.R. The elderly in Clinical Nutrition, 2nd Edition. Washington D.C., C.V. Mosby, 1988. p. 110.
14. Charlton, K.E. and Rose, D. Nutrition among older adults in Africa: the situation at the beginning of the millennium. *J. Nutrition*. 2001. 131: 2424S – 2428S
15. WHO; National Institute on aging; National Institutes of Health; Global Health and Aging; Publ. No. 11-7737; 2011.
16. Chilima, D.M. and Ismail, S.J. The relationship between nutritional status and functional ability among older people in rural Malawi. Proceedings of the Nutritional Society, 1998.