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Dietary practices associated with prevalence of malnutrition among the elderly in Kiambu County, Kenya

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Abstract

Ageing is often associated with various needs as well as changes, which make elderly people susceptible to malnutrition. A healthy diet helps to protect against malnutrition in all its forms, as well as noncommunicable diseases. Malnutrition is a major risk factor of cardiovascular and metabolic diseases and therefore the importance of good dietary practices and balanced diet cannot be overemphasized. The percentage of older people at risk of malnutrition in most Kenyan Counties has increased to 29.6% from 20.1% in 2015. This study therefore study sought to assess the effect of dietary practices on malnutrition among the elderly in Kiambu County. The research design was cross sectional descriptive research design. The target population in this study was the elderly population from the age of 60 years and above. A sample of 398 respondents was determined with the help of Yamane Formula. A questionnaire was used to collect data. Descriptive, chi-square and correlation analysis were conducted with the help of SPSS. Results showed that prevalence of malnutrition stands at 42%. Results also showed poor dietary practices. Only 26.6% of the sample had 3 meals per day. The results showed that gender (p=0.000) and education level (p=0.035) were significant. Results also showed that skipping of meals (p=0.003) and number of meals (p=0.042) were significant. Cross tabulation showed that respondents who had less than 3 meals and who skipped at least one meal were more likely to be malnourished. The study concluded that the high prevalence of malnutrition in the sample can be attributed to poor dietary practices. This study recommended an increase in food supplementation efforts by the county government to old people.

Keywords: Malnutrition of the Elderly; Nutrition status; Geriatric nutrition; Dietary practices; Ageing

1. Introduction

Malnutrition is a term used to describe a lack of balance in nutrients consumed by an individual (Chalermsri et al., 2020). Malnutrition among the elderly people often occurs due to functional and physiological changes that come with old age, inadequate access to food, and lack of financial support. The functional status of the elderly is their capability to carry out their everyday activities, which consists of food preparation and intake thus, affecting their nutritional status (Ramya, Ranganath, Jadhav, & Swetha, 2017). There is a perception that malnutrition among the elderly people is most common in hospitals and institutions for the elderly, however, that is not the case as malnutrition is most common for elderly people who are at home. They tend to be given less attention due to the necessities that come with taking care of them. For the healthy elderly people, intervention is also required since they tend to have poor diets hence, low intake of nutrients, which can lead to future complication (Nyberg, Olsson, Pajalic, Örtman, Andersson, & Blücher, 2015).

Ageing is often associated with various physiological, social, pathological, and psychological needs as well as changes, which make elderly people susceptible to malnutrition (Chalermsri et al., 2020). Traditionally, intake of food tends to decrease as one advance in age subsequently, in order to compensate for the diminished energy needs that are associated with lowered basal metabolic rate and physical activity, care for the elderly is imperative. Ageing is

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associated with health deterioration due to decreased resistance to diseases in the body. The cumulative effect of the interaction between decrease in nutrition and changes witnessed in ageing results in progressive under-nutrition which often goes undiagnosed among the elderly (Ghimire, Baral, & Callahan, 2017). Nutrition among the elderly persons is associated with the quality of life (QoL) and functional quality.

Malnutrition is a major risk factor of cardiovascular and metabolic diseases and therefore the importance of good dietary practices and balanced diet cannot be overemphasized (Bede et al., 2020). Numerous scientific evidence points out on the importance of an individual's dietary practices and nutritional status in the prevention and management of multiple diseases. A healthy diet helps to protect against malnutrition in all its forms, as well as noncommunicable diseases (NCDs), including such as diabetes, heart disease, stroke and cancer. Dietary practice is defined as an observable actions or behavior of dietary habit and can be classified as good dietary practices and poor dietary practices (Nana & Zema, 2018). They are the quantities, proportions, variety or combinations of different foods and beverages in diets, and the frequency with which they are habitually consumed. They can also be referred to as the habitual decisions of individuals or group of people regarding what foods they eat. According to Reddy and Anitha (2015), dietary practices are one of the most complex aspects of human behavior, being determined by multiple motives and directed and controlled by multiple stimuli. There are many potential influences on dietary practices including individual factors, families and friends, community characteristics, the food and supplement industry, and public policy (Krishnamoorthy et al., 2018).

Proper dietary choices require the consumption of vitamins, minerals, carbohydrates, proteins and fats (Zainudin et al., 2019). Maintaining a nutrient-dense diet is critically important for older adults because of the impact of food intake on health. In the elderly, there are increased requirements for a number of nutrients, such as: protein, riboflavin, vitamin B6, calcium, vitamin D and, for some, vitamin B12 (Bede et al., 2020). WHO recommendations include the consumption of five or more servings of fruits and vegetables per day (400-500g/day) and limited intake of saturated fats. According to Govindaraju et al. (2018), a dietary pattern consistent with current guidelines to consume relatively high amounts of vegetables, fruit, whole grains, poultry, fish, and low-fat dairy products may be associated with superior nutritional status, quality of life and survival in older adults. Fruit juices, milk and plant beverages are some of the drinks included in nutrition in the elderly guidelines (Franca et al., 2016).

Available evidence suggests that the elderly have poor dietary practices. According to Franca et al. (2016), the failure to meet the recommended intakes of fruit, vegetables, and fish and to avoid red meat with visible fat and chicken skin are indicators of unhealthy eating habits. National surveys and observational cohort studies have identified several nutrients that may be inadequately consumed in relation to health risk among older adults, including protein, n–3 FAs, dietary fiber, carotenoids (vitamin A precursors), calcium, magnesium, potassium, and vitamins B-6, B-12, D, and E (Shlisky et al., 2017). Krok-Schoen et al. (2018) found that dietary protein intakes were significantly lower in older age groups, with up to 46% of the oldest adults not meeting the protein intake recommendation. In a study conducted in Meru in Kenya, Munoru (2018) found that the mean energy intake was 1587 ±653 for men and 1442 ±590 for women which is below the WHO recommendations.

The percentage of older people at risk of malnutrition in most Kenyan Counties has increased to 29.6% from 20.1% in 2015 (Kuria, Waudo, & Shikuri, 2016). Munoru (2018) found that 39.4% elderly persons were undernourished in Meru County. In Uasin Gishu County, Bore et al. (2019) estimated the prevalence of undernutrition to be 41 percent. This may be due to their poor dietary practices. However, most nutrition interventions have focused on under-five children and women of reproductive age, particularly pregnant and lactating women leaving out the elderly, who are also vulnerable to malnutrition. Identifying factors that affect the dietary practices of the elderly is important to initiate timely and appropriate interventions. This study therefore sought to assess the effect of dietary practices on malnutrition among the elderly in Kiambu County.

2. Material and methods

The research design was cross sectional descriptive research design. Cross- sectional study design was appropriate in this study as it allowed for the collection of data at one point. It also allowed the researcher to determine the socio-demographic characteristics at the point of data collection. This allowed for the descriptive characteristics of respondents to be determined. The study area was Kiambu county which has a population of 596,268 (Male - 49 %, Female - 51 %). The main economic activity in Kiambu County is agriculture in tea, coffee, dairy, poultry and horticulture farming. Agriculture is the predominant economic activity in the county and contributes 17.4 per cent of the county's population income. Majority of the people in the county depend on the sub sector for their livelihood, with 1.28M directly or indirectly employed in the sector. The size of arable land in the county is 1,878.4 Km2, non-arable land is 649.7 Km2 and 15.5 Km2 is under water mass.

The target population in this study was the elderly population from the age of 60 years and above. Estimated figures that included those that are above sixty years old was ninety two thousand five hundred and ninety two persons (92,592) (County Government of Kiambu, 2018). To determine the sample population needed to participate in the study and allow proper inference of results to a wider population (among the elderly); Yamane (1967) formula was used.

$$n = \frac{92{,}592}{1 + 92592(0.05)^2}$$

$$n = 398.27$$

$$n = 398$$

Thus the researcher was to approach 398 respondents. Random sampling which is a probability sampling technique ensured that every elderly person aged above 60 years and residing in Kiambu had an equal opportunity to be selected to participate in the study. Simple randomization was used to prevent the selection bias and insures against accidental bias. A semi-structured, researcher administered questionnaire was used to collect data. The Mini Nutritional Assessment (MNA) a validated nutrition screening and assessment tool that identifies elderly people who are malnourished or at risk of malnutrition was used. The sum of the MNA score distinguishes between elderly patients with: 1) adequate nutritional status, MNA > or = 24; 2) protein-calorie malnutrition, MNA < 17; 3) at risk of malnutrition, MNA between 17 and 23.5. The Dietary Questionnaire that was adopted for this study mainly focused on the frequency of meals that the respondents took. The Dietary Questionnaire that was adopted for this study mainly focused on the frequency of meals that the respondents took. It also assessed whether they were allergic to particular foods and their preparation (with regards to who prepared the meals for them). It also looked at whether they were aware the nutritional requirements that they needed in their body. A pre- test of the socio-demographic questionnaire was done to ensure that the tool captured all the data that was needed from the respondent.

The study was carried out for 6 months between 2019 and 2020. An Ethical clearance was obtained from the Scientific and Ethics Review Committee at Kenya Methodist University. Permission to collect data was sought from the Kiambu County government. Participation was voluntary through informed consent after the respondents had been explained to the purpose of the study. An informed written or a thumb print consent was sought from the respondents. The respondents were assured of confidentiality of the information given before carrying out the study in order to enhance the response. Privacy was enhanced by not recording the name of the respondents anywhere. The respondents were made aware that the information given was for study purposes only and confidentiality, privacy, and dignity of the subjects were ensured.

Data analysis was done using the statistical package for social science (SPSS), version 24.0. Descriptive statistics namely frequencies and percentages were used to represent the prevalence of malnutrition and to describe the characteristics of the sample population. Chi Square tests were used to check for associations between demographic characteristics and malnutrition as well as between dietary practices and malnutrition. Results were presented in from of tables and pie-charts.

3. Results

The target population for the study was three hundred and ninety eight (398) respondents as calculated. The response rate was 68.8% representing 274 respondents.

3.1. Social Demographic Characteristics of the Respondents

Most (50.4%) of the participants were male, married (48.5%) with tertiary level education (30.7%). Results also show that 57.7% were unskilled whereby 26.6% were self-employed and 22.3% were homemakers.

Table 1 Social Demographic Characteristics of the Respondents

Variables	%(n)
N=274	100(274)
Gender	
Male	50.4(138)
Female	49.6(136)
Marital Status	
Married	48.5(133)
Separated	20.4(56)
Widowed	15.0(41)
Never married	9.5(26)
Widower	6.6(18)
Education level	
No formal schooling	26.6(73)
Primary level	14.6(40)
Secondary level	28.1(77)
Tertiary level	30.7(84)
Occupation in Early years	
Skilled	6.9(19)
Unskilled	57.7(158)
Professional	24.8(68)
Others	10.6(29)
Current occupation	
Farmer	19.3(53)
Business person	26.6(73)
Homemaker	22.3(61)
Taking care of grandchildren	19.7(54)
None	12.0(33)

3.2. Prevalence of Malnutrition among Respondents

The prevalence of malnutrition among respondents was established using through mini nutritional assessment (MNA). Results in Table 4.2 show that 42% of the respondents had between 0-7 points in the MNA score.

Table 2 Mini Nutritional Assessment Scores

Points	Frequency	Percent (%)
0-7	115	42.0
8-11	61	22.3
12-14	98	35.8
Total	274	100.0

The sum total of the responses' assigned scores in Table 2 were then classified as follows to determine the prevalence of malnutrition: [(12-14 points is classified as having normal nutrition status), (8-11 points is classified as being at risk of malnutrition) and (0-7 points is classified as being malnourished).The prevalence of malnutrition therefore stands at 42% as shown in Figure 1.
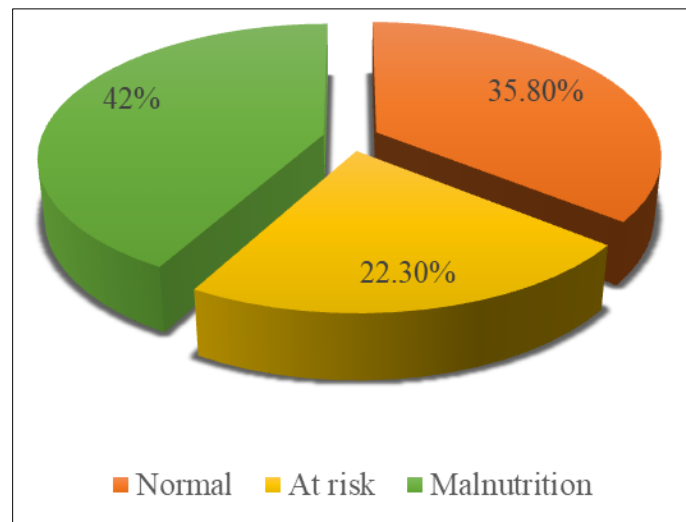

Figure 1 Prevalence of Malnutrition in Kiambu County

3.3. Dietary Practices

The dietary questionnaire was used to establish dietary practices. Table 2 presents the results. More than half of the respondents (64.2%) obtained food through buying. Only 21.2% reported as having some food restrictions or allergies that made them avoid some foods. More than half of the respondents (55.1%) reported poor levels of appetite. The most skipped meal was lunch whereby 25.2% reported skipping. Under meal preparation, 35.8% of the respondents reported as having their children prepare their meals. On the number of meals consumed per day 41.2% consumed two meals per day.

Table 3 Respondents' Dietary Practices

Characteristic	Category	%(n) [N=274]
Sources of food	Home garden	29.2(80)
	Buying	64.2(176)
	Donations	6.2(17)
	Others	4.0(1)
Food restrictions	Yes	21.2(58)
	No	78.8(216)
Levels of appetite	Poor	55.1(151)
	Fair	23.4(64)
	Good	21.5(59)
Meal skipping	Breakfast	8.4(23)
	Lunch	25.2(69)
	Supper	9.1(25)
	Rarely	39.8(109)
	More than one	17.5(48)

Meals preparation	Self	23.7(65)
	Children	35.8(98)
	Friend	8.8(24)
	Spouse	13.9(38)
	In-laws	7.7(21)
	Others	10.2(28)
Number of meals consumed per day	One	17.5(48)
	Two	41.2(113)
	Three	26.6(73)
	Four	13.9(38)
	More than four	7.0(2)

3.4. Association of Demographic Characteristics and Malnutrition

Chi-square tests were conducted between the socio demographic characteristics and the nutrition status of the respondents. The results are displayed in Table 4. The results showed that gender (p=0.000) and education level (p=0.035) were significant. Cross tabulation showed that men and those with low education were more likely to be malnourished.

Table 4 Association of Demographic Characteristics and Malnutrition

Characteristic	Chi-square value (χ^2)	Degrees of freedom (df)	Significance (p)
Gender	110.344	274	0.000***
Marital Status	3.121	274	0.373
Education Level	22.187	274	0.035***

3.5. Association of Dietary Practices and Malnutrition

To find out the relationship between dietary practices and malnutrition among the elderly in Kiambu County, Chi-square tests were conducted between the indicators of dietary practices and the nutrition status of the respondents. Results in Table 5 show that skipping of meals (p=0.003) and number of meals (p=0.042) were significant. Cross tabulation showed that respondents who had less than 3 meals and who skipped at least one meal were more likely to be malnourished.

Table 5 Association of Dietary Practices and Malnutrition

Characteristic	Chi-square value ($\chi2$)	Degrees of freedom (df)	Asymp. Sig. (p) (2-sided)
Food sources	12.316	274	0.655
Food restrictions	6.942	274	0.074
Appetite	6.215	274	0.102
Meal skipping	13.643	274	0.003***
Meals Preparation	8.752	274	0.188
Number of meals	8.187	274	0.042***

4. Discussion

The study found that a high prevalence of malnutrition. The results also showed poor dietary practices. There was a relationship between dietary practices and malnutrition. Skipping of meals and number of meals were significant. Respondents who had less than 3 meals and who skipped at least one meal were more likely to be malnourished. This result is in consonance with findings of Vassilakou et al. (2020) that the daily number of full-course meals consumed was associated with malnutrition risk among free-living elderly in the community of an urban municipality of Attica. These findings are similar to those of Beck and Ovesen (2004) who established that participants who were skipping meals had a lower BMI, energy and protein intake (all p <0.001) and a higher prevalence of negative protein balance (p <0.01), than the other residents. This result is however in disagreement with findings of Fávaro-Moreira et al. (2016) who established that poor appetite and needing assistance to eat were statistically significant eating-related risk factors for malnutrition, whereas the ability to eat independently was related to the improvement of the nutritional status.

5. Conclusion

Most of the elderly persons in Kiambu County are malnourished and a large number are at risk of malnutrition. The high prevalence of malnutrition in the sample can be attributed to poor dietary practices. Majority of elderly persons do not have 3 meals signalling inadequate access to food and poor household food security. There is a need therefore to strengthen access to food for elderly persons. This study recommends an increase in food supplementation efforts by the county government to old people. The study also recommends that the government ought to lower the age for cash transfer and increase the amount to ensure that the elderly are not able to afford food but have food security and eat well.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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