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Predicting Anorexia-related Weight Loss among Residents of Governmental Geriatric-Care Homes: A multi-governorates Study

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Abstract
Background: Anorexia of Aging is one of the leading causes of malnutrition in the elderly, which has been identified as a geriatric syndrome. Which is defined as a physiological deficiency or defect that occurs as a person ages, this, can cause decrease in the amount of energy and essential nutrients that the human body needs. Which may cause involuntary weight loss, and leading to major complications.
Objectives: This study is endeavored to predict anorexia-related weight loss among residents of governmental geriatric-care homes and to find out the relationship between the predicted weight-loss outcome & socio-demographic characteristics, of them.
Methodology: A descriptive cross-sectional design has been carried out in the governmental geriatric care homes in Iraq middle Euphrates governorates. The period of the study started from (1 October 2020 to 27 June 2021). A non- probability (purposive) sample was selected to obtain representative and accurate data for the (136) elderly living in geriatric care homes. **Results:** The results of the study shows that 33.0% of study sample were classified as having a risk for anorexia and needs nutrition counseling. While (24.0%) of study participants were classified as needing frequent reassessment for the nutritional status. therefore, More than half of the study sample were at risk of the anorexia and unintentional weight loss and it is expected to lose at least (5 %) of their total body weight during the upcoming 6 months, if no nutritional counseling and interventions are executed.
Recommendation: this study recommended that both an urgent and tailored nutritional intervention is required to manage the aforementioned vulnerability of the elderly individuals living in governmental geriatric care homes. Of equal importance, using the CNAQ as a valid and reliable tool by community nurses is essential to provide the maximum level of nutritional screening and counseling to the target population.
Keywords: Anorexia, weight loss, geriatric care homes

Introduction

Aging is the process of becoming old. It is a normal aspect of the human life phases. At the biological level, molecular and cellular damage are irreversible and uncontrollable, which can lead to a progressive decline in physiological function. Aging is commonly followed by physiological changes that may have a negative effect on a human, but these changes can differ based on how the situation is handled (van Beek et al., 2016). Because of the decline in death rates among the elderly and young, people are expected to live longer as a direct result of improved health care technologies. Since the ageing population is growing dramatically worldwide, providing care to any person has become a significant challenge to the health and social sectors (Boateng&Jeptanui, 2016). Both developed and most importantly developing countries like Iraq are invited to be ready to face such an enormous challenge.

The regulation of appetite, specifically when deficient, is the key to understanding the pathogenesis aging-related anorexia. The consumption of food is regulated by highly complex processes, with fail-safe mechanisms in place to ensure the unimpaired feeding drive continues. To simplify, food intake is controlled by a central feeding pathway that is controlled by peripheral satiation signals. Supplementary input from peripheral fat cells, basic nutrients, and endogenous hormones is obtained by the central feeding system. The multi-level variations of this system result in the "physiological" anorexia of aging during the aging period (Wysokiński et al., 2015; Landi et al., 2016).

In the Middle East and Northern Africa (MENA), the proportion of the population over the age of 65 is predicted to be 4.7 % (of a total population of 336 million) the percentage ranges from less than 2% in the United Arab Emirates (UAE) to 10% in Lebanon (Hajjar et al., 2013). In Iraq, the elderly population (65 years and above) represented about 3.1% of the total population which reached in the latest statistics to (40 million) in 2020 (Central Statistical Organization [CSO], 2020).

One of the most common problems in the elderly is involuntary weight loss. Weight loss can be caused by a variety of factors are malignancy (19-36%) or nonmalignant such as gastrointestinal disease (9-19%) and psychiatric conditions such depression and dementia (9-24%). Used of the drugs and poly pharmacy can interaction with taste and cause nausea. Social factors other causes that may lead to unexpected loss of body weight while the frequency of unknown causes is about (6-28%). Non-malignant diseases are more common in

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weight loss in general than malignant tumors. Weight loss can lead to weakness, falls and bone disorder (Adeleke et al., 2017; Gaddey& Holder, 2014).

Objectives of the Study

This study is endeavored to predict anorexia-related weight loss among residents of governmental geriatric-care homes and to find out the statisticalrelationship between the predicted weight-loss outcome and socio-demographic-clinical characteristics of the targeted population.

Method of the study

A descriptive cross-sectional design has been carried out. The period of the study started from(1 October 2020 to 27June 2021).A non- probability (purposive) sample was selected to obtain representative and accurate data. From (136) elderly living in geriatric care homes in Iraq middle Euphrates governorates.

Study instrument

The study instrument includes the participants' socio-demographic and clinical characteristics sheet and the Council of Nutrition Appetite Questionnaire (CNAQ) Scale. Detailed presentation of both sections is as follow:

PartI: Socio-demographic and clinical Data

The participants' socio-demographic and clinical characteristics included gender, age, marital status, educational level, economic status (monthly income in Iraqi Dinar), family visit record an individual's visit to his/her family record, Body Mass Index (BMI) Scale, Having dentures, Doing exercises, exercises duration, smoke tobacco history,

Part I I: The Council of Nutrition Appetite Questionnaire (CNAQ) Scale

The original version of the CNAQ was developed by Wilson et al, (2005). The CNAQ was used on an international level to assess appetite in elderly individuals in the community as well as geriatric care homes residents. It consists of eight items used to clinically predict significant weight loss.A 5-point scale ranging from 1 to 5 was used in theaforementioned tool. The total score range from 8 to 40. Scores between 29 and 40 indicate good appetite; those between 8 and 28 indicate poor appetite.The scores are divided as follows:

8-16 the participant is at risk for anorexia and needs nutrition counseling.

17-28 the participant needs frequent reassessment for the nutritional status.

>28 the participant is not at risk of the anorexia at this time.

Results

Table (1): Frequencies and percentages of socio-demographic characteristics

Variable	Categories	f	%
Gender	Male	65	**65.0**
	Female	35	35.0
Age	65 - 74 Years old (Young Old)	65	**65.0**
	75 - 84 Years old (Old)	29	29.0
	85 and older (Oldest- old)	6	6.0
Marital status	Single	19	19.0
	Married	31	**31.0**
	Divorce	27	27.0
	Widow	23	23.0
Educational level	Doesn't Read and Write	23	23.0
	Read and Write	29	**29.0**
	Primary Education	14	14.0
	Intermediate Education	18	18.0
	High School Education	7	7.0
	Higher Education	9	9.0
Monthly income	Enough	14	14.0
	Enough to some extent	21	21.0
	Not Enough	65	**65.0**
	Total	100	100.0

F=Frequencies, %= Percentages

In table (1), the underlined numbers, represent the highest percentages of the selected variables. In which, more than half (65.0 %) of the study sample were males. Almost three quarters (65.0%) of the study sample were classified as (young old) within age range of (65 – 74) years. Furthermore, more than quarters (31.0 %) of the study sample were married. (29.0%) of the study sample were able to read and write. Of equal importance, (65.0%) of the study sample reported that their monthly income is (not enough).

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 04, 2021

Table (2).Frequencies and percentages of the clinical and other related characteristics

Variable	Categories	f	%
Does your family visit you in nursing homes	Yes	32	32.0
	No	68	**68.0**
Are you visiting your family	Yes	42	42.0
	No	58	**58.0**
Body Mass Index (BMI)	Underweight (<18.5)	4	4.0
	Normal weight (18.5- 25)	59	**59.0**
	Overweight (25 - 30)	21	21.0
	Obesity (> 30)	16	16.0
Having dentures or not	Normal teeth	22	22.0
	Artificial Teeth	78	**78.0**
Doing walking exercises	Yes	43	43.0
	No	57	**57.0**
Duration of exercise/Week	No exercise	57	57.0
	1 – 2 Hours	7	7.0
	3 hours	2	2.0
	4 Hours	13	**13.0**
	5 Hours	6	6.0
	6 Hours	7	7.0
	7 Hours	8	8.0
smoke history(tobacco,electronic or hookah cigarettes)	Yes	34	34.0
	No	66	**66.0**
Years of smoking	1 - 10 Years	4	4.0
	11 - 20 Years	3	3.0
	21 - 30 Years	3	3.0
	31 - 40 Years	11	**11.0**
	41 - 50 Years	9	9.0
	51 - 60 Years	2	2.0
	61 - 70 Years	2	2.0
No. of Cigarettes	1 - 10 cigarettes	6	6.0
	11 - 20 Cigarettes	17	**17.0**
	21 - 30 Cigarettes	11	11.0
	Total	100	100.0

F=Frequencies, %= Percentages

The underlined numbers in table 4.2, represent the highest percentages of the selected variables. In which, about three quarters of the study sample (68%) were those whose families do not visit in geriatric care homes and more than half (58%) of the study sample do not visit their families. Of equal importance, (59.0%) of the study sample have normal Body Mass Index (BMI) (18.5- 25). Furthermore, most of the study sample (78.0%), were using artificial teeth. (13.0%) of the study sample reported walking (4 hours/week), as their selected type of physical exercise. Almost three quarters of the study sample (66.0%) reported no smoking history. For those who smoke, 11.0% of the study sample were chronic smokers, who smoke11- 20 cigarettes/day for about 40 years.

Table (3). The risk of the anorexia of aging among the total study sample

Characteristics	f	%

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 04, 2021

Risk for anorexia and needs nutrition counseling(8-16)	33	33.0
Needs frequent reassessment for the nutritional status(17-28)	24	24.0
Not at risk of the anorexia at this time(>28)	43	43.0
Total	100	100.0

F=Frequencies, %= Percentages

The numbers in table 4.3, represent the risklevel of the aging-related anorexia. About 33.0% of study sample were classified as having a risk for anorexia and needs nutrition counseling, while lowest percentage (24.0%) of study participants were classified as needing frequent reassessment for the nutritional status.

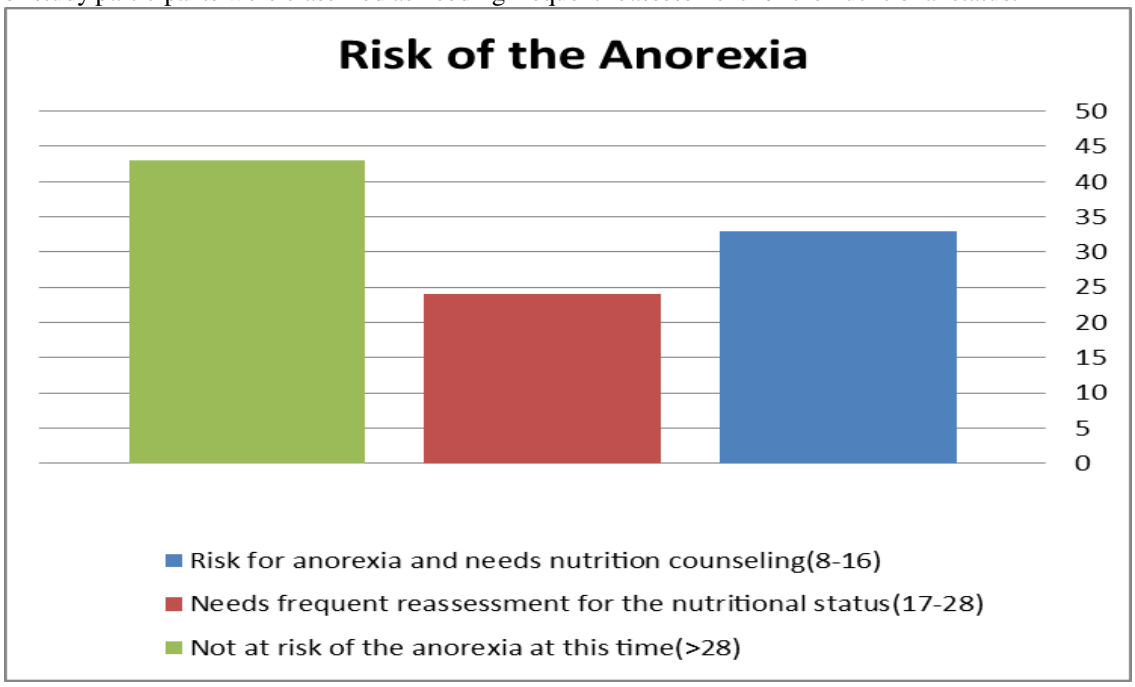

Figure (1): illustrates the risk for anorexia of aging

Table (4).Association between risk of anorexia of aging and socio-demographic, clinical and other related characteristics

	Risk for Anorexia			**Pearson Chi-Square**		
Gender	Risk for anorexia and needs nutrition counseling	Needs frequent reassessment for the nutritional status	Not at risk of the anorexia at this time.	Value	df	Asp. Sig. (2-sided)
Male	22	14	29	.622[a]	2	.733
Female	11	10	14			
Total	33	24	43		100	
Age				**Fisher's**	**Exact**	**Test**
65 - 74 Years	15	14	36	14.333	4	.003
75 - 84 Years	14	8	7			
≥85 Years	4	2	0			
Total	33	24	43		100	
Marital status				**Pearson**	**Chi-**	**Square**
Single	9	5	5			
Married	5	7	19			

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 04, 2021

Divorce	9	5	13	10.770[a]	6	.096
Widow	10	7	6			
Total	33	24	43		100	
Body Mass Index (BMI) Scale				**Fisher's**	**Exact**	**Test**
Underweight (<18.5)	3	0	1	12.676	6	.030
Normal weight (18.5 - 25)	22	18	19			
Overweight (25 - 30)	5	5	11			
Obesity (> 30)	3	1	12			
Total	33	24	43		100	

DF= degree of freedom, Sig= Significant

In the table (4)Pearson Chi-Square, shows no statistically significant association between subject's gender and risk for anorexia (Value= .622a, df =2, Asp. Sig. (2-sided) =.733),Fisher's Exact Testshows there a statistically a significant association between subject's age (value = 14.333, df =4, Asp.Sig (2-Sided) =.003) and risk for anorexia, the results shows no statistically significant association between subject's marital status (value =10.770[a], df =6, Asp.Sig (2-Sided) =.096) and risk for anorexia andFisher's Exact Testshows a statistically significant association between Body Mass Index (BMI) (value =12.676, df =6, Asp.Sig(2-Sided) =.030) and risk for anorexia.

Discussion

Table (1) represents the socio-demographic characteristics of respondents.More than half of the study samples were malesthis result was expected due to the cultural norms of the Iraqi society which severely judge families that let their female-gender relatives to be institutionalized in the governmental homes. This finding was similarJanabi& Al-Naqeeb, (2012) that conducted in Iraqthat indicates the majority of elderly (66%) were men, while the lower proportion (34%) were women**.** This finding not agreement with study conducted in Korea by Kim et al., (2017) to determine the Factors Influencing Anorexia in Elderly Patients in South Korea that found Men constituted 24.9% of the study population and women 75.1%.

The study results showed that the mean age of the study sample was72 year's old. Such finding should not be overlooked considering the fact that such age group is vulnerable to different age-related health problems. Elderly people who suffer from chronic diseases and different age-related health problems their nutritional status is greatly affected compared to healthy people. Diseases and various drugs can lower food intake and negatively impair diet quality by causing changes in food taste, lack of appetite, decreased olfactory function, and changed nutrient metabolism in the body(Jyväkorpi, 2016).Stroke, dementia, depression, cancer, arthritis, osteoporosis, microscopic colitis, visual impairment(Pisani et al., 2016).in addition the congestive heart failure or high blood pressure and coronary artery disease and diabetes all have an effect on nutrition (Bellizzi et al., 2016).Of equal importance,three quarters (65%) of the study sample were classified as (young old) within age range of (65 – 74) years. This results was expected because the geriatric care homes accept the elderly individuals whose age is 60 years or older according to the Ministry of Labour and Social Affairs of Iraq. This finding supported by Farhood, *(*2017) **;** Al-Kazrajyet al.,(2020) in Iraq that conducted to assess the nutritional status of the elderly. Whichfound that (65.4%) and (76.3%) of participants at age group (60-69) years. with Mean Age = (67.56 + 74).in another study in Korea by Kim et al., (2017) that found mean age was 75 years old.

More than a quarter of the study samples reported that they were married. This finding was similar to Norazman et al., (2020) that found the most of the study sample were married that conducted inMalaysian. The studyresults shows that (29.0%) of the study sample were able read and write. Most of the study sample reported that their monthly incomes were not enough. These results were also expected because increased poverty level in Iraq. According to Ministry of Planning (2020) that indicates the poverty rate in Iraq has increased to 31.7% in 2020, compared with 20% that record in 2018.

Table (2) representsthe clinical and other related characteristics that show. The results of the study manifested that more than half of the study sample were not visitation their families' home nor their family members visiting them in geriatric homes. This result was not expected and surprising due to the strength of the family relationship and social links between people in these regions(Walid, 2017). The largest proportion of study participants regarding BMI was of normal weight (18.5- 25). This finding was expected due to weight and height from the factors that determine the nutritional status of the elderly. Therefore, weight tends to decrease in

ISSN: 0975-3583, 0976-2833 VOL 12, ISSUE 04, 2021

the elderly, usually due to age and decreased muscle mass. This finding consisted with study conducted by David RoyyifiArifin et al., (2019) in Indonesia.

Most of the study samples (78.0%) were using artificial teeth. This result was not expected due to the fact that such governmental home should be closely monitored by the ministry of health by providing the basic health care services. This finding were supported by Janabi& Al-Naqeeb, (2012) that conducted in Iraq to assessment of health problems for the elderly at the geriatric care homes that found (56.7%) of the elderly suffer from loss of teeth and the use of denture (56.7%) and (43.3%) suffer from gingivitis.

More than half of the study sample reported that they do not exercise. These result was expected because the physical and psychosocial status of the elderly. In the study conducted in Iraq by Al-Amarei, (2015) that found more than half of the elderly residents in geriatric care homes suffer from depression. And another study in Iran by Nazemi et al., (2013) that indicate (50.0%) of the elderly living in nursing homes suffer from moderate depression.This can also be explained by progress of the age as well as due to the COVID-19 outbreak andCurfew. However, (13.0%) of the study sample reported walking (4 hours/week) as their selected type of physical exercise. This small percentage is encouraging considering the fact that despite all the obstacles, there are some old-age persons who were committed to maintain their health.

Almost three quarters of the study sample (66.0%) reported no smoking history and (34.0%) indicated that they have smoking history. These results were expected because the prevalence of smoking among the Iraqi people is estimated to be about (40%) for the total population (Al-Ani et al., 2020). For those who smoke, 11.0% of the study sample were chronic smokers, who smoke11- 20 cigarettes/day for about 40 years. These result supported by (David RoyyifiArifin et al., 2019) that found that (60.4%) of their study sample were smoker and (17%) were smoking (11-20) cigarettes per day.in another study in Korea conducted by Kim et al.,(2017) that found (24.0%) of the study samples have smoking history. The causes for the prevalence of smoking in Iraq include people' behavior and the social and cultural environment that promote smoking. The most likely cause is psychological and connected with post-war conflicts during the previous three decades (Ibrahim et al., 2018).

In table (3), about 33.0% of study sample were classified as having a risk for anorexia and needs nutrition counseling. This findings were supported by Tokudome et al., (2017) that found (29.3%) of their study sample were at risk for anorexia of aging. While lowest percentage (24.0%) of study participants were classified as needing frequent reassessment for the nutritional status. In other study, which was conducted by Donini et al., (2013), the prevalence of anorexia was 27.2% in nursing homes. In another study, which was conducted by Tsutsumimoto et al., (2018) the prevalence of the anorexia of aging t was (10.7 %).These results can be explained by the fact that the anorexia of aging remains hidden if it were not detected using this scale, and therefore it is an early warning tool for us to protect this important and neglected segment of society.

Table 4, represents the association risk of anorexia of aging and socio-demographic, clinical and other related characteristics. The results show no statistically significant association between subject's gender and risk for anorexia. These results supported by Geurden et al.,(2015) that indicated no statistical association between gender and the risk for anorexia of aging. This result can be explained by that the elderly male and female live in the same environment and the factors associated with it, which makes them similar in terms of exposure to the same factors that affect their health status.

There were a statistically significant association between age and risk for anorexia of aging. These findings were consistence with a studies conducted by Tsutsumimoto et al., (2018); Agarwalla et al., (2015)that found a statistically association between anorexia of aging and the age group. In the study that conducted in Korea by Kim et at.,(2017) to determine factors affecting anorexia in the elderly population that found the population is growing older and becoming less healthy that lead to increase the risk for anorexia of aging.

The results also show no statistically significant association between marital status and risk for anorexia of aging. These findings were consistence with a study conducted by Streicher et al., (2018) that found no association between marital status and the risk for malnutrition. These results were not in an agreement with a study conducted by Tsutsumimoto et al., (2018) that indicated a statistically association between the marital status and anorexia of aging.There were statistically significant association between BMI and anorexia of aging. These findings were supported by Tsutsumimoto et al., (2018) that found a statistical association between BMI and anorexia of aging. In another study conducted in Iran by Tartibian et al., (2019) that foundsthere was a significant positive correlation between The Mini Nutritional Assessment MNA score and BMI. Also these finding consistence with study by Norazman et al., (2020) that indicates the elderly who are at risk of malnutrition have lower body weight and BMI.

Conclusions

This study was the first study that were designed to predict the anorexia of aging related weight loss among older people who were living in the governmental geriatric care homes in Iraq by using the CNAQ. More than half of the study sample were at risk of the anorexia and unintentional weight loss and it is expected to lose at least (5 %) of their total body weight during the upcoming 6 months, if no nutritional counseling and interventions are executed.

Recommendation

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Both an urgent and tailored nutritional intervention is required to manage the aforementioned vulnerability of the elderly individuals living in governmental geriatric care homes. Of equal importance, using the CNAQ as a valid and reliable tool by community nurses is essential to provide the maximum level of nutritional screening and counseling to the target population.

There are no adequate scientific studies in Iraq to assess the anorexia of aging among the resident governmental geriatric care homes. Therefore, there is a need across Iraqi cities to perform similar studies at a larger sample size and sufficient period of time.

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