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Study on mini nutritional assessment of pre and post nutritional counseling of the elderly with non-communicable disease/conditions residing in old age homes of Mysore city

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Abstract
Elderly with non-communicable diseases (NCD) in Old Age Homes (OAHs) are having poor health conditions due to their reduced ability to self-manage and sub optimal facilities with regard to health status. Keeping this in view, the study was conducted through Mini Nutritional Assessment (MNA) of the elderly with non-communicable diseases condition residing OAHs of Mysuru, Karnataka, India. Among 122 residents of OAH, 92 (male n=42 and female n=50) of age 60-89 years were identified with non-communicable diseases viz, Diabetes Mellitus (DM), Hypertension (HTN), Arthritis, Coronary heart disease (CHD), Gastritis were included in the study. These 92 subjects nutritional status was assessed applying MNA and also clinical signs & symptoms and physical activity was noted. Based on the scores of MNA, 20% of the malnutrition and 77% were at the risk of malnutrition. 25-50 % of the elderly were having joint pains, blurred vision, weakness and oedema. The physical activity of the elderly was brisk walking, however time duration was only for 15 minutes. From the current study the major observation was lack of knowledge in the management of chronic disease condition, poor physical activity. It is strongly suggested modification in the lifestyle towards dietary management, physical activity and there is a need of nutrition education and health check-up for the elderly.

Keywords: elderly, non-communicable disease (NCD), screening, assessment

Introduction

According to India Ageing Report 2017, by the UNFPA, the share of population over the age of 60 could increase from 8 per cent in 2015 to 19 per cent in 2050 (S. Irudaya Rajan P *et al*., 2003) [1]. Now-a-days, the role of families in case of older person has declined due to structural changes which have taken place in the Indian society and the concomitant disintegration of the joint family system, which has resulted in the rejection or neglect of the aged (Dubey A *et al*., 2011) [2]. Old age is always viewed as physically inactive condition where the person is always under a risk of developing disease condition. Advancing age is accompanied by progressive increase in chronic conditions such as HTN, CVD, Osteoporosis, Diabetes and Dementia. They are susceptible to certain food borne illness, health complications caused by those illnesses but also likely to experience significant changes in dietary needs. Nutrition has emerged as a major modifiable determinant of chronic disease and age related decline. Health and well-being are determined not only by our genes and personal characteristics but also by the physical and social environments (Shlisky J *et al*., 2017) [3].

In India aged population is currently the second largest in the World. Many traditional societies' today faces a unique situation in providing care for its elderly because of fast erosion of old age support structures. In India, the population of old citizens is increasing in trend. In 1901, it was 12.1 million, but in 2011 it was 103.2 million (MJ Denham and Dr Marjory Wareen 2011). Before the 1930s chronic condition, elderly patients were often medically neglected: they were not properly examined but received benign guardianship and expected a bed for life. The first doctor who was interested in geriatric medicine showed that many such elderly patients, which considered unbeatable, could be treated and remobilised. These doctors had to contend with considerable ignorance not only the problem of the treatment not being met, but also most people do not realise there is a problem (Komal C *et al*., 2014).

In Indian society, the tradition of joint family is disappearing slowly, which was based on the love and affection. It has also transformed the life of family. People have started believing more in nuclear family. Now-a-days parents have started moving into OAH's to find solace, because they are hesitant to live with their children (Lalan Y *et al*., 2014) [6]. Therefore, OAH's become necessity in the present day scenario as the younger generation is having problems in coping up with special needs of the elderly and require resources for special

care. Though there is increase in the number of OAH's, one is not sure of the situation under which elderly live (Muhammad Shoaib *et al*., 2011; Sharma K.L *et al*., 2007) [7, 8].

Prevention programs to reduce chronic disease risks have traditionally focused on children and younger adults. However, many researchers have started to focus their interest and attention on older adults. This change in outlook has come about due to demographic changes; people are now living longer, and consequently the older population is increasing rapidly and medical expenditure is rising with the onset of several major chronic diseases (Sahyoun NR *et al*., 2004) [9].

As the population of older adults continues to increase, there is even more urgency to establish nutrition assessment standards to evaluate the nutritional status of this vulnerable population. There is a high prevalence of under-nutrition among seniors and the cases of insufficient energy or micro and macronutrients are alarming. Unfortunately, this nutritional state is often mis-diagnosed because of inappropriate assessment. The nutrition diagnosis needs to be accurate in order to provide effective intervention.

The nutrition assessment of older people is sometimes challenging because older adults are often dealing with chronic medical conditions that require multiple pharmaceuticals for therapy. Therefore, drug-nutrient interactions are a prime concern among this population group (Wunderlich S 2013) [10].

Movement and nutrition may therefore be able to assist in the prevention and therapy of chronic diseases. Regular physical activity and better dietary choices are effective means of extending not only lifespan but also health span. Healthy nutrition is important throughout life, and diet is the most important risk factor of illness worldwide (Lange KW 2017; G. Bhushanam *et al.*, 2013; Ushvinder 2010) [11, 13]

Nutritional needs of the individual change as they age. Due to environmental changes physiological, social, and economic, they have to munch on healthy food, and these changes may affect their nutritional intake. Nutrients need and recommended dietary allowances looks forward at selection of nutrients and food components and outlines background information, recommended levels of intake, and current levels of intake and food and drink sources (Adlakha M 2018) [14].

The metabolic syndrome (Met. S) is related to diet and lifestyle. It is a clustering of chronic disease risk factors, including abdominal obesity, dyslipidemia, elevated blood pressure and elevated fasting glucose. Individuals with Met.S are at high risk of developing type2 DM, CVD and have greater mortality rates than those without the syndrome. Reducing the risk of premature chronic disease in some older adults may be helped by the promulgation of accurate information through education programs and individual counselling, translating nutritional guidelines into manageable food use (Magdalena Krondl *et al*., 2008) [15].

Nutrition education is an essential component in improving dietary habits and food choices, in order to reverse the under nutrition and improve the nutritional diagnosis. Poor dietary habits and lack of physical activity can be the main reason for poor nutritional status among older adults. The positive impact of nutrition education on the nutritional status of older adults has been confirmed by many studies (Joy EJ *et al*., 2017) [16].

Materials and Methods

The study was conducted in six OAH of in and around Mysore City, Karnataka, India. This study was designed as simple random sampling technique Community based study. The plan of research work was approved by the Institutional Ethical Committee, JSS Medical College, JSS Academy of Higher Education & Research, Mysuru Karnataka. Permission from the management of all the OAH was taken. Prior to the implementation of the study assigned consent was taken. Data have been collected randomly on those interested and willing to participate. A total of 122 elderly residing in OAHs were willing to participate in the study. Ninety two of them were included as per inclusion/exclusion criteria and further the 92 subjects were screened as the study sample. Inclusion Criteria were elderly aged 60 years and above residing in OAH and able to communicate, understand and comprehend to reply the questionnaires and also elderly with selective NCDs/condition (Diabetes, Hypertension, Coronary Artery Diseases); Exclusion criteria were elderly who had any physical problems interrupt with interview (e.g. problem in Speech, Hearing, and Vision), Completely bed ridden and refusal to cooperate due to any reason. After initial rapport building and seeking written informed consent, the socio-demographic details were obtained on a pre-tested semi-structured Proforma.

General information on socio demographic factors

In the study age of the elderly was listed from their personal medical records and some were asked personally. Marital status, education qualification was documented from the elderly. There socio economic status for their maintenance resources in the OAH were noted and it shows that there financial was managed from the house rent, husband pension for widower and amount send by their children. Reason for residing in OAH were recorded some were no children, children were in abroad, children do not want to keep with them and some reason were the elderly didn't want to burden the children.

Mini Nutritional Assessment (MNA)

There are few tools which are used for the geriatric subjects such as; Malnutrition Universal Screening Tool (MUST), Geriatric Nutritional Risk Index (GNRI), Malnutrition Screening Tool (MST) and Nutritional Risk Screening 2002 (NRS 2002) they are only used for Nutritional Screening for the geriatric population whereas, Subjective Global Assessment (SGA) is the tools used only for Nutritional Assessment. In the current study Mini Nutritional Assessment (Guigoz, 1996) was used because it is the only tools where both the Nutritional

Screening and Assessment can be assessed for the elderly population. The aim of MNA is to identify elderly subjects in category of malnourished or at risk of malnutrition. It also establishes a nutritional diagnosis and also formulates a plan for nutrition therapy by evaluating the effects of interventions. In nutritional screening it predicts probability of outcomes related to nutritional factors and evaluates effect of nutrition therapy whereas, in nutritional assessment elderly can identified as malnourished or at risk of malnutrition by a nutrition screen where it should have a complete nutritional assessment. It is performed by a nutrition expert. Nutritional Assessment is necessary for planning nutrition intervention. It involves a thorough evaluation of factors that affect nutrition status such as reasons for reduced food intake, any disease related factors, side effects of treatment, oral problems, meal-time challenges and cultural, social and ethnic barriers to food intake such as issues with access and affordability.

Clinical signs and symptoms

The clinical signs and symptoms are abnormalities that can indicate a potential medical condition therefore, related to the disease conditions were recorded. And the most common symptoms were found to be joint pain, as many of the subjects were having arthritis, vision problems which may be due to diabetes, oedema may be due to HTN, the rest of the signs and symptoms such as skin problems, constipation, dry mouth, dizziness, fatigue and constipation were also found on the elderly.

Disease history of the elderly

The disease history i.e. the non- communicable disease condition in elderly of both the gender it can be observed that the subjects were suffering from Diabetes, HTN, Gastritis, CHD and Arthritis problems.

Physical activity performed by the elderly

Among physical activity as it is mentioned that the subjects were doing bricks walking however the time duration was of 15mins. Yoga and other physical activity were not performed by the elderly.

Results

From the six OAHs a total of 122 elderly residents were included in the study among that 92 elderly were detected from Non-Communicable Diseases (NCDs)/condition. Out of which 42 were male and 50 were female. The age range starts with 60 years and above. Medical records review of the elderly was available from that the Doctor prescriptions and investigation reports of individuals within a year were recorded to get information on diagnosis and prescribed treatment. According to socio-demographic profile of elderly was male and female gender, aged category starts from 60-89 years. The religion was recorded under four main religions i.e. Hindu, Muslim and Christian. Data revealed that majority of the study population were Hindu (100%). The majority of the study population was predominantly vegetarian (100 %) However non-vegetarian foods were not served weekly or occasionally. Elderly around 20% were non-vegetarian prior residing in OAH and post residing every elderly became completely vegetarian due to the rules and system by the trustee. The other habits i.e., cigarette smoking and alcohol consumption are risk factors for all health related problems. Data revealed that the study subjects were not in any habits of smoking or consuming alcohol. Hence, not allowed in OAH therefore, elderly were none using any harmful related habits for their health.

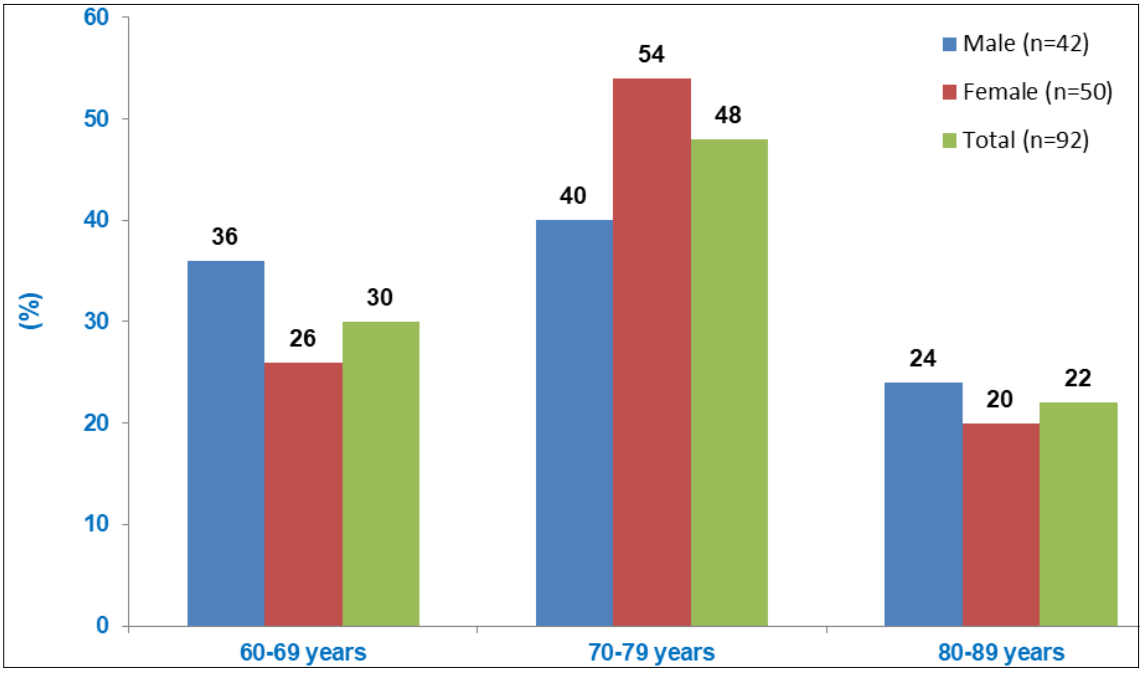

Fig 1: Age wise distribution of the elderly residents of OAHs

Figure 1 shows the distribution percentage of elderly subjects according to male and female in the three sub groups of age in 60-69 years, 70-79 years and 80-89 years. Majority (48%) of the subjects for both the gender were in the age group 70-79 years. While remaining between (40%) of the subjects were fallen in the age groups of 60-69 years. On comparing the two gender groups it was revealed that in the percentage population of females aged 70-79 years (54%) was more compared to males (40%) and conversely the percentage of the study population in age groups 60-69 years (36%) and 80-89 years (24%) was greater in males as from females.

Table 1: Distribution of elderly based on their changes of pre and post nutritional counseling Mini Nutritional Assessment classification

MNA scored	Male MNA Pre to the counseling	Male MNA Post counseling	Female MNA Pre to the counseling	Female MNA Post counseling
Malnourished	n=6 (14) 16.6 ± 0.2	n=1 (2)	n=13 (26) 16.7 ± 0.2	n=7 (14) 16.5 ± 0.3
Risk of Malnutrition	n=35 (83) 20.5 ± 1.6	n= 15 (36) 21.5 ± 1.4	n=36 (72) 19.9 ± 1.7	N=20 (40) 21.15 ± 1.3
Well-nourished	n=1 (2.3)	n=26 (62) 24.6 ± 0.6	n=1 (2)	n=23 (46) 24.6 ± 0.7

*Values in parenthesis are percentages

The nutritional status was assessed according to the Mini Nutritional Assessment consists of 18 point-weighted questions, divided into four categories. The first part consists of four anthropometric measurements. There then followed six 'global' questions including number of pharmaceuticals taken, ability to move, occurrence of acute somatic or psychological stress during the past 3 months and presence of pressure or skin sores. The third part of the MNA consists of six questions to assess dietary intake, e.g. how many whole meals eaten per day. To help in the assessments, a template was used describing how the three main meals (breakfast, lunch and dinner) should be composed. To assess whether a portion size was sufficient, cups and ladle with different portion sizes were shown. The template, in combination with the two largest portion pictures, constituted a reference for a 'whole' meal. Fluid intake was calculated by the number of glasses (150 mL) that the elderly drank per day. The requirement for help during eating was assessed. The elderly were evaluated whether they had reduced food intake due to reduced appetite, chewing and swallowing difficulties or digestion problems. The final part of the scale consists of two self- assessments of whether food intake sufficient and of own health status. The answers can give a maximum of 30 points. Less than 17 points is regarded as indicating malnutrition, 17–23.5 points indicates a risk for malnutrition and >24 points indicates that the person is well nourished.

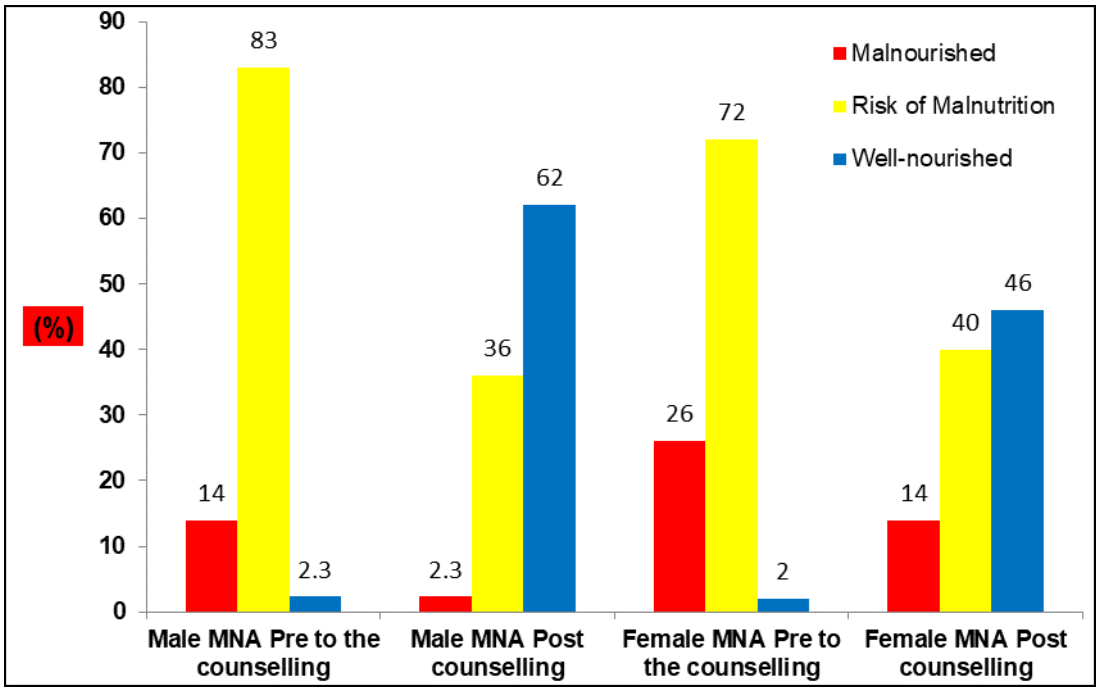

Fig 2: Distribution of elderly based on their changes of pre and post nutritional counseling Mini Nutritional Assessment classification

From the Mini Nutritional Assessment of post and pre to the nutritional counseling the changes we can find out that pre to the counseling elderly subjects risk of malnutrition category of male where the highest in percentage of (83%) of which mean SD (20.5 ± 1.6) and elderly malnourished male (14%) of which mean SD (16.6 ± 0.2) and well-nourished (2.3%) whereas from the post counseling male well-nourished were the highest category

(62%) of which mean SD (24.6 ± 0.6). The female pre to the counseling risk of malnutrition were the highest in percentage (72%) mean SD (19.9 ± 1.7) and post counseling well-nourished (46%) mean SD (24.6 ± 0.7). From the above table and graph it indicates that elderly in pre to the counseling and post counseling have improvement changes in the value of post nutritional counseling this shows that elderly were following the guidelines and counseling is helping them to change their lifestyle and prevent from health condition.

Disease condition of the elderly residing in OAH with reference to NCD

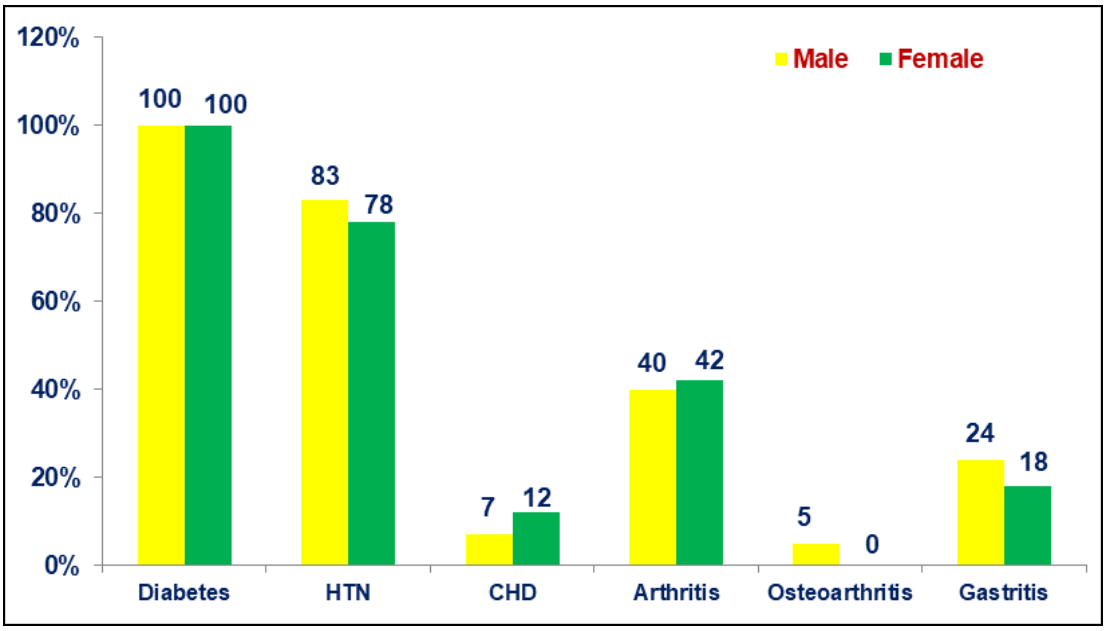

Fig 3: Disease history of the elderly residents residing in OAHs

Figure 3 shows the disease history for male and female elderly residing in Old Age Homes of Mysore City where we can find 100% subjects suffered from Diabetes. Whereas, in male (83%) of fallen under in blood pressure is more compared to female (88%) value. In elderly subjects Arthritis was (40-42%) and it's similar in both the gender and elderly having osteoarthritis in female were none and (5%) were in male elderly. Such as, gastritis was more in male elderly as compared to female subjects.

Clinical signs and symptoms of the elderly residing in OAH

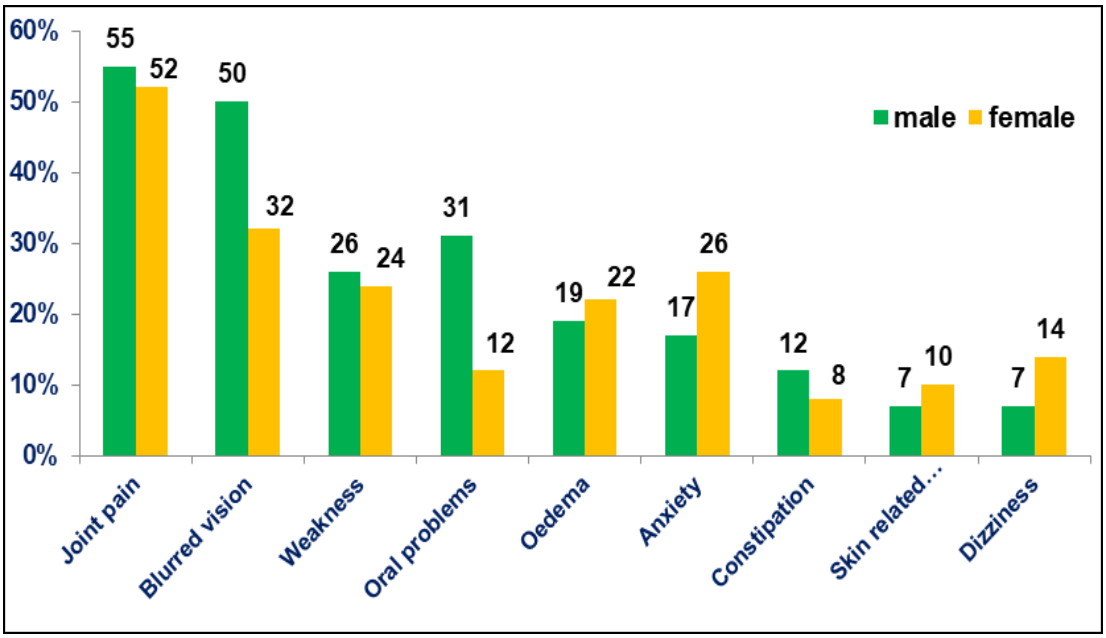

Fig 4: Clinical signs & symptoms of elderly residents in OAH

Figure 4 shows the elderly faces in their daily life. According to the results recorded from the elderly subjects high number of percentage in male (55%) and female (52%) problems of joint pain can be seen. The most

common symptoms were found to be joint pain, as the subjects were also having arthritis. Around 40% were vision problems which may be due to Diabetes, Oedema may be due to HTN, the rest of the symptoms such as skin problems, constipation, dry mouth, dizziness and constipation were found on the 10-20% elderly.

Physical activity of the elderly residing in OAH

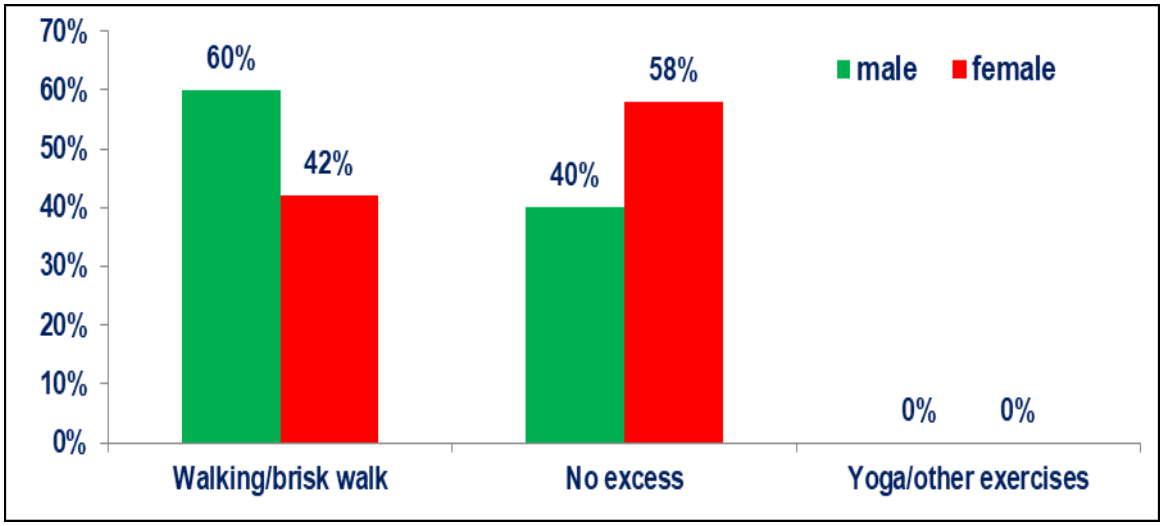

Fig 5: Physical activity of the elderly residing in OAH

Figure 5 shows there are no yoga and other activities performed by the elderly or organized by the management of the OAH. Among physical activity performance as it is mentioned the elderly subjects were performing bricks walking however the time duration of 15mins. Yoga and other physical activity were not performed by the elderly. No such facility was provided by the management. The low physical activity may be due to the reason of oedema or joint pain. The study survey revealed that in case of females (42%) and males (60%) subjects respectively were performing their physical activity. However, the remaining elderly were not access in any physical performance.

Discussion

The present study was conducted on 92 elderly subjects residing in OAH of Mysore City. The study involved the MNA, disease history, clinical signs & symptoms and physical activity of the elderly. In the OAH, 95% of the elderly are staying without life partner and frequency of children visiting is rare. From the MNA indicates that elderly in pre and post nutritional counseling have improvement changes in the value of post nutritional counseling this shows that elderly were following the guidelines and counseling is effective and helping them to change their lifestyle and prevent from health condition. Although elderly were access on walking regularly, they were having problems of joint pains, arthritis and some of them were lethargic. The activity performed by the elderly was only brisk walking for the short duration of 15 minutes this might be one of the reasons not to see any changes to their activeness. The major findings of the study reveal that the elderly residing in OAH are in need of the regular medical check-up with guidance and education in management of the chronic disease condition. Monitoring their physiological condition periodically is also recommended. The results of the current studies indicate there is need for a special care in the elderly related to their environmental surrounding, health profile and their nutrition. Menu or special food should have to be served according to the health conditions and plan accordingly to their health profile.

Conclusion

Major observation in the study was elderly were not aware of the maintenance of proper nutritional care and importance of physical activity. However, it is not possible to give separate individual diet pattern in OAHs. Some major dietary modification in their menu pattern and educating the elderly related to dietary intake had given regarding their physiological condition. The OAH management should provide proper menu and well-nourished food according to their health. Minimum counseling should be specified to elderly about preferring their food. Further studies more focus on developing awareness by giving nutritional education, health management are recommended for all the elderly residing in all over the world.

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