ASSESSMENT OF DIETARY INTAKE OF HEART FAILURE PATIENT

Abstract

The female placed her eggs in whorls as well as in masses (150–200 eggs per mass) on the underside or the top portion of a maize leaf and on the lid of a glass jar. When the egg mass wasn't coated with scales, it had a layer of scales on it. Under laboratory conditions, the incubation, larval, pre-pupal, and pupal periods were 2 to 3, 13.5 to 23, 2 to 3, and 5 to 8 days, respectively. The duration of the first, second, third, fourth, fifth, and sixth instars was, respectively, 2 to 3, 2 to 3, 2 to 3, 3 to 4, and 3 to 5 days. The larva of the last instar was dark brown with a reddish-brown head that was marked with an inverted 'Y' shape and an elevated, conspicuous dark spot. The forewing of male adult was light brown, grey and straw. Markings on the male were more pronounced than the female with males having a grey colour and a light diagonal marking on the forewing. While female forewing was uniform greyish brown to a fine mottling of grey and brown. The life cycle of male and female were 28 to 41 days and 30 to 45 days, respectively.

Keywords: Maize, Fall Armyworm, Spodoptera Frugiperda

Authors

Chetan Kumar
PhD Scholar
Lalit Narayan Mithila University
Darbhanga, Consultant Dietician, Patna.
chetan.yj24@gmil.com

Dr. Pragati
Assistant professor
University Department of Home Science
Lalit Narayan Mithila University
Darbhanga, Bihar.
pragatisarathipatna@gmail.com

I. INTRODUCTION

Worldwide, an estimated 64.3 million people have HF.[1] Heart failure is becoming a serious health issue in low and middle income nations like India.[2] Estimates of the prevalence of HF in India range from 1.3 million to 4.6 million, with an annual incidence of 4916 000 to 1.8 million. The future burden of HF in India will continue to be significantly influenced by the population, epidemiology, and health change.[3]In the prevention and risk reduction of heart failure, diet is a major modifiable risk factor. Over the past century, there has been advancement in our knowledge of how nutrition plays a role. Major changes have occurred in nutrition studies more recently to better understand the function of foods and diets.[4]

To effectively manage heart failure, one must keep an eye out for changes in nutritional status as well as changes in signs and symptoms. Everyone, whether they are ill or well, engages in some amount of daily self-care, but if a person is identified as having a complicated chronic illness like heart failure, the importance of self-care and the benefit of specialized assistance become more apparent. [5]Strong evidence was presented by a study that suggests the risk of heart disease may be decreased by eating a diet rich in fruits, vegetables, legumes, whole grains, fish, and chicken while limiting red meat, high-fat dairy products, and refined grains. Dietary changes seemed to be more successful in preventing symptoms from getting worse. Because general dietary patterns may be simple for the public to translate into diets, dietary pattern analysis may be helpful in establishing dietary recommendations.[6]

According to the American College of Cardiology/American Heart Association's (ACC/AHA) Joint Guidelines, patients should limit their salt consumption. These recommendations support following dietary recommendations for diabetes, hypertension, and hypercholesterolemia common underlying and concomitant diseases in HF.[7-11]Many of recent studies have found evidence that some nutrients have an impact on the advancement of heart failure and related outcomes when consumed in accordance with the DASH diet.[12-14]

II. METHODOLOGY

Through purposive sampling of 100 respondents who were willing to be part of the study were recruited from heart cure clinic (kankarbagh) some patients from HDNA (danapur) and some patient from the (Daksh) heart care clinic Patna Bihar. After taking informed consent throw a well design questionnaire demographic profile were collected from 100 heart failure patients.

This study was set as a descriptive study, age between 30-80 years who reported ever being diagnosed having heart failure by health care provider. Patient who had been history of diabetes, CKD, HTN, and COPD, Thyroid were included in this study and patient with Inability to communicate, mental retard or memory related diseases were excluded from my study.

A single 24 hours dietary recall were collected using individual food consumption record tracker. All questions were asked by me to patient during a facial interaction with every patient. The information form gathered respondent related with age, religion, daily fluid and salt consumption, body mass index, waist circumference, waist hip ratio, NYHA

functional classification assessment, and Echo value. The primary nutrient of interest was sodium, fluid intake, oil intake, fruits and vegetable intake. This analysis used the heart failure specific sodium intake recommendation from the American college of cardiology/American heart association (ACC/AHA)[15] Additional nutrients promoted by the DASH Diet, which documented associations with impact on heart failure outcomes, were also assessed.[16]

Food Consumption analysis were collected by the form and the variety of foods consumed by the participants was determined by the different food groups. Arithmetic mean, standard deviation tests were assessed for the qualitative and numeric variables. The data were analyzed using SPSS new version. Significance was regarded as p< .05.Patients who were invited to participate in the study were informed about the study aim and expectations in accordance with the declaration. Patient were enrolled as participants after obtaining their verbal and written approval.

III. RESULTS AND DISCUSSION

Analysis revealed that the mean age group of the subjects was (70±3.17) and SD 1.359.

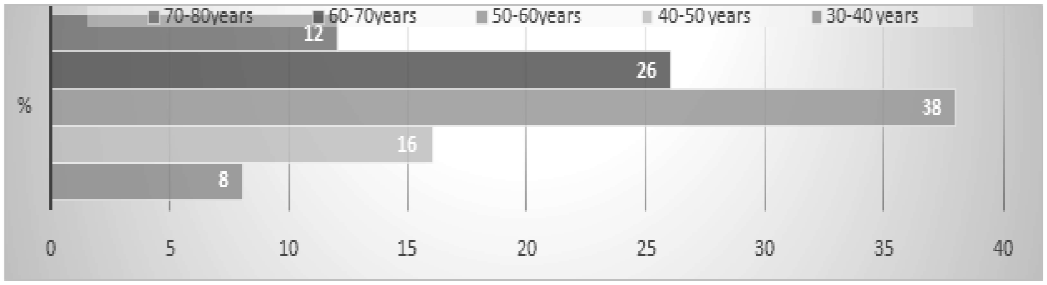

Figure 1: Age Status of the Respondents

LEMON *e. al*.(2010)[17] conducted a study to assess the dietary quality of person with heart failure in NHANES(1999-2006) they reported that out of 50074 respondents the mean age of the subject was 70.3 years . The age of subjects was almost same when compared to the present study.

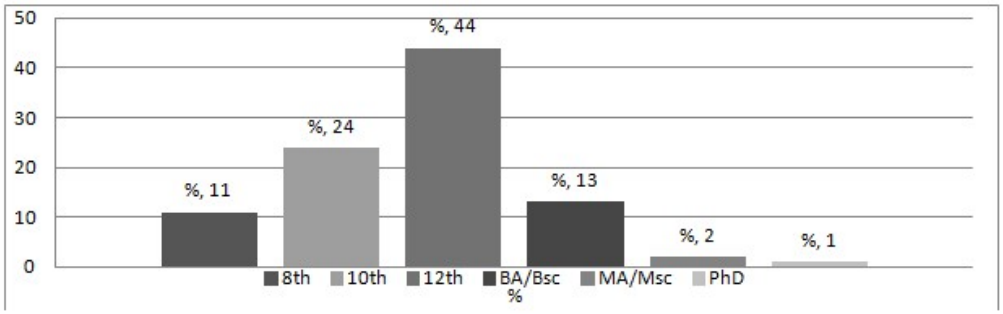

Figure 2: Education Qualification of the Respondents

Mean Education qualification was 2.74 and SD was .960 in this study. Hilal UYSAL *et al.(*2019)[18]conducted a similar study which reported that out of total hundred subjects 50% were a studied up to matriculation 29% a studied up to intermediate, 5% were found graduate, and rest 16% were illiterate. In present study most of the respondent were literate.

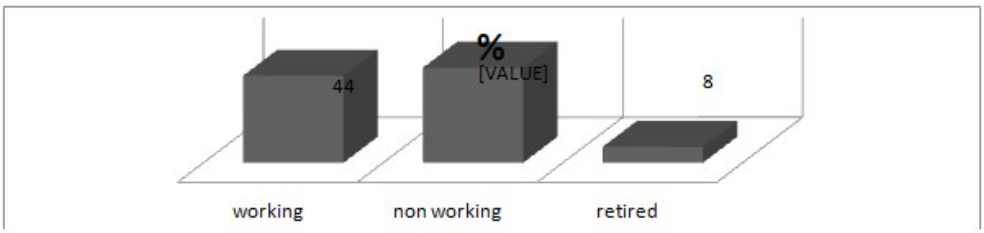

Figure 3 : 3 Employment Status of the Respondents

Mean score of the respondent income was 2.65 and SD was 1.359 in present study. Amare *et al.(*2015)[19,20] conducted a study on malnutrition and associated factors among heart failure patients out of 284 heart failure patients, 56% were employed and 42% were non employed. Employment status of the subjects was more when compare to the present study.

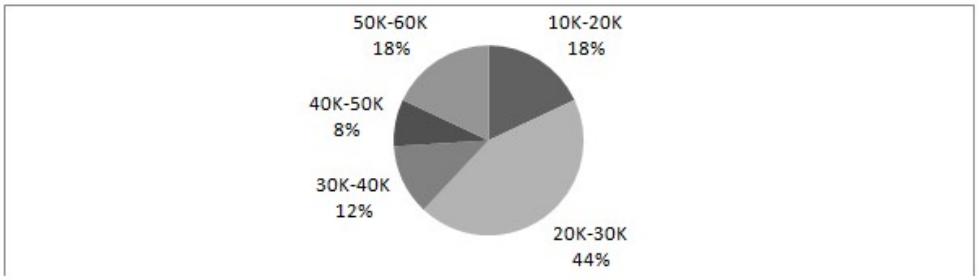

Figure 4: Economic Status of Respondents

Information regarding economic status in figure show that 44% of the respondent monthly income was 20000-30000 rupees, 18% were earning 50-60 thousand per month, while 18% were earning 10-20thousand per month from various source, 8% were earning 40-50k per month and rest 12% were earning 30-40k in a month.

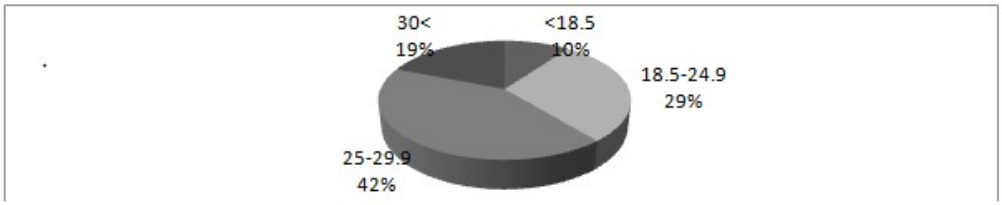

Figure: 5 Nutritional Status of HF Patients (BMI)

Mean Score of BMI was 2.69 while SD was .895 in this present study. Hilal UYSAL *et al*(2019)[21] conducted their study which reported that out of total N=100 respondents, 5%

were underweight, 34% were healthy BMI, majority of the respondents were overweight, 21% of the respondents were obese and rest three percent subjects were on morbid obese. The majority of the subjects was overweight when compared to the present study.

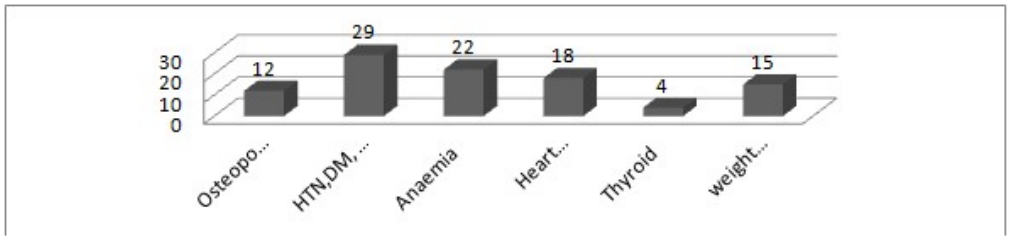

Figure 6: 6 Health History of Patients

Mean score of the patient history was 3.18 and SD was 1.66. Chi square analysis shows that there was statistically no significant correlation at $p<0.05$ between nutritional status and education level ($p=0.109$) and international status and income level chi square level x^2 =6.63, P =0.356). The reason of more person fall in health category because of availability of food and they are from villagearea. Fig 7: Symptoms of HF Patients.

The mean score of the patient regarding symptoms was 2.36 and SD was 1.092 in this present study. Assessment of food consumption patterns of the participant revels that in this study that , 45 % of the participants stated that they never consumed two or more eggs in a week as recommended foods, whereas 42% stated that they consumed egg occasionally; while 13% of participants always consume eggs in week. 20% of the respondents were taking always fruits while 49% of the respondents were never taking fruits in daily. Now only 25% of the respondents were eating vegetables regularly while majority 45% was taking sometimes.68% were taking grains in the form of Maida, wheat always while only 9% were not taking grains daily. 40% only were taking milk daily due to some myth and lack of awareness. Majority of patients like 60 % were not taking meat due to high oily content and 63% were not taking dry fruits regularly due to high price or myth or non-availability of Foods patient were need to eat less actually they were taking those items in moderation or in high content like 8% patient were taking sugars in their daily diet while 71% respondents said they were not taking saturated fats in their diet but 18% were consuming fatty foods daily in any form. 84 % patient said they were not taking salty snacks or extra salt added food item in their diet but 12% were directly adding salt while dining.40% were using creams or whole fat milk in their diet daily. 24% of the respondents were taking red meat even after cardiac issue and 55% were taking fried foods, Potato chips, salty canned packed food in daily diet.

Table 1: Total Energy, Protein, Carbohydrate, Fats, Fibers, Vitamins, Minerals, Electrolytes and Fluid Consumptions According to (N=100)

	USDA/USCF/DASH RECOMMENDED	**MEAN Intake**	**MEAN Difference**	**SD**
Energy (kcal)	1735.89	1761.74	25.85	359.46
water from food (ml)	170.89	217.52	46.63	20.51

protein (gm)	44.98	33.3	-11.68	3.52
fat (ml)	46.8	59.4	12.6	4.58
carbohydrate(gm)	299.87	397.79	97.92	7.33
fiber(gm)	25.94	17.9	-8.04	2.21
vitamin E (mcg)	15	13.06	-1.94	0.4
Vitamin B1 (mcg/dl)	0.81	0.759	-0.051	0.021
vitamin B2(mcg/dl)	0.962	0.906	-0.054	0.042
Vitamin B6(mcg/dl)	0.945	0.88	-0.06	0.05
Vitamin B9(mcg/dl)	311.2	313.45	2.25	6.44
Vitamin C (mg)	71.25	54.36	-16.89	3.311
Sodium (gm)	1908.65	2015.39	106.74	2.44
Vitamin K(gm)	2.2	2.33	0.13	0.199
Calcium (mg/dl)	1.2	1.089	-0.11	0.1
magnesium (mEq/dl)	253.4	217.88	-35.52	7.81
Phosphorous(mg/dl)	412.01	386.58	-25.43	6.47
Iron(mg)	7.01	5.93	-1.08	0.28
Zinc (mcg/l)	8.43	7.21	-1.22	0.061
Vitamin A(mcg)	811.01	607.84	-203.17	2.144

The Dispersal of macronutrients in the diet of individuals with heart failure does not differ significantly from that of the general population. Suggestions are that energy intake should between 26-32 kcal/kg Ideal body weight, with 50-55% of carbohydrate consumption, 20-25% fat consumption of total calorie and 30% protein by total calorie. However patient who is having HF need more protein compare to normal population range from 1.1gm/kg IBW while in malnourished patient with cardiac cachexia need 1.5-2.0gm/kg IBW. Thus the authors recommended limiting the intake of fatty food items cholesterol <200mg/day.

Published studies have associated the DASH diet, which includes low fat and increase the low fatty milk products, complex carbohydrates, fish, vegetables, and Mediterranean diet (Butler,2016)and further recommended this diet for patients with HF just only because of its magical effects. Fatty food can cause weight gain so should be avoid by HF patients. Assessing by the guidelines this study found that patients had higher average total energy intake, higher mean carbohydrate, fat, water, salt, intake but patients had lesser protein, fiber, vitamin E, B1,B2,B6, Vitamin C, Calcium, magnesium, phosphorous, iron, Zn &Vitamin A consumption compare to the USDA/USCF/DASH recommendation.

Optimal energy needs of the patients with HF are 25-30 kcal/kg/IBW in a day (Aquilani et al., 2003). In this study the total energy intake Mean was (1761.74±359.46). Change in protein intake affects weight loss in obese patients (mean BMI=37.3kg/m2) as well as improve quality of life (Butler, 2016; Evangelista et al., 2009). The protein intake of the participants in this study was found to be less. (Table 2).Low Potassium level has been linked with HF related mortality. Lower calcium level are known to cause to HF in many cases. (Levitan et al., 2013). My study found that calcium level was low in majority of patients even phosphorous, zinc, vitamin A also was below to the recommended amount. It is considered that iron deficiency in HF results partially from inadequate dietary iron intake (Drozd,

Jankowska, Banasiak 2017).This study found the dietary iron intake was lesser and should be in normal range.(Vieira et al.,2004) have reported decreased intake of vitamin A,C and K level in his study while in my study also consumption was below the required amount.

The symptoms of HF are like fatigue, dyspnea, SOB, palpitations etc experienced (McMurray et al., 2012) This Study found that Participants compiled with the fluid restriction recommendations, they gained or lost weight often ($p > .05$). This study found that most of the participants was following 1-2L fluid restriction per day recommended by doctors($x^2=11.68$, $p=.04$).In this study Lower sodium intake were recommended by doctors to HF patients but due to lack of awareness patients were taking more salt in their diet Similar to (Yancy et al.,2013), low sodium compliance was found to be higher in HFrEF Patients ($p>.05$).This suggest that the participants consumed foods without reading food label. This study found that sodium intake of most participant was 2015.39 mg.

IV. CONCLUSION AND RECOMMENDATIONS

Result of this study indicates that the dietary quality of the person should be better and should be prescribed a diet plan with need to adherence on it and even need to educate about the importance of nutrients and how a healthy balance diet help them to reduce the disease progression and help them to feel better throughout in the journey of HF treatment. Patient need to educate about the fluid salt and fat intake limitation while treatment.

REFRENCES

[1] https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)32279-7/fulltext
[2] https://journals.lww.com/hfji/Fulltext/2023/01000/HeartFailureJournal_of_IndiaA_new_dawn.1.aspx https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3913650/#:~:text=The%20burden%20of%20HF%20in of%20491%20600%E2%80%931.8%20million.
[3] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5945285/
[4] https://pubmed.ncbi.nlm.nih.gov/32945600/
[5] Alsafwah S, Laguardia SP, Arroyo M, et al. Congestive heart failure is a systemic illness: a role for minerals and micronutrients. Clin Med Res.2007;5(4):238–43.
[6] Newman KP, Bhattacharya SK, Munir A, Davis RC, Soberman JE,
[7] Ramanathan KB. Macro- and micronutrients in patients with congestive
[8] Heart failure, particularly African-Americans. Vasc Health Risk Manag.2007;3(5):743–7.
[9] Bhattacharya SK, Ahokas RA, Carbone LD, et al. Macro- and micronutrients in African-Americans with heart failure. Heart Fail Rev.2006;11(1):45–55.
[10] Selektor Y, Weber KT. The salt-avid state of congestive heart failure revisited. Am J Med Sci. 2008;335(3):209–18.
[11] Witte KK, Clark AL. Micronutrients and their supplementation in chronic cardiac failure. An update beyond theoretical perspectives. Heart Fail Rev. 2006;11(1):65–74.
[12] Lennie TA, Chung ML, Habash DL, Moser DK. Dietary fat intake and pro inflammatory cytokine levels in patients with heart failure. J Card Fail. 2005;11(8):613–8.
[13] Pinho CPS et al.(2014) Nutritonal aspects in heart failure ; conclusion journal of nutrition and health science
[14] Hunt S.A ACC/AHA2005 guidelines update for the diagnosis and management of chronic heart failure in adult: a report of American collage of cardiology . J Am Collcardiol. 2005;46(6);e182
[15] Stephenic C. Lemon, PhD et al. the dietary quality of person with heart failure in HANES 1999-2006 JGIM: 139 Conclusion.
[16] Hilal UYSAL et al. assessment of dietary habits in patients with chronic Heart Failure: the journal of nursing research 2019 page 8.

[17] Hiwot Amare on malnutrition and associated factors among heart failure patients ; *BMC Cardiovascular Disorders*volume15,Articlenumber:128(2015)https://bmccardiovascdisord.biomedcentral.com/articles/10.1186/s12872-015-0111-4

[18] Mendis S. Global status report on non-communicable diseases. In: Cardiovascular diseases. Fact sheet N°317th ed. Geneva: World Health organization; 2014.

[19] Hilal UYSAL et al. assessment of dietary habits in patients with chronic Heart Failure: the journal of nursing research 2019 page 8.

