

# ANALYTICAL STUDY ON ACCEPTABILITY OF DIET FOODS IN RELATION TO THEIR PALATABILITY FACTORS AMONG WOMEN

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## ABSTRACT

**Background:** Women being the back bone of any sound society where she has to undergo the pressure of maintaining sound health which needs a constant check on kind of food consumed by women. This results in adoption of various diet food plans but this adoption highly depends on the acceptance of diet food on various palatability factors. **Objectives:** To study the factors that affects the acceptability of diet food. To find the most dominating palatability factor influencing the consumption of the diet food. **Methodology:** A descriptive cross – sectional design was adopted. Women in an age group of 25 to 55 years were selected through purposive sampling. A structured survey instrument was used for data collection form 174 women from Gurdaspur and adjoining cities such as Pathankot and Amritsar. **Results:** The most dominating palatability factors weretexture (56.1), taste (47.5) in average scores and then followed by aroma(40.6) and appearance (38.1) in average score. The most important acceptability factor was the satisfaction level (0.785) Relative index of importance for the food which is considered good for health and weight loss. **Conclusion:** Respondents hasgiven their responses towards more basic palatability dominant factors which decide the consumption patterns along with the acceptability of food on the lines of satisfaction level due the improvement of health.

**Key Words:** Diet Food, Palatability, Acceptability, Satiation, Dietary Assessment, Women

## INTRODUCTION

Acceptance of food among human being is a result of various factors which play their respective role over the intake and acceptance of food especially when it comes to the array of diet food by women. Eating good food is a basic block for well-being and good health especially among women. Acceptability of food also depends on likes and dislike of the person consuming the food, which is directly dominated by the eating habits of the person.

Whereas the food palatability is an extremely complex model which various factors play their roles to persuade the food acceptability.

Eating well is about sleeping well, having good source of energy, mood boosting agent, good nutrition, and maintaining overall body weight. Diet food is all about sensible food eliminating junk food. Diet food helps in controlling high blood pressure, blood sugar levels, fatigue and most importantly weight loss. Many women do not go for diet food or do not even think about it due to its different methods of cooking, buying different ingredients like multi-grain flour, millet flour, multi-grain bread, fox nuts, green tea, detox juices etc. Other than preparing meals for whole family, another reason than this is palatability factors like, taste, texture, aroma, appearance etc. Accepting a diet food in Indian scenario is little more than difficult as Indian food is so tempting which nobody can resist once its kept in front of eyes , automatically our all sensory organs go towards that food and suppressing the mind for that food cravings is very difficult e.g Samosa's , Pav bhaji, Chat papdi, Dhai bhalla , Chole Bhature, etc.

#### Food Acceptability Factors

1. Taste : Sweet, sour, salty, bitter, umami, Spicy, Metallic and Astringent
2. Flavour: Amplitude, Continuity and Aroma
3. Palatability: Texture, Temperature, Colour, Shape and Sound.
4. Food Acceptability: Personal Condition, Environment and culture

Colour affects our acceptance of food. It is said, we eat with our eyes, because the first impression of food is formed by its appearance, which includes colour, shape aroma. The initial attraction rejection of food depends on its looks. Most of our acceptance or rejection of food depends on its looks. Colour of the food plays a vital role in acceptance or rejection of food, as colour is associated with various foods and their freshness for example the blue-green colour is related immediately with algae or fungi. The colour of the food is one way to judge its quality. Quality of the dish is not always indicated by the colour of the final preparation. Adding of food colour in the final products by the manufacturing units improves the acceptance of food by the consumer drastically. Each food has a particular texture that we associate with it. Thus well- cooked rice is soft, potato wafers are crisp and cucumber slice has a crunchy texture. A variety of qualities are included in texture, such as crisp, soft, hard, sticky, elastic, tough, gummy or stringy. Any change in accepted palatability factors of food

such as texture, taste, aroma etc results in non acceptance of food. The textural qualities of food depend on the ingredients, their proportion, the manner in which these are combined and the method of preparation.

Flavour is a combination of various sensory impulses felt by the consumer when the particular food is eaten like aroma, taste and texture in combination affects the flavour of the food. It is the most important aspect of food, which decides our choices of food. The accepted colour and the texture of the food might motivate us to purchase and eat the food but flavour of the food ultimately decides that whether we will eat it more in future or not. Thus, flavour of any eatable food is very important to make sure that the food will be consumed by the person in future also. The odour or smell of food influences our food acceptance. The odours are carried by air to our nose, and are transmitted by special nerves (olfactory nerves) to our brain. The sense of touch contributes to our perception of food. It identifies the textural qualities of the food, such as softness and hardness. Taste sensations are the sum- total of the sensation created by food when it is put in the mouth. The taste of any food is apparent to the taste buds which are located on the surface of the tongue (Mudambi, 2007).

According to Garg (2006) there are six primary taste buds sensations – sweet, sour, salty, bitter, astringent and pungent. It has been assumed that the number of taste buds and sensitivity to taste are parallel phenomena, that children, with their greater number of taste buds, have keener sense to taste than to adults, and that there is a decline in sensitivity to taste from childhood through adult life. Some individuals have sharper taste than others, as has been indicated, but there are also variations in the sense of taste in some individual from one time to another. This phenomenon of variation is compounded by the number of different qualities of taste that can be identified. The magnitude of this number is suggested by the fact that, most individual substances that have been tested, some 20 to 30 different levels of intensity can be detected by an average person. Recognition of these complexities of taste variation offers some insight into the differing food likes and dislikes in individual. Hunger and appetite also effects food habits. Contrary to widely held opinion, human appetite is not guided by instinct.

(Berkoff, 2007) explained that taste, smell, touch, sight and sound are all part of flavour. So are temperature and texture. Visual perception (what something look like) and texture perception (how something feels in your mouth) are important component of taste acceptance. Temperature affects flavour in a big way. One perceives flavours best when they

are close to body temperature (98.6° F). Foods that are super hot or super cold can't be properly tasted. Taste buds, which are made of protein like rest of the skin and muscles don't function well at extreme temperatures. Flavour and taste are also influenced by age and environment. Behaviour modification can influence taste palate. This could be a good thing or bad thing. Some people have a super tasting ability. It's thought that these people are born with more taste buds. Aging does not mean that people will lose all sense of taste. However, smoking, coffee, cola and tea and some medications can exert enormous influence on taste.

There is the various dietary researches talk about the role of various food properties in terms of texture, temperature, taste and colour have immense effect on satisfaction level of consumers with respect to the level of consumption and repeat intake of the same food. Reducing the intake of any food at any eating time line has numerous ways to approach. Some of the approaches have limited success in reducing the obesity and it has been proved that the inner desire to stop eating is very weak in particular situation and depends a lot on the environmental condition of that particular time. Further availability of food in various forms in market makes people to go for new and tempting food products without considering the effects of such impulse buying and eating's. The social well being also accepts the abundance of food which also marked as the sign of social wellbeing. Food acceptance is the combination of various nutritional benefits that intake of food gives to the consumer, besides the environment it is consumed and the state of consumer mind together effects the intake of food (Kleef, 2012).

Joshi (2011) stated that diet surveys are practical ways to assess the energy intakes of groups of a population. The information about intake of food by the people is attained with difficulty. Nutrient profiles of foods are important for the following purposes: for planning the menus so that the balance diet can be taken, to evaluate the food consumption pattern in national and regional household and to study an individual's food intake for relatively brief period of time as an index of his diet.

Dietary assessment is one of the specialized interests of nutritionists, which is used in surveillance of populations, clinical assessment, experimental research and nutritional epidemiology. It has become of particular importance with the realization that nutrition plays a major role in the aetiology of common chronic disease such as obesity, diabetes, heart disease and cancer. As these diseases have a long onset and nutritional factors interact with gene variants in influencing risk, very large populations must be studied prospectively over

prolonged periods of time in order to assess the magnitude of nutritional factors in the aetiology of these diseases. Accumulated evidence can then be used as a basis for public health and clinical ever a major problem until recently has been the conflict between the need for accuracy to establish exactly where an individual lies within the overall distribution of foods and nutrients and the logistics of doing so when very large populations required for epidemiological studies are investigated (Mann, 2010).

According to Garg (2006) every individual accepts the food based on various factors such as texture , taste and aroma which are directly linked with the sensory features of the individual, belief system and knowledge about food and the mood of the individual at the time of consuming the food item. Murray (2003) says that to measure the food acceptability is a tedious job especially when behavioural changes in individual respondents depends on sensory characteristics and expectation of the consumer form the food which is being consumed and its after effects on the body and mind in terms of pleasure and satisfaction. Meiselman (2003) shows that various outside factors effects the acceptability of diet food in terms of finished food knowledge, nutritional aspects, brand names, packaging etc whereas it is also found that simple changes in food colour, texture and aroma can induce the acceptability of food among consumer provided that basic expectations are met by the food items. According to the authors six experiments took place to know on what basis consumer accepts new food which launched in the market, so the following variables were found as per the research how the food is prepared, what name is given along with its serving details, under which brand it was launched and how it's packed, full product information, how the product information is designed and stated on the packaging and does the consumer already know about the product? It is based on the theory of cognitive dissonance (Edelman, 1985).

Various reviews taken into consideration in this research indicated to the significance of various sensory, health and satiation levels which affects the acceptability of various foods by the consumer. This shows the relevance of research objectives which are also based on the dominating factors for diet food among women and study of acceptability of diet food in terms of their palatability. Women in our country undergo for diet food, keeping their health concerns in their minds and accept the new type of food intake. This gives them the freedom to choose from the wide range of diet food available but at the same time the acceptance is highly dependent on the various factors based on individual approach towards diet food. The objectives of the research were:

- To study the factors that affects the acceptability of diet food.
- To find the most dominating palatability factor influencing the consumption of the diet food.

## METHODOLOGY

**Research Design:** Descriptive cross –sectional design was adopted.

**Locale:** The study was conducted in Gurdaspur and Pathankot (Cities in Punjab). Respondents were the women from all fields of life including house wives and working class which were approached personally and through online survey.

**Sampling Design:** Women in an age group of 25- to 55 years were selected through purposive sampling. Total 174 respondents participated in survey. Out of total respondents only 164 confirmed doing dieting therefore only 164 responses were used for analysis.

**Tools and Technique:** Structured interview schedule was prepared for collecting information on socio demographic profile and diet plan patterns with special emphasis on palatability factors of participants. Questionnaire was developed to evaluate the acceptability of diet food among women with respect to the palatability factors. The tool was in English. On the basis of initial information obtained from interviews a list of possible dominant palatability factors was prepared. Respondents were asked to rank factors such as texture, taste, aroma, health condition, temperature, appearance, appetite, satisfaction level, healthiness of the food and food preparation methods from 1 to 10 where 1 was most dominant and 10 were least dominant. According to Dhanavandan (2016) Henry Garret Ranking Method was used to find the most dominant factors influencing the acceptability of diet food. As per this method, respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula:

$$\text{Percent position} = 100 (R_{ij} - 0.5) / N_j$$

Where

$R_{ij}$  = Rank given for the  $i$ th variable by  $j$ th respondents

$N_j$  = Number of variable ranked by  $j$ th respondents

The Garrett's table was used to change the percent position into scores. For each factor the scores were added to calculate the means scores. The factors which have highest mean score were taken to be the most dominant factor.

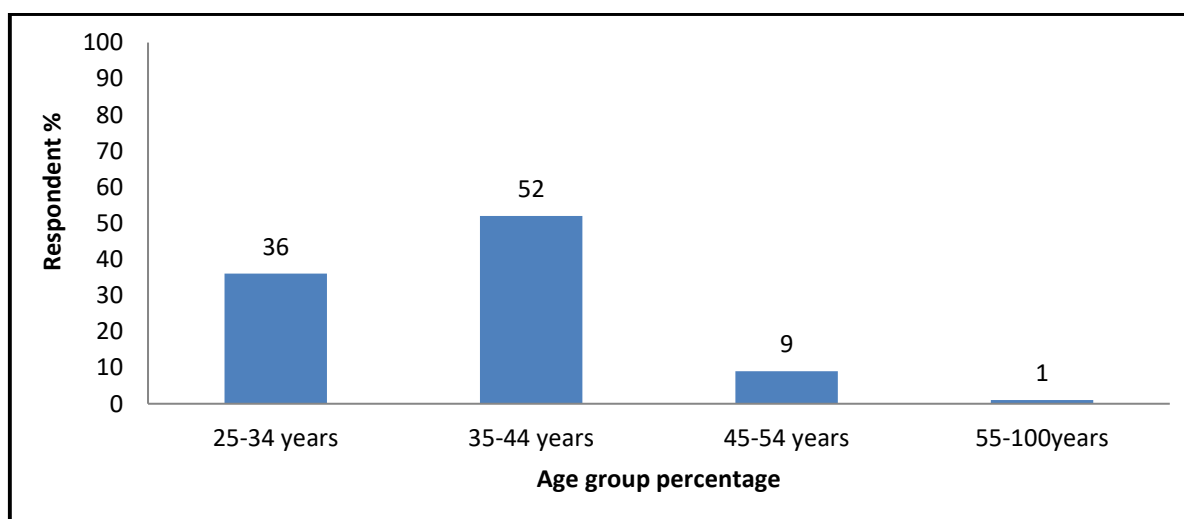
Acceptability factors were studied through the set of 10 questions where respondents were asked to chose from Likert Scale 1 to 5 were 1 being strongly disagree and 5 being strongly agree. The data obtained from questionnaire was analysed through Rank Method and Relative Index of Importance.

Relative Index of Importance =  $\text{Sum of weights (W1+W2+W3+.....+Wn)/AxN}$

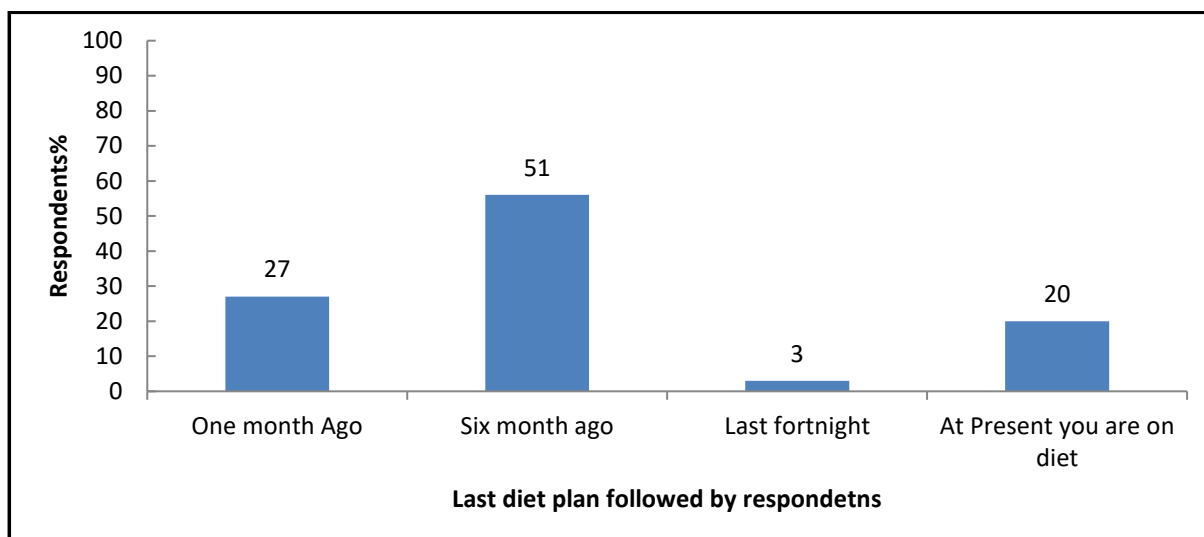
Where W= weights given to each factor by the respondents and will range form1 to 5 where 1 is strongly disagree and 5 is strongly agree. A= Highest weight (i.e. 5 in each case) and N= total number of respondents.

**Data and Statistical Analysis:** Data was analysed on the basis of age and diet food pattern wise. The results were expressed in terms of frequency, percentage and mean.

## RESULTS AND DISCUSSION

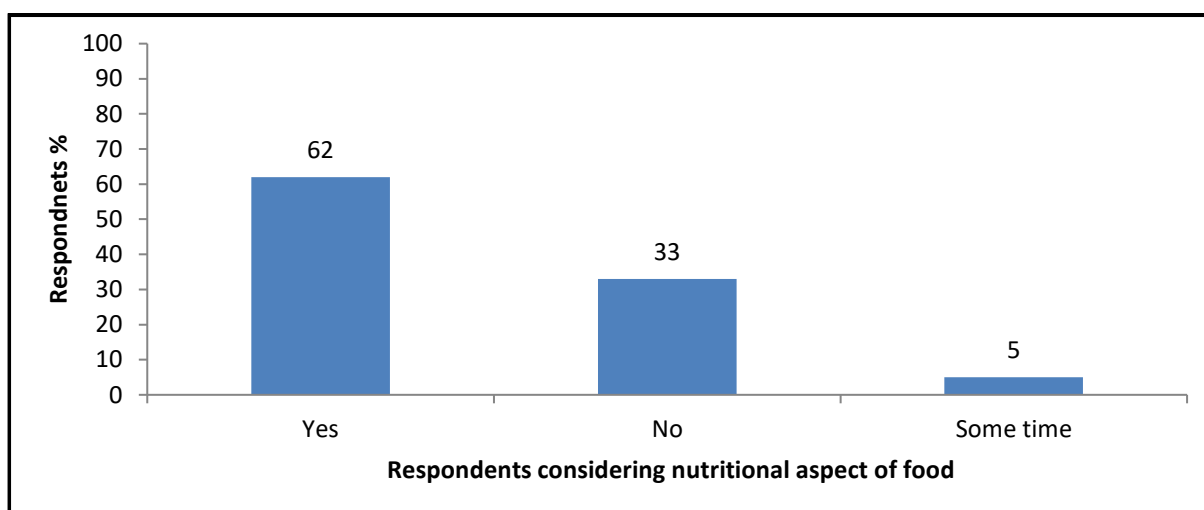


*Figure 1: Age group breakup of respondents*



***Figure 2: Last diet plan followed by respondents***

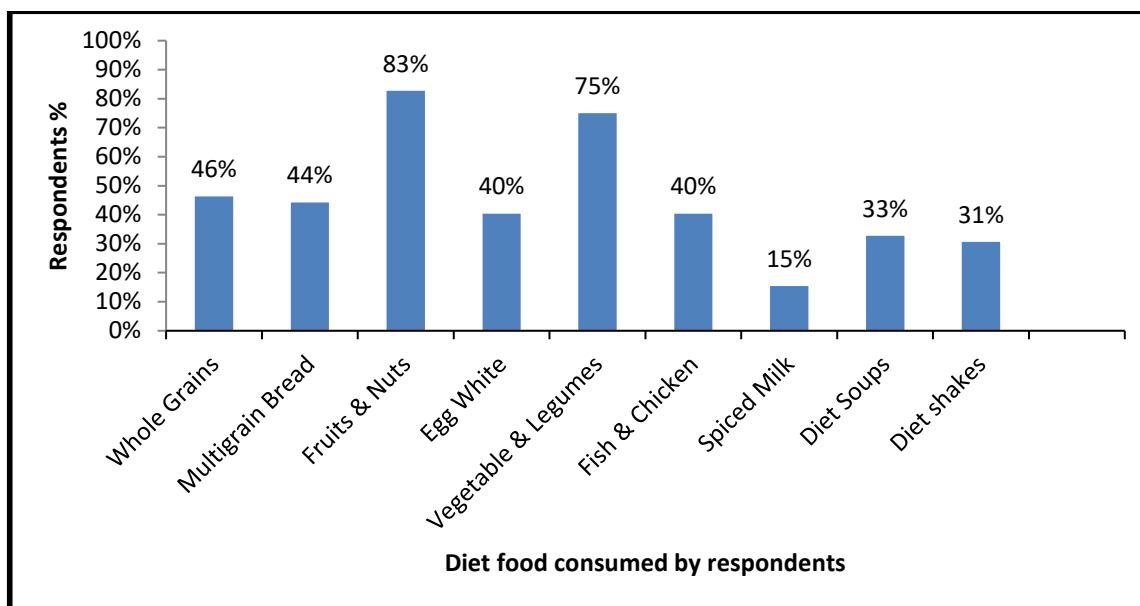
In figure 1 age group of respondents included maximum (52%) middle age respondents those who have participated in survey. Frequency of diet plan (figure 2) taken by the respondents indicated that the dieting is the regular affair in their dietary pattern. As majority (51%) of respondents have take diet plan six months ago that is probably lock down period.



***Figure 3: Respondents considering nutritional aspect of diet food.***

The nutritional value of food is an important aspect which is considered by the respondents 62.5% when they decide to consume the diet food for the first time.





**Figure 4: Type of diet food being consumed**

Researchers (Meiselman, 2003) have found that among various outside factors which affects the acceptability of diet food was nutritional information about food. Among the type of diet food being consumed the fruits and nuts 82.7% have been chosen by the respondents followed by the vegetable and legumes 75% this result highlighted that the nutritional aspects of diet food is considered and intake of food is planned accordingly.

**Table 1: Ranking of factors dominating diet food choice as per Henry Garret Ranking Method**

S.No.	Factors	Total /164	Average Score	Rank
1	Texture	9206	56.1	1
2	Taste	7794	47.5	2
3	Aroma	6674	40.6	3
4	Health Condition	6284	38.3	4
5	Temperature	6250	38.1	5
6	Appearance	6030	36.7	6
7	Appetite	4746	28.9	7
8	Satisfaction Level	3740	22.8	8
9	Healthiness of the food	2736	16.6	9
10	Food Preparation	792	4.8	10

In the study done on factors that determine food acceptability by Juliana (2018) the results showed that texture, aroma, and appearance have distinctive and dominant effects on food consumption. . The findings of the conducted work are also alike to the above mentioned study where texture, taste and aroma have been found to be most dominant factors in food acceptability of respondents. As per the above table the most dominating palatability factor influencing the consumption of the diet food among the respondents are texture (56.1), taste (47.5) and then followed by aroma (40.7) and Health condition (38.3).

The results showed that the consumption of diet food remain subjected to the basic palatability factors which also signified that the food intake among women is accepted on the basis of the individual likes and dislikes and the healthiness of food and food preparation methods still does not play considerable role in diet food consumption.

***Table 2: Relative Index of importance for acceptability factors***

<b>S. No.</b>	<b>Acceptability statements</b>	<b>Relative Index of Importance</b>
1	Do you feel satisfied after consuming diet food mainly because it is good for your health and weight loss	0.785
2	Healthiness of diet food is always a deciding factor for its intake for me.	0.785
3	Does the method of cooking affects the consumption of particular food?	0.763
4	Intake of diet food depends on my personal preference taste for a particular food.	0.726
5	Appearance or colour of the food is a motivation for consumption	0.724
6	Does your appetite make you to decide the portion of diet food to be consumed?	0.724
7	Does your bad health affect the acceptability for the diet food?	0.719
8	For me acceptance of aroma of a new diet food is must before I consume it	0.709
9	Prefer to have liquid food or semi liquid diet food as compared to solid or crispier food.	0.648
10	Temperature of food plays very little role for me in consuming it.	0.646

To study the factors which affected the acceptability of diet food, acceptability statements were framed which included the important factors of acceptance. The result were analysed by index of relative importance and after ranking the results, it was found that the most

important factor for acceptance of diet food among respondents was their satisfaction level (0.785) for the food which is considered good for health and weight loss, and healthiness of diet food (0.785) whereas the state of food (0.648) and temperature (0.646) of food does not play much significant role in acceptance of diet food for respondents. Same results were also reflected in the research done by Kleef (2012) which stated that combination of nutritional benefits, the environment and the state of consumer's mind together affects the acceptability of food. The results are in correlation with the research with diet food taken by women as a central focus as it is found that many of respondents do consider the nutritional and satiation most essential factors for acceptability of diet food. Interestingly, research results showed that although the texture and taste remain dominating factors for diet food consumption, still the respondents have satisfaction and healthiness as an acceptability criterion for the diet food.

As per Stubbs (2013) palatability can be defined as the acceptability of a food on complete sensory nature of food such as smell, taste texture etc and the feeling of initiating of ingestion of food. The environment and mental state of the consumer of food also plays the vital role in palatability of food. It is also true that the palatability of food decreases with the increase of intake of any food. Palatability is major deciding factor for the acceptance of diet food, and we all know Indian women like eating hot and spicy food. First and foremost factor which comes under palatability is taste; taste plays a major role other than texture, appearance, aroma etc. Consumer thinks whatever they eat should be tasty, it should satisfy our taste buds, due to this people forget to eat sensible food and crave for junk food.

Therefore dietary guidelines are usually developed as advices to the general public about optimal food choices and consumption behaviours, written in reader friendly language for ordinary people although they are often backed up by a technical explanation, which may include quantitative expression of the guideline in the form of a food guide. The dietary guidelines usually comes as asset of recommendations that are meant to be adopted as a whole to produce an overall dietary pattern that will optimise health and wellbeing and prevent chronic disease while providing all essential nutrients (Trustwell, 2011).

## **CONCLUSION**

Palatability factors play major role in acceptability and consumption pattern of diet food. Consumption of food is highly related to the perception of the diet food in the consumer mind especially in terms of their healthiness and their effectiveness in improving the health. It was

found through the result in the research work that the dietary food is being consumed is mainly guided by the nutrient aspect of the food. However in all situations accurate and reliable data on the food intake of the women is required for studying the dietary habits of single population, therefore more detailed and improved methods of dietary assessment is necessary if further association of diet food consumption and its acceptability is to be established. In final words one can agree that the sensory quality of food along with healthiness and complete knowledge of food and nutrition among women give confidence to them for accepting the diet food.

## REFERENCES

1. Berkoff, N. (2007). Nutrition for the Culinary Arts . New Delhi: Dorling Kindersley (India) Private Limited. Pearson Education (pp. 64).
2. Dhanavandan. (2016). Application of garret ranking technique:. International Journal of Library and Information Studies, 135.
3. Edelman. (1985). The role of consumer expectencies in the acceptance of novel food. Journal of food science (pp. 1707-1714).
4. Garg, M. (2006). Diet, Nutrition and Health . Delhi: ABD Publishers, Jaipur (pp. 57-60).
5. Joshi, S. A. (2011). Nutrition and Dietetics. New Delhi: Tata McGraw-Hill Education Private limited (pp. 413-416).
6. Juliana. W. M. (2018). Analysis of the factors that determine food acceptability. The Pharma Innovation Journal, 7(5), 253-257.
7. Kleef, E. (2012, April 24). NCBI. Retrieved December 2020, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3662086/>:  
<https://www.ncbi.nlm.nih.gov/>
8. Mann, J. (2010). Essentials of Human Nutrition. New Delhi: Oxford University Press.
9. Meiselman, H. (2003). Food Acceptability Affective Methods (2nd ed.). Encyclopedia of Food Sciences and Nutrition (Second Edition).

10. Mudambi, R. (2007). Food Science. Delhi: New Age International (P) limited (pp.69-71).
11. Murray, J. (2003). Sensory Evaluation. Food Acceptability and Sensory Evaluation (2nd ed.). Encyclopedia of Food Sciences and Nutrition (pp. 5130).
12. Stubbs, R. (2013). Appetite: Psychobiological and Behavioral Aspects. Retrieved January 25, 2021, from Scinece direct:  
<https://www.sciencedirect.com/science/referenceworks/9780123848857>
13. Trustwell, A. S. (2011). Nutrition and Food. New Delhi (pp. 533).