

Market Survey of Fortified Candies in Prayagraj District (U.P.)

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Abstract: In recent years, Customer attitudes and behaviors have moved towards health foods because they have more concerns on increasing environmental stresses such as pollution and toxic substances in the environment. In recent years, the consumer food habit has been focused on processed food rich in nutritional and functional properties. The consumer's trend has shifted to foods with more natural and dietary fibers, natural colorants, minerals, vitamins, low calories, low cholesterol, and low fat and free of synthetic additives. For this reason, this study aimed to deeply study shopper behaviour with respect to fortified candies. A form survey on a convenience sample of two hundred respondents was conducted by choosing the Prayagraj districts of Uttar Pradesh. The form consists of shopper demographics Variables, psychological feature factors in shopping for product, shopper shopping for preferences and patterns, factors influencing to choose associate degree organized or unorganized sector and so the impact of family and peer teams on shopper behaviour with respect to fortified candies. The most significant factors influencing buying decisions were accessibility, quality, regular supply, super market and the mode of payment. In this study we can observe the behavior of consumers buying a candy. The satisfaction level of candies got a fine response. These results may vary in other regions. The popularity and use of candies though is less, yet it is remarkable as it is still making lots of profits. The demand for candies is projected to grow.

Keywords: Consumer behaviours, fortification, fortified candies, innovation, market research.

1. Introduction

Food Fortification or Enrichment is the process of adding micronutrients (essential trace elements and vitamins) to food. It can be carried out by food manufactures, or by governments as a public health policy which aims to reduce the number of people with dietary deficiencies within a population.

As defined by the World Health Organization (WHO) and the Food and Agricultural Organization of the United Nations (FAO), fortification refers to "the practice of deliberately increasing the content of an essential micronutrient, i.e., vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and to provide a public health benefit with minimal risk to health".

Food Fortification has been identified as the second strategy of four by the WHO and FAO to begin decreasing the incidence

of nutrient deficiencies at the global level. As outlined by the FAO, the most commonly fortified foods are cereals and cereal-based products; milk and dairy products; fats and oils; accessory food items; coffee, tea, cocoa, carbonated and uncarbonated drinks, candy, condiments and spices, and other non-staple foods; and infant formulas.

Iron deficiency anemia is still the most prevalent nutrition problem worldwide. Iron deficiency causes approximately half of all anemia cases worldwide, and affects women more often than men. World estimates of iron deficiency occurrence are somewhat vague, but the true number probably exceeds one billion people Calis et al., (2008). Young children are a particularly vulnerable group and the prevalence of anemia in this population category in east is 50–70%. Children consume less food than do adults and their diet often consists of foods with a low iron content and in which the bioavailability of iron is poor Stekel (2000). Anemia during childhood may lead to impaired motor development, decreased growth and appetite, reduced learning capacity, and reduced cognitive performance, and is also associated with poorer performance of the immune system Salon (2008). Therefore, an adequate supply of iron to all tissues during this critical period of development is essential Stekel (2000).

IRON and massive dose vitamin A supplementation is the most common short-term strategy currently used to control the set to micronutrient deficiencies in developing countries including India. However, problems in their delivery systems and community acceptability have been documented. Food fortification is an effective and cost effective, medium-term approach to improve micronutrient status and is sustainable once established.

Fruit juice blends in form of candy can be produced from various fruits in order to combine all the basic nutrients present in different fruits for use when combined. It can improve the vitamin and mineral content depending on the kind and quality of fruits and vegetables used Carvalho et al. (2007) The consumer attracted nutritious and healthy product, as the consumer behavior is 13.79% influenced by healthy factor Jaisam and Utamaang (2008). The market for nutritional product is expected to expand further due to the trend toward

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lifestyle diseases McCoy (2005).

Candy is a type of confectionery which describes a spectrum of sweet goods and takes on different meanings from one country to the others.

Candies are considered to be the instant sources of energy as they provide high calories and are also rich in flavor and palatability. They can be easily prepared, packed, transported and stored Figiel (2006). There are various types of candies such as hard candy/ rock candy, soft candy/ jelly candy, toffee, fondant and fudge candy. Candy is defined as preparations of sugar, honey, or other natural or artificial sweetener sin combination with chocolate, fruits, nuts, or other ingredients or flavoring sin the form of bars, among others Hamid (2007). The words candy (US and Canada), sweets (UK and Ireland) and lollies (Australia and New Zealand) are common words for the most common varieties of sugar confectionery. Abella *et al.*, (2011) stated that chewy candies made with different gelling agents and sweetner offer certain/ specific texture characteristics and eating properties. Jellies, caramel, nougats and taffies are the chewiest candies beside chewing gums. Candy is also a source of empty calories, because it provides little or no nutritional value beyond food energy. At the start of 20th century, when under nutrition was a serious problem, especially among poor and working-class people, and when nutrition science was a new field, the high calorie content was promoted as virtue. Researchers suggested that candy, especially candy with milk and nuts, was a low-cost alternative to normal meals Labau (2012).

Indian consumers look for the most fun and enjoyable products. This means manufacturers need to innovate with new and novel shapes, textures, flavors and packs. The Indian candy market is divided into three main categories — sugar candy, chocolate candy and gum candy.

2. Objectives

Based on the facts, the present study entitled "Market Survey of Fortified Candies in Prayagraj District."

- To examine consumer behavior towards candies in Prayagraj (U.P.) during COVID-19.
- To study consumer habits: Consumer preference and Frequency of purchasing.
- To study Satisfaction level of developed candies flavour present in market.
- To analyze the important factors that influences the purchasing behaviour of consumers towards candies.

3. Methodology

This chapter completely focused on describing and discussing the gathered necessary data and information that will be useful to understand the consumer buying behavior and attitude towards Fortified candies in Urban and Semi-urban area in Prayagraj District (Uttar Pradesh).

Due to COVID-19 this study on online survey has been conducted. The methodology includes both primary and secondary research. The primary research contained surveys such as questionnaires to draw an estimated demand using

ordinal and numeric data. The data were collected and are subjected to the analysis using Google forms.

Data Collection: The first required research data was collected using the following strategies: Questionnaire: A list of direct questions and relevant questions was written and forwarded to the sample for answers.

This study was conducted with the responses of 200 respondents within the age group of 5 to above 50 years.

Secondary research data is collected from journals, books and the Internet. The second study is based on various websites and electronic media.

4. Findings

1) Age of the respondents

Table 1
Age of the respondents

Age group (Years)	Number of Respondents	Percentage%
5-10	4	2%
10-15	24	12%
15-25	128	64%
25-above	44	22%
Total	200	100%

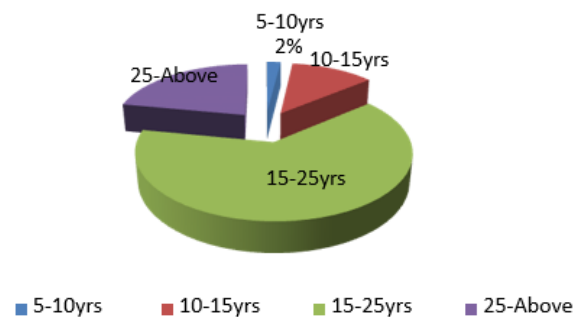


Fig. 1. Age group of the respondents (Percentage)

Here the total 200 respondents that responses the Google form, the age of the respondents was recorded into groups such as '5-10', '10-15', '15 -25 years' and 25 years above. The maximum number of respondents fall in the age group of '15-25' (64%) and the minimum number of respondents was found in the age group '5-10' is categories (2%).

2) Gender of the respondents

Table 2
Gender of the respondents

Gender of Respondents	Frequency	Percentage
Male	48	24%
Female	152	76%
Total	200	100%

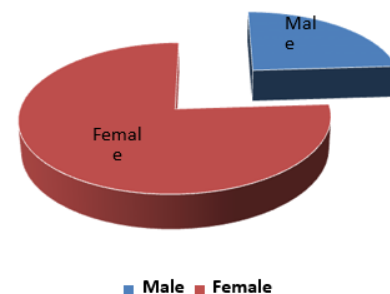


Fig. 2. Gender of the respondents (Percentage)

Gender plays a vital role in the purchase decision: Gender classified as, female and male, gender is one of the main classifications because different gender exhibits different preference. It was found among the consumers (100) % Male and Female tend to have different choices while purchasing products because of the difference in their upbringing and socialization. Male and Female consumers demonstrate considerably different approaches in their decision making and purchasing behavior. In this study female responded is more than male their preference is given in table 4.2 It was found that the maximum percentage of female respondent (76%) followed by the male respondent minimum (24 %).

3) Locality of respondents

Table 3
Locality of respondents

Residence	Frequency	Percentage
Semi-urban	84	41.9%
Urban	116	58.1%
Total	200	100%

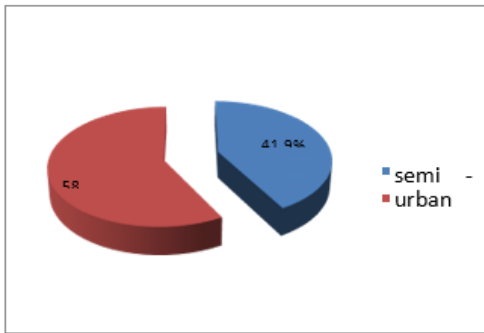


Fig. 3. Locality of respondents

Locality shows the residents that are responded in this survey which are categorized into two semi-urban and urban. If income and urbanization increase among consumers, the percentage of income spent on consumption increased. The urban consumer's preferred mostly branded products compared to rural consumers. The most significant factors influencing buying decisions were accessibility, quality, regular supply, super market and the mode of payment. In the study, maximum of 58% of the respondent belongs to urban area and 41.9 % of the respondent belongs to semi-urban area. The respondent of the semi-urban area is less as the study was mainly focused on candies.

4) Occupations

Table 4
Occupation of respondents

Occupation	Frequency	Percentage %
Agriculture	30	15.00%
Business	47	23.32%
Government Employee	20	10.00%
Others	103	52.68%
Total	200	100%

Occupation also influences a person's purchasing and consumption pattern of candies. Kubendran and Vanniarajan (2005) stated that the change in consumption pattern was due to changes in food habits. If income and urbanization increase among consumers, the percentage of income spent on consumption increased. The following occupants of the

respondents are classifying for the data collection and given in table 4.4 Here the total 200 respondents were classified into Agriculture, Business, Government employee and others (private sector) in which, 15.00% of the respondent are involved in agriculture they are followed by Business with 23.32 %, 10% of the respondents were involved in Government jobs and 52.68% of the respondents were included in other categories.

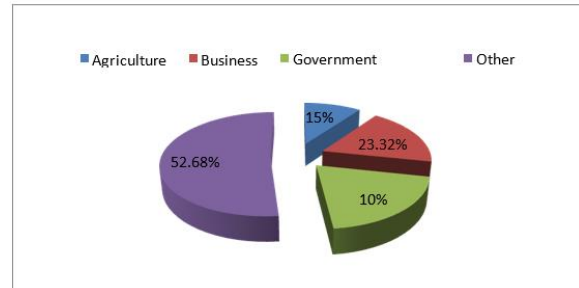


Fig. 4. Occupations of the respondents

5) Family type

Table 5
Family type of respondents

Type of Family	Frequency	Percentage
Joint Family	48	24.00%
Nuclear Family	152	76.00%
Total	200	100%

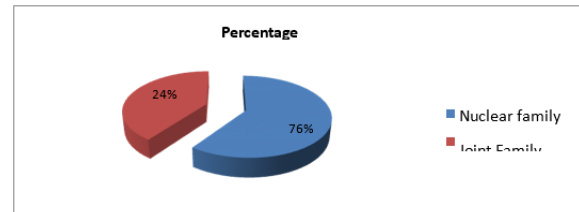


Fig. 5. Family type

The family type also plays a vital role in the consumption pattern of candies, the following classification describes the type of family with their consumption frequency.

It is understood that out of 200 respondents in this study, 76% of the respondent belongs to a nuclear family and the other 24 % of the respondent belongs to joint family system. So, we can understand that nuclear family prefer more candies than the joint family.

6) Income of the respondents

Table 6
Income of respondents

Income	Frequency	Percentage
Below 10000	82	41%
10000-25000	56	28%
25000-50000	34	17%
50000 and above	28	14%
Total	200	100%

The income of the respondents was recorded into groups such as Below 10000*, 10000- 25000, 25000 - 50000*50000 and above. The maximum number of respondents falls in the income group of below 10000 *(41%) and the minimum number of respondents was found in the age group is 50000*above categories (14%). The above study mention that if the income

and urbanization increase among consumers, the percentage of income spent on consumption also increased.

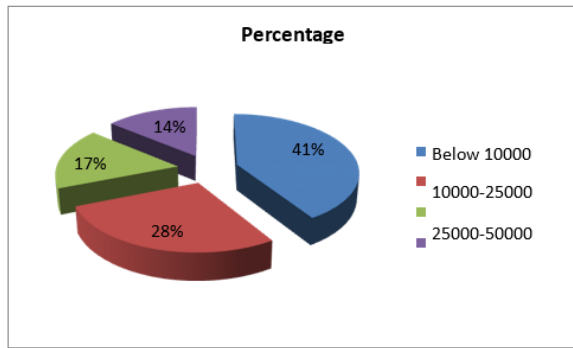


Fig. 6. Income of respondents

7) Marital status

Table 7
Preference of respondents on the basis of their marital status

Marital Status	Frequency	Percentage
Married	39	19.04%
Unmarried	161	80.96%
Total	200	100

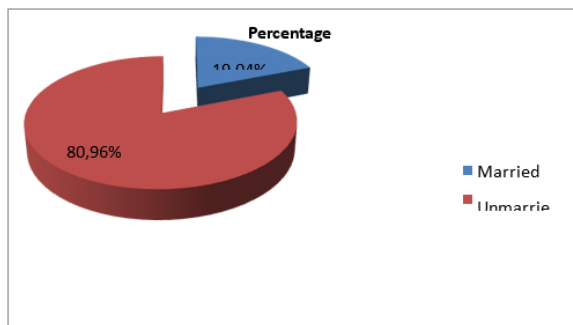


Fig. 7. Marital status of the respondents

In this category, respondents are mostly unmarried and others are married, for this study of consumer satisfaction it is very essential to know the marital status of every respondent among of 200 respondents, 80.96% were unmarried and 19.04% were married, so most of the respondents were unmarried, so we can conclude that most of the consumers especially unmarried respondents preferred more candies.

8) Taste of candies the participants preferred

Table 8
Preference of respondents on the basis of the taste

Taste of candies	Frequency	Percentage
Sweet	148	74%
Sweet and sour	36	18%
Sour	12	6%
Bitter	4	2%
Total	200	100%

In this category, most of the respondents are mostly preferred candies on the basis of their liking towards particular taste, for this study of consumer satisfaction it is very essential to know the preference of every respondent. It is understood that out of 200 respondents in this study, 74% of the respondent belongs to preferred sweet taste, 18% preferred sweet and sour taste, 6% preferred sour and the other 2% of the respondent preferred bitter taste.

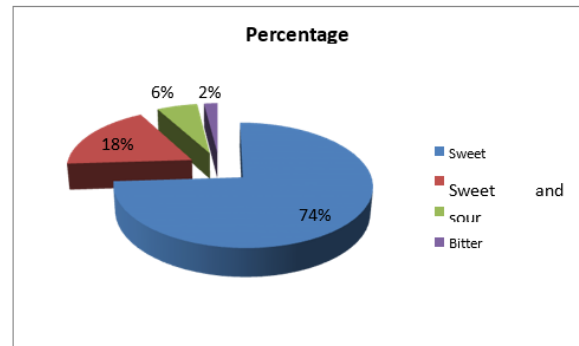


Fig. 8. Preferred taste of candies by the respondents

9) Age group which intake most candies

Table 9
Age group which intake most candies

Age group	Number of respondents	Percentage
Below 10	130	56.00%
10-20	40	22.00%
20-30	22	18.00%
30 above	8	4.00%
Total	200	100

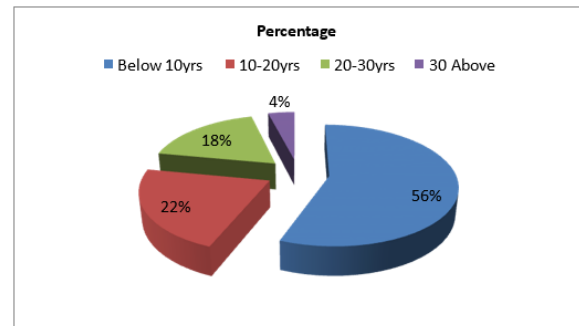


Fig. 9. Age group which intake most candies

Human desire for sweet taste spans all ages, races, and cultures. Throughout evolution, sweetness has had a role in human nutrition, helping to orient feeding behavior toward foods providing both energy and essential nutrients. Infants and young children, in particular, base many of their food choices on familiarity and sweet taste. It is understood that out of 200 respondents in this study mostly children age group below 10 intake most candies 56.00% and age group above 30 preferred less 4.00%.

10) Preference of types of candies

Table 10
Preference of respondents on the basis of type of candies

Types of Candies	Frequency	Percentage%
Chocolate	128	64.00%
Sugar	36	18.00%
Gum	20	10.00%
Hard Boiled	16	8.00%
Total	200	100%

The preference also plays a vital role in the consumption pattern of candies, the following classification describes with their consumption frequency. stated that Chocolate is consumed all over the world. Since its origin, it has undergone many transformations to meet changing market demand. A better understanding of consumer behaviour is a key objective of any

business, It is understood that out of 200 respondents in this study, 64.00% of the respondent belongs to preferred chocolate candies, 18.00% preferred sugar candies, 10% preferred gum candies, and 8.00% preferred hard boiled candies.

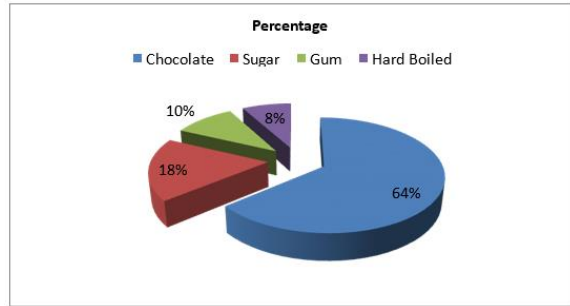


Fig. 10. Preferred type of candies by the respondents

11) Preference of fortified candies by the respondents

Table 11

Preference of Fortified candies by the respondents

Preference for fortified candies	Frequency	Percentage
Preferred fortified candies	120	60.00%
Not Preferred fortified candies	80	40.00%
Total	200	100%

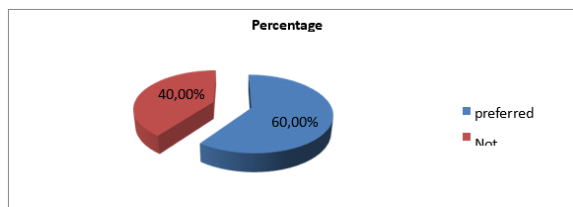


Fig. 11. Preference of fortified candies by the respondents

Education also influences the pattern of consumption educated people have a well aware of various products that are available in the market through mass media communications. The following respondents are classified for the data collection and given in table. It is understood that out of 200 respondents in this study, 60.00% of the respondent belongs to preferred candies and the other 40.00% of the respondent belongs to not preferred categories.

12) Consumption of fortified candies on the basis of nutritional supplements

Table 12

Preference of respondents on the basis of nutritional supplements

On the basis of nutritional supplements	Frequency	Percentage
People Preferred	120	60%
People Not Preferred	80	40%
Total	200	100%

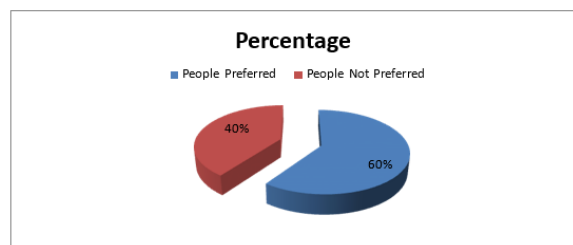


Fig. 12. Preference of candies on the basis of nutritional supplement

In this category, most of the respondents are mostly preferred candies on the basis of nutritional supplements, for this study of consumer satisfaction it is very essential to know the preference of every respondent. Luccas (2014) stated that the growing interest of consumers for adequate the diet has been increased the demand for find more conscious, convenient, nutritious and natural food options. It is understood that out of 200 respondents in this study, 60% of the respondent belongs to preferred candies and the other 40% of the respondent belongs not preferred categories. So, we can understand more people preferred fortified candies.

13) Consumption of fortified candies on the basis of flavor

Table 13

Preference of respondents on the basis of flavor of candies

On the basis of Flavor	Frequency	Percentage
Orange	108	54.00%
Mango	40	20.00%
Guava	32	16.00%
Grapes	12	6.00%
Other	8	4.00%
Total	200	100%

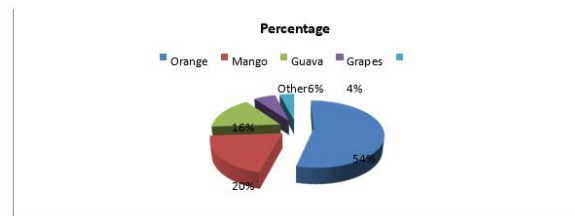


Fig. 13. Preference of candies by the respondents on the basis of flavor

In this category, most of the respondents are mostly preferred candies on the basis of the flavor of the fruit, for this study of consumer satisfaction it is very essential to know the preference of every respondent. It is understood that out of 200 respondents in this study, 54.00% is the maximum no. of respondent belongs to preferred orange flavour and 4% is the minimum no. of respondent preferred any other flavor. So, we can understand more people preferred orange flavor.

14) Consumption of fortified candies on the basis of herbs flavour

Table 14

Preference of respondents on the basis of Herbs Flavor of candies

On the basis of herbs flavor	Frequency	Percentage%
Ginger with Honey	112	56.00%
Tulsi with Mint	52	26.00%
Amla	36	18.00%
Total	200	100%

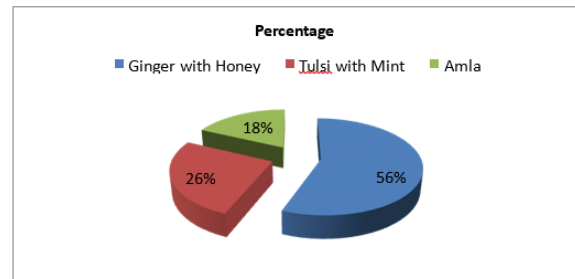


Fig. 14. Preference of candies on the basis herbs flavor

It is understood that out of 200 respondents in this study, herbal products are in huge demand in the developed world for health care for the reason that they are efficient, safe and have lesser side effects as the formulation based on herbs are safe and effective, as per their liking of herbs flavor 56.00% of the respondent belongs to preferred ginger with honey, 26.00% preferred tulsi with mint and other 18.00% of the respondent belongs to preferred amla categories. So, we can understand more people preferred ginger with honey flavor candies.

15) Consumption of fortified candies on the basis of rind colour of candies

Table 15
Preference of respondents on the basis of Rind colour of candies

On the basis of Rind color	Frequency	Percentage
Orange	85	42.50%
Red	61	30.83%
Yellow	30	15.00%
Green	14	6.67%
Other	10	5.00%
Total	200	100%

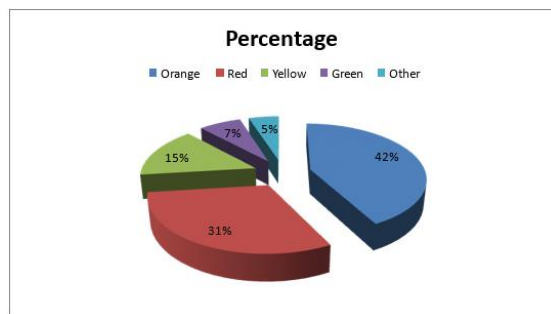


Fig. 15. Preference of candies on the basis of rind color

Rind color also influence the buying behavior of customer bright and vibrant colour attracts more customers It is understood that out of 200 respondents in this study, 42.50% preferred orange, 30.83% preferred red, 15.00% preferred yellow, 6.67% preferred green and the 5.00% preferred any other rind color. So, we can understand most people preferred orange rind color.

16) Preference places for purchasing candies

Table 16
Preference of outlets for purchasing candies by the respondents

Outlets for purchasing candies	Number of respondents	Percentage
Confectionery	144	72.00%
From grocery Stores	28	14.00%
From Supermarket	24	12.00%
Other Mode	4	2.00%
Total	200	100%

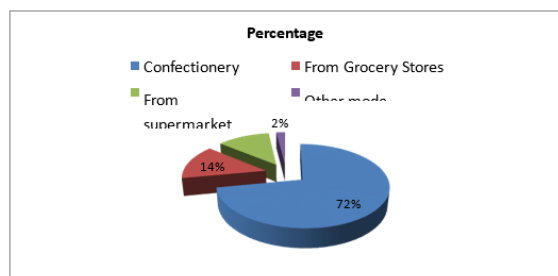


Fig. 16. Preferred mode for purchasing candies by the respondents

Preference mode for buying candies depend on the easily availability of the product It is understood that out of 200 respondents in this study, 72% is the maximum no. of respondent preferred to purchase candies from confectionery, 14% respondents preferred grocery stores and 12% of the respondent's preferred supermarket and 2% is the minimum no. of respondent preferred any other mode.

17) Buying frequency of respondents

Table 17
Frequency of purchasing

Frequency of Purchase	Frequency	Percentage%
Daily	48	24%
Once in a week	68	34%
Twice in a week	84	42%
Total	200	100%

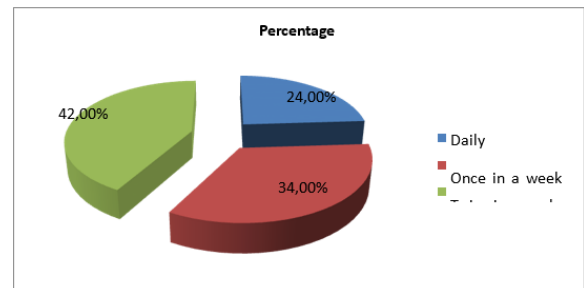


Fig. 17. Frequency of purchasing

In this study, we can conclude that most of the consumers preferred candies as per there mood once in a week 34% and 42% twice in a week and others are 24% preferred daily respectively.

18) Reasons influencing the choice of candies

Table 18
Reasons influencing the choice of Candies

Reasons	Frequency	Percentage%
Packaging	4	2.00%
Nutritive value	5	2.51%
Texture	13	6.59%
Appearance	54	26.90%
Taste	124	62.00%
Total	200	100%

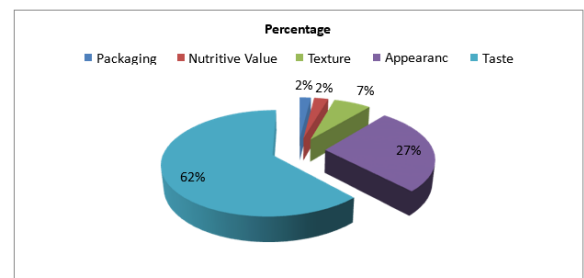


Fig. 18. Reasons influencing the choice of candies

It is understood that out of 200 respondents in this study, 62% of the respondent belongs to the taste categories, 27% belongs to appearance, 6% belongs to texture and the other 2.51% of the respondent belongs to nutritive value and 2% belongs to packaging. So, we can understand that most of the people choices candies have all the sensory attributes.

19) Reasonable price of candies

Table 19

How much respondents would like to pay?

Price (in Rs./Piece)	Frequency	Percentage%
1 Rs.	76	38.00%
2 Rs.	56	28.00%
3 Rs.	48	24.00%
4 Rs.	20	10.00%
Total	200	100%

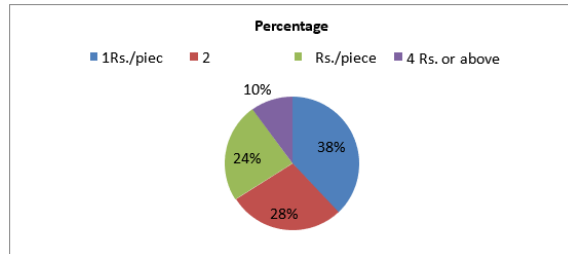


Fig. 19. Reasonable price of candies

The price also plays a vital role in the consumption pattern of candies, the following classification describes Price. According to the survey, 38% is the maximum no. of respondents preferred candies price between Rs.1/piece and 10% is the minimum no. of respondent who preferred to pay 4 Rs./candies.

5. Conclusion

The popularity and use of candies though is less, yet it is remarkable as it is still making lots of profits. The demand for candies is projected to grow. Slowly but surely, it will penetrate into the rural markets.

In this survey we can observe consumers behaviors for candies on the basis of:

Consumer preference (Habit of consumer): According to the survey study most of the consumers from Prayagraj 74% preferred sweet candies 18% preferred sweet and sour, 6% preferred sour and 2% preferred bitter taste (Table 8).

Frequency of Purchase –candies (Table 17).

Ananalysis of consumer behavior and their satisfaction level

For candies, majority of respondents had a frequency of 42% buying candies twice a week 34% once a week and 24% daily (table 17). In this study we can observe the behavior of consumers, majority of respondents had a frequency of usually

buying a candy twice a week, 42% respondents purchase candies twice a week, but very few are responded once a week and daily category. In (table 17) satisfaction level of candies got a fine response to their satisfaction level. This result may vary in other regions.

6. Recommendations

After the analysis of customers 'response and identifying the areas of improvements following points were brought into consideration:

- The focus should be kept on readily available of candies in the market.
- Candies blended with various herbs and flavors, attracts the customers more so, candies should be developed using various herbs and flavors for the enhancements of taste as well as nutrition.
- Regular feedback from customers should be taken.
- Quality and Taste should be focused more.

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