

Survey on consumer attitude and behavior and preferences about edible oil consumption in Hyderabad, India

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ABSTRACT

Background: Edible oils are an indispensable component of human diet it plays an essential role not only in nutrition but also acts as a medium of food preparation, preservation and adds to the organoleptic properties of foods.

Objective: Present study aimed to assess knowledge, attitude and practice of the consumers about edible oil selection and consumption. Study also explored the perception of consumers in terms of cooking practices with respect to their understanding of adulteration and awareness of proper disposal and handling of oil during and after the preparation of foods.

Methodology: A questionnaire was curated to obtain relevant information regarding buying practices, oil consumption pattern, knowledge of consumers about quality of oil of the respondents in the city of Hyderabad, India.

Results: Study concluded that 79% participants preferred branded oil over loose oil. 63% reported that they consider loose oil adulterated. Participants lacked knowledge about smoke point, acid value, and disadvantages of reusing oil. 63% subjects were reusing oil multiple time even after change in color, odor and change in consistency. Average intake of oil was found to be 1.3 ± 85 Kg/month, which is much higher than the recommendations made by ICMR-NIN RDA 2020 of 750g/month for a sedentary worker man.

Conclusion: Study concludes that participants were not clear about quality attribute of oil, right way of using oil, harmful effect of reusing oil, keeping a check on changes in color, flavor etc. Therefore, it is important to create awareness among consumer regarding the oil type and its properties, quality attributes and right way of using it.

Key words: Edible oils, refined oil, reusing oil, smoke point, acid value.

Introduction

The most profound sources of edible oils is present in form of vegetable oils which are extracted from the seeds of plants. Globally used for frying and cooking purposes. Some of its types includes: Sunflower oil, soybean oil, groundnut oil, mustard oil, olive oil, canola oil and cottonseed oil among various other edible oil. ^[1]

Edible oils are most vital sources of fats; a macro nutrient which performs various vital physiological functions in the body. Some of these are; meeting the energy requirements, structural component of cells, production

of inflammatory mediators, energy reserve and provides insulation and protection to internal organs.it provides protection against oxidation of free radicals, atherosclerosis and CVD and other related disorders ^[2].

Oils marketed to the consumers are processed as refined, unrefined and their blends. Refined edible oils are processed using petrochemicals for refining purposes. They are not heat stable and degrade to harmful toxic byproducts on heating for a long time. Unsaturated fats present in oil tends to oxidize, and generate free radicals, and also change the chemical composition of the oil when heated beyond their smoke points making it hazardous

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for consumption and inhalation^[3]. According to American Oil Chemist Association (AOCS), five times heated oil has greater peroxide value of edible oil (>140 Meq/kg)^[4].

According another report by ORF foundation 60% of used cooking oil in India makes its way back to the food stream^[5].

Repeated reusing induces oxidation, hydrolysis and polymerization of oil resulting in change in the physio-chemical, nutritional and sensory properties of the oil. This alters the composition of oil changing the flavor and stability of its compounds. This phenomena of oil deterioration is termed as rancidity. It is of 3 types: oxidative, hydrolytic, and ketonic. Rancidity leads to formation of aldehydes, ketones, and hydrocarbons. Imparting the characteristic flavors and odors without much change in color. Contamination by microorganisms caused by infestation during processing and handling would accelerate spoilage of oils^[6]. All oils and fat are subjected to oxidation during storage depending upon factors like fatty acid profile, minor components including moisture and other impurities and quality of processing, as well as external factors like storage temperature, oxygen concentration, and light^[7].

Adulteration of oil by adding cheaper alternatives is widespread in Indian market such as argemone oil, mineral oil, karanja or castor oil. The intake of adulterated oils has negative health repercussions, including cardiovascular disease, loss of eyesight, damage to liver, heart problem, stomach infections, or cancer causing millions of deaths annually^[8,9]; these are largely undetected without a proper biochemical detection test.

The gap between production and demand has paved way for adulteration and malpractices which are harmful to health to which population remains largely oblivion. The purchasing practices are heavily influenced by their economic status, their understanding of health and lifestyle, their dietary pattern trend and innovation, the appeal towards packaging and most importantly popularity of a brand or a kind of oil. Recently there has been an increase in consumption of olive oil, soya bean oil and rice bran oil contributed by increased awareness of their greater nutritional value in last decade. The objective of this study is to assess oil consumption pattern among consumers in Hyderabad city and also to assess knowledge and attitude of consumers about oil quality, properties and selection.

Methodology

Around 150 women households from middle class economic background in the age group of 20-45 years were selected through convenience sampling. All participants

were requested to attend orientation session by personal invitation. Participants were explained about the study background in one-to-one session conducted at our college, during the program they were explained about various terms mentioned in the questionnaire. Later they were provided with the pre-set E-questionnaire shared via link to conduct survey. Questionnaire had 22 questions enquiring about their knowledge pertaining to various foods, domestic consumption of edible oil, per capita consumption of oil, breakup of average consumption by income groups, preferred oil type and brand, trend in shift of brand and type of oils, factors affecting their purchases and influence of promotions while buying any food products especially oils. Data collected was further analyzed, interpreted to calculate mean and standard deviation using MS Excel 2013.

Results and Discussion

Individuals with varied backgrounds took part in survey. 66% participants reported to be graduate/ post graduates in various discipline, 20% completed their intermediate course whereas 8% were matriculated and remaining were school dropouts.

Mean family income of 46% participants was 40000/- and above, 28% participants were having family income in a range of 21000-30000/-, whereas 17% reported family income was 15-25000/- remaining participants were having income below 15000/-.

Figure 1 indicates Type of oil used by participants indicated wide difference in their choices, 67% participants were using sunflower oil, 18% groundnut, 6% olive oil, 1% soybean oil whereas no participants reported to consume coconut oil.

83% participants reported to consume branded packaged oil and 17% were using kacchi ghani/ loose oil available at local market. Mean per capita consumption of oil was 1.3±850kg/month, which is far more than the suggestion made by expert committee of NIN in RDA 2020 of 750g/month for sedentary worker adult man.

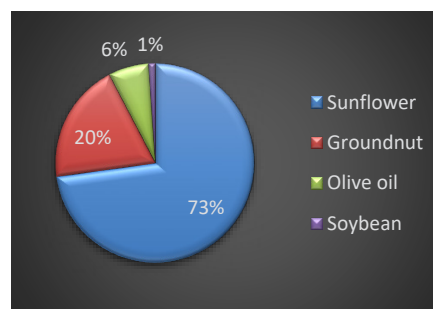


Fig. 1: Types of oil used by participants

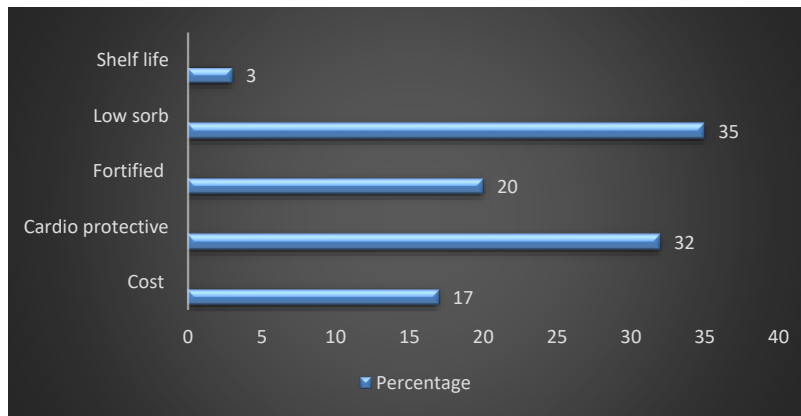


Fig. 2: Reason cited for selecting specific oil

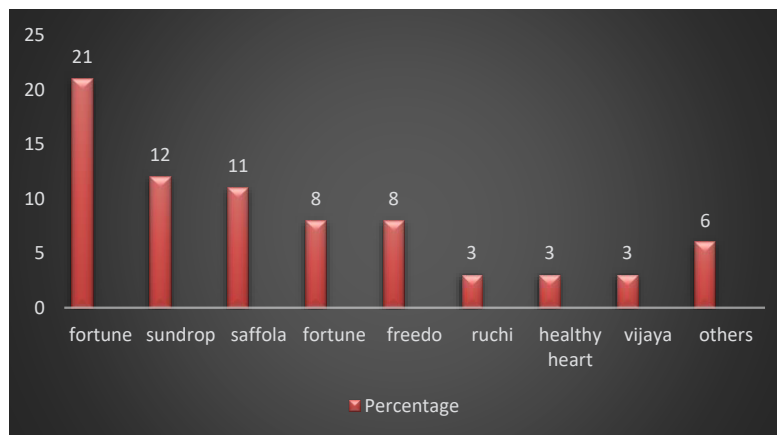


Fig. 3: Brand wise consumption of oil

Figure 2 indicated consumer’s perception while selecting oil. 17% participants were keen about the cost and considered less expensive oil while purchasing it. 32% participants select oil depending upon its cardio protective action, 20% reported that they see check labels and pick up oil high in antioxidants or oil which is fortified with vitamins. 35% go for low-sorb oil/ oil which claims to absorb less in food. Remaining participants reported that they choose oil with longer shelf life which they get to know by their best before date.

Question enquiring about when they consider oil unfit for consumption, 19% participants reported to consider bad smell as sign of deterioration of quality, 9% suggested color change is sign of spoilage, 35% think when oil turns thick it is no more suitable for cooking, 33% discard oil if they observe any of the change like color change, smell and when oil turns thick. Remaining 4% reported that at no point they consider oil unfit for consumption and they continue using it being it expensive commodity.

Reporting about the choice of oil between refined oil and virgin oil/cold pressed oil. 79% participants reported that they prefer refined oil over cold pressed/ virgin oil because of better keeping quality and absence of other

interfering substances. 11% participants further reported that they are fine reusing oil multiple times till it finishes, 76% of them were reusing oil up to 2-3 times, 8% reported use of oil 4-6 times, and remaining 5% participants confirmed they avoid reusing oil multiple times considering its harmful effects on health.

Indian cooking methods involve cooking at high temperatures, most of the time oil reaches smoking point usually in deep frying operations. 46% participants reported that they very often use high temperatures in their cooking practices to prepare food.

Of the total samples collected 37% participants are aware of smoke points of oil and 63% stated otherwise. 63% participants opined that unpacked oil is usually adulterated with less expensive alternative and may be of low quality. Remaining participants were having mixed opinion. Coming to choice of oil 67% participants reported to consume sunflower oil, followed by 18%, 6% for groundnut oil and olive oil respectively, which is in accordance with Praduman et al, 2022 with respect to south India. Figure 3 represents Brand choices made by consumers which indicates that 21% participants were using gold drop followed by 12% healthy heart, 12% Saffola and 8% fortune

refined oil. However, data collected by Praduman et al, 2022 reported 41% participants chose fortune oil followed by 27.5% sundrop and 16.8% freedom oil.

Table 1: Family income of the participants

S. No	Family Income per month	% participant's falling into this category
1.	>15000	9%
2.	15000-25000	17%
3.	25000-40000	28%
4.	>40000	46%

Conclusion

Study concluded that majority of consumers were not clear with the idea of selecting oil as they lack knowledge about the quality attributes. Criteria for selection is usually commercials and availability of the oil in local market rather than the quality aspects. Selecting good oil is crucial as Indian cooking subject oil to high

temperatures. Therefore, there is an absolute need to educate people on the proper oil handling practices and their risks. Consumers should have knowledge regarding selecting oil, using right oil for making various recipes, storage and handling, signs of spoilage etc.

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Conflict of interest

We have no conflicts of interest to disclose.

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