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## Current status of consumer preference for ornamental fish keeping in Navsari District

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#### Abstract

The study was conducted for initial assessment of current status of consumer preference for ornamental fish keeping in Navsari district for period of 6 months. Data was collected interview of aquarium users through prepared questionnaire. The purpose of present study is to find preference to ornamental fish keeper and routine health care adopted by aquarium keepers. Total 60 numbers of respondents interviewed in study out of which 63% were in the age group of 40 years male person are more engaged in aquarium keeping. Ornamental fish keepers kept their aquarium in their house for decoration and hobby. Majority of the respondents were graduate (43%) having experience of 1 to 3 years. It is notice that majority of users kept only one aquarium in their houses (92%) and most of them were community type aquarium. While it was notice that some of the respondents also keeping two and more aquariums. Majority of this aquariums are medium size and goldfish is dominated rather than other speices. Majority of respondents use commercially available feed with feeding twice in a day. Fin rot, dropsy, and loss of appatite are noticed by some of respondents and they treat those diseases with the help of ornamental fish Shopkeepers advices.

**Keywords:** aquarium keepers, consumer preference, ornamental fish

#### Introduction

Ornamental fishkeeping, also known as the hobby of aquarium fish keeping, has emerged as one of the most popular and captivating hobbies worldwide. Ornamental fish are also called "Living Jewells" because of their different shapes, colors and behaviour. These living jewels, with their vibrant colors, graceful movements, and unique behaviors, are admired for their beauty and calm nature. The tradition of keeping ornamental fish in glass tanks dates back to ancient times in countries like China, where it began with goldfish in the year 1163. Over the centuries, this hobby spread to various countries, and in the 17<sup>th</sup> century, goldfish gained popularity in England and Scotland. Since then, the hobby has grown exponentially, becoming particularly popular in the United States after 1850. As a hobby ornamental fish keeping is becoming popular. Therefore, global trade of ornamental fish is known to be increasing day by day (Husen, 2019) <sup>[6]</sup>.

Consumer preferences play a significant role in shaping the ornamental fish market, with hobbyists often seeking uncommon or endangered species with eye-catching features (Borges *et al.*, 2021) <sup>[2]</sup>. The trade in ornamental fish has become a lucrative industry, valued at billions of dollars annually, and has positively impacted the livelihoods of many rural residents in developing countries. The rising popularity of keeping aquariums all over the world is because they need less space and attention compared to other pet animals (Laskar *et al.*, 2016) <sup>[7]</sup>. In today's pet industry, ornamental fish are considered a consumer-based product. While freshwater species dominate the trade, the marine ornamental fish market has also seen substantial growth.

India, with its rich biodiversity and suitable climate, has significant potential in the ornamental fish trade. It has a wide range of native freshwater and indigenous marine species, making it an attractive source for fish sellers and hobbyists globally. The North-Eastern region, which is endowed with a variety of natural water bodies and many kinds (250 species) of attractive fishes, contributes the major share of India's exports of ornamental fishes to the international market through the Kolkata, which accounts for around 80% of the total. The potential for growth in the ornamental fish industry in India could provide employment opportunities for rural communities, especially women, entrepreneurs, and unemployed youth, while also boosting foreign exchange earnings (Sinha, 2017) <sup>[10]</sup>.

As the popularity of aquariums continues to rise, the industry is likely to see continuous development and improvement, with new species being introduced regularly. However, it is essential to ensure sustainable practices, especially when dealing with wild-caught species, to protect the delicate marine ecosystems and maintain the beauty of these living jewels for future generations to enjoy.

**Materials and Methods**

The study was conducted in Navsari District over the period of 6 months from September-2022 to March-2023. Target groups were, aquarium users. The simple random sampling method was used for data collection. The sample size was 60 respondents of aquarium users. The responses of each respondent were compiled and tabulated to indicate frequency and percent distribution for different categories of the questionnaires.

**Data analysis**

The collected data were analyzed by use of excel 2007 and Statistical Package for social Science (SPSS) 25. The results were presented in the chart form with the help of simple statistical measures like arithmetic mean, mode (Frequency) and percentage.

**Results and Discussion**

**Profile information of the ornamental fish keepers**

To understand the present status of ornamental fish keeping clearly and comprehensively for this study some of the personal details were considered which is include their age, education, duration of ownership and purpose of keeping aquarium.

to 20-30 years (Fig. 1).

**Education status of aquarium users**

The results showed that the educational qualification of 43% were Graduates and 35% were Secondary level and 10 numbers (17%) were m higher secondary level whereas only 3% were primary level and 2% were post graduate (Fig. 2). Arif *et al.* (2018) [1] reported in their study that 40% of ornamental fish keepers are graduate level.

**Purpose of keeping Aquarium**

The study indicated that people kept an aquarium for both reasons like decoration and hobby about 50% (Fig. 3).

**Gender of aquarium users**

The majority about 53% were male ornamental fish keepers and 47% female ornamental keepers' fish out of 60 respondents (Fig. 4). Saha and Patra (2013) [8] reported in their study that the majority of male people engaged in aquarium keeping.

**Duration of ownership**

Most of aquarium users 38% were own their aquarium for about 1 to 3 years or less than that, 30% were own about 3 to 6 years, 17% were own their aquarium for about 9 years and more whereas only 15% fish keepers were own their aquarium about 6 to 9 years (Fig. 5). Uddin *et al.* (2019) [11] and Tolon (2018) reported their findings that 50% of customers were having their aquarium for less than 2 years and a majority of people have Less than 1 year of Experience in aquarium keeping.

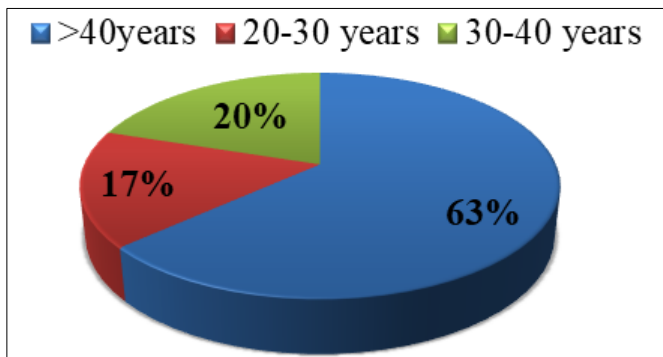


Fig 1: Age of aquarium users

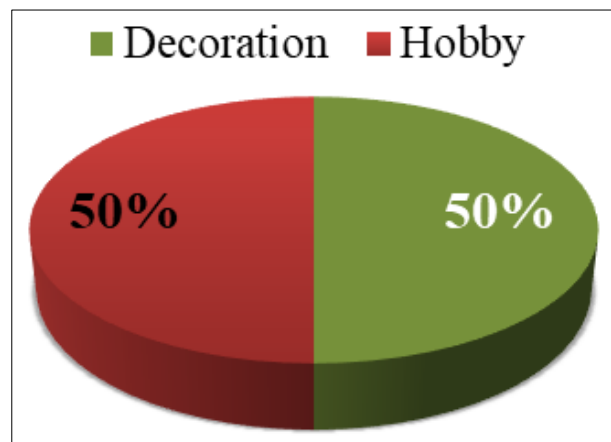


Fig 3: Purpose of keeping aquarium

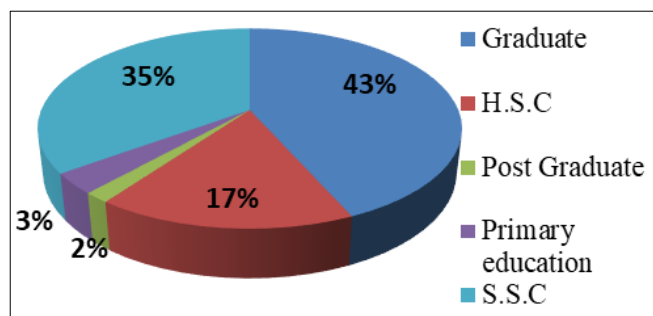


Fig 2: Education Status of aquarium users

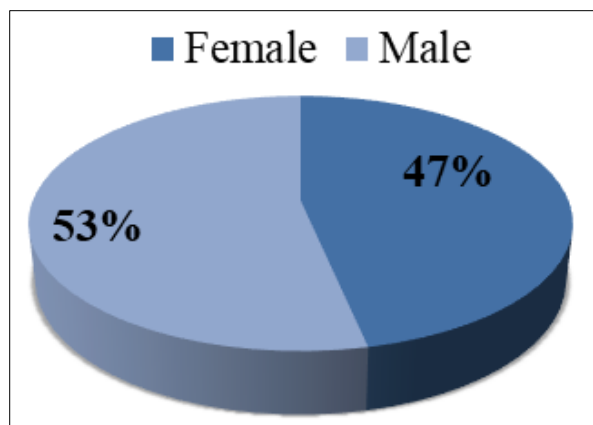


Fig 4: Gender of aquarium users

**Age of aquarium users**

Data showed that most of the users 63% were in the age group of >40years, 20% users were belonged to 30-40 years and remaining 17% ornamental fish keepers were age group of up

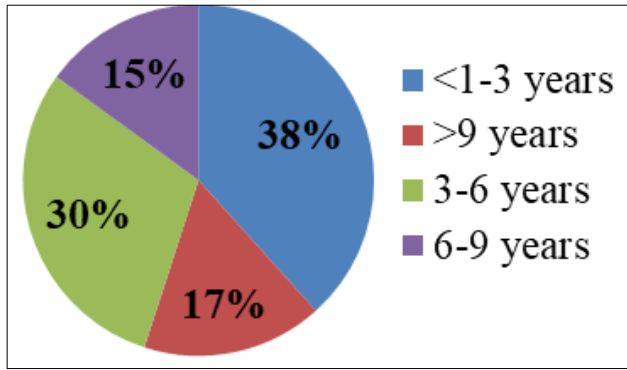


Fig 5: Duration of ownership

**Aquarium Details**

To know the present status of ornamental fish keepers in the study area, the information relating to the aquarium, ornamental fish and their management practices must be brought into consideration.

**Preferable number of aquariums**

Most of aquarium users 92% were own only 1 aquarium and 7% were own 2 aquariums 1% were own 3 aquariums (Fig. 6).

**Preferable size of aquarium**

Maximum numbers of the cusumers 57% were having medium type whereas 30% were having table top type and only 13% ornamental fish keepers owned large type of aquarium (Fig. 7). Laskar *et al.* (2016) [7] reported in their study that the majority of respondents prefer small and medium size aquariums.

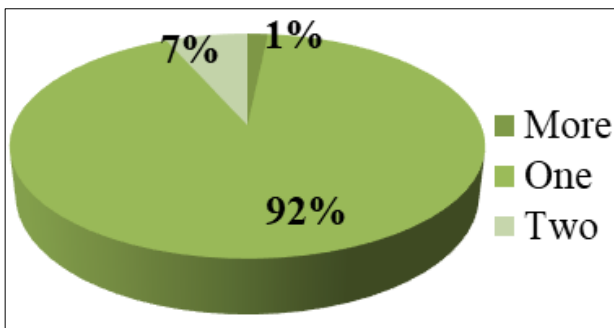


Fig 6: No. of Aquarium

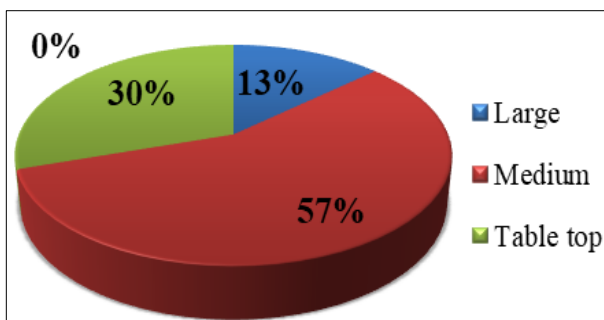


Fig 7: Type of aquarium

**Preferred species by consumers**

Most of ornamental fish keepers prefer goldfish as a pet about 32%, 25% prefer sharks, 14% prefer tetra and 29% of ornamental fish keepers prefer other than goldfish like guppy, koi carp, dollar fish, flower horn, discus, fighter fish etc. (Fig. 8).

8). Faruk *et al.* (2012) [4] reported in their study that goldfish, koi carp, angel fish, guppy, fighter fish, parrot fish and discus fish most demanded species by consumers.

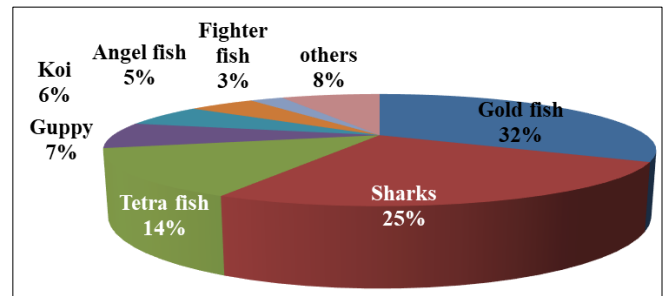


Fig 8: Preferred species by consumers

**Preferable type of aquarium**

Among the hobbyists, preferences were highest for community aquarium 57%, followed by single species 43% (Fig. 9). Arif *et al.* (2018) [1] reported in their study that hobbyists' preferences for community aquarium 83%, followed by single species 17%.

**Fish feed**

All of consumers use formulated feed to feed their fish, from that 95% use crumbles, 3% use powder type of feed and only 2% use other type feed (Fig. 10). Gobiraj *et al.* (2020) [55] reported in their study that 72% of respondents use a formulated feed in their aquarium.

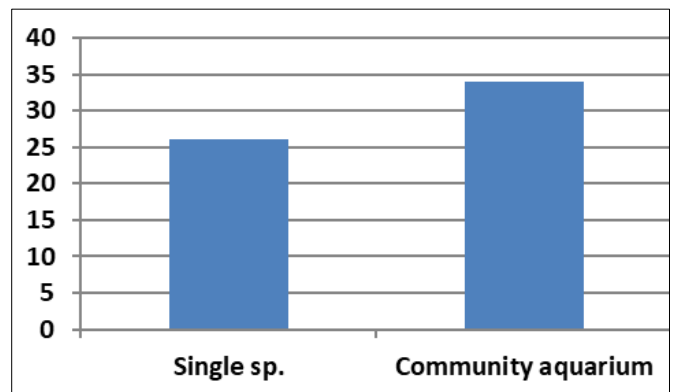


Fig 9: Type of aquarium

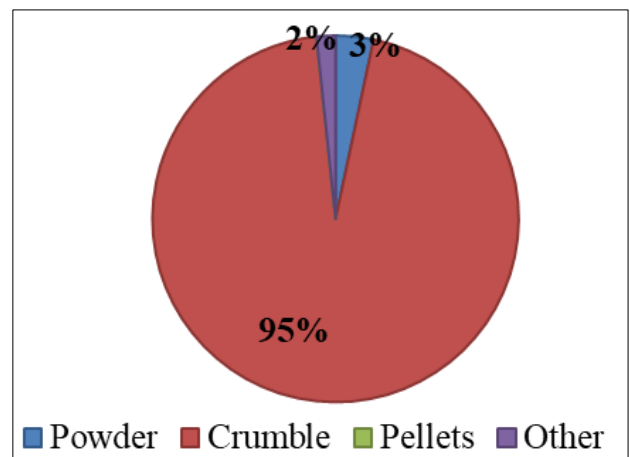


Fig 10: Types of feed use

**Name of feed (Company/Brand) used by aquarium keepers:**

The study revealed that the majority of the

ornamental fish keeper about 90% gives the market available Taiyo and optimum feed to fish and the least number of people use other types of feed (Fig. 11). Chadnee *et al.* (2019) [3] reported in their study that aquarium fish traders and customers are used optimum and Taiyo feed along with Nova and Oscar.

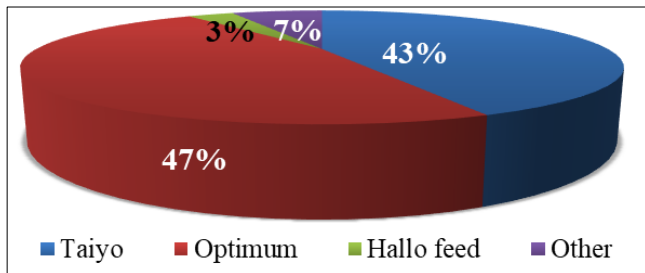


Fig 11: Name of feed used (Company/Brand)

**Frequency of Feeding**

The study revealed that the majority of the ornamental fish keeper 67% give feed to fish twice a day and 28% give feed to fish once a day only 5% of ornamental fish keeper gives feed to fish other than above mention two frequency (Fig. 12).

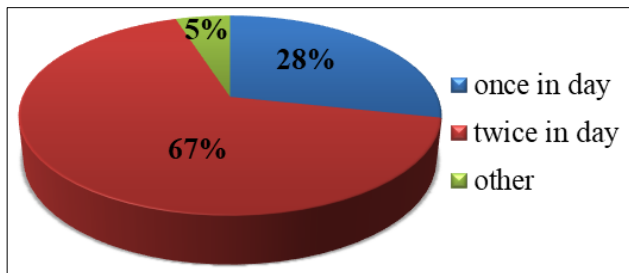


Fig 12: Frequency of feeding

**Water source**

Good water chemistry is the basis for a healthy aquarium system whether it is freshwater or saltwater. Municipal water can be good for use in freshwater aquariums if some precaution is taken because it was treated with chlorine. Mineral water is among the best for use in fresh water aquariums with hard water-loving fishes. The study revealed that the majority of the ornamental fish keepers 68% used mineral water and 22% used ground water whereas only 10% ornamental fish keepers use municipal water in their aquarium (Fig. 13).

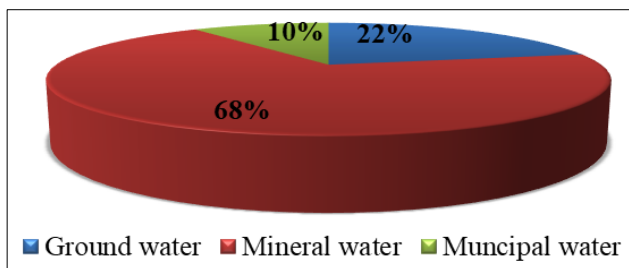


Fig 13: Water sources

**Aeration**

Continuous aeration is a very good practice it mixed the water, supplies oxygen for the fish, and removes carbon dioxide. About 60% respondents use aeration in their aquarium and 40% are not use aeration in their aquarium (Fig. 14).

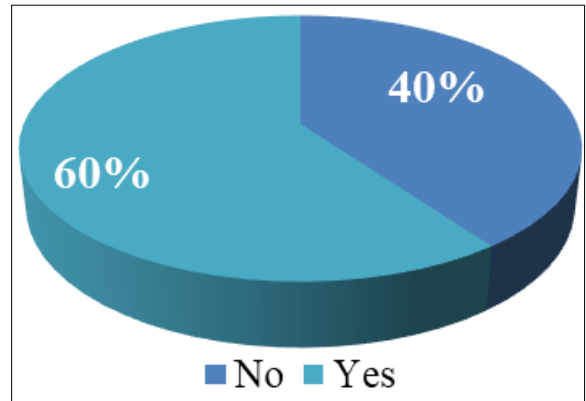


Fig 14: Aeration

**Filters used in aquarium**

Filters are used to remove unwanted matter from the aquarium and also introduce desirable substances into the water. Another is biological, the most important aspect of which is the conversion of toxic ammonia into much less toxic nitrate. Study reveals that majority of ornamental fish keepers 62% of respondents use filters in their aquarium and out of that 57% use power filters and only 3% and 2% use trickle filters and sponge filters (Fig. 15).

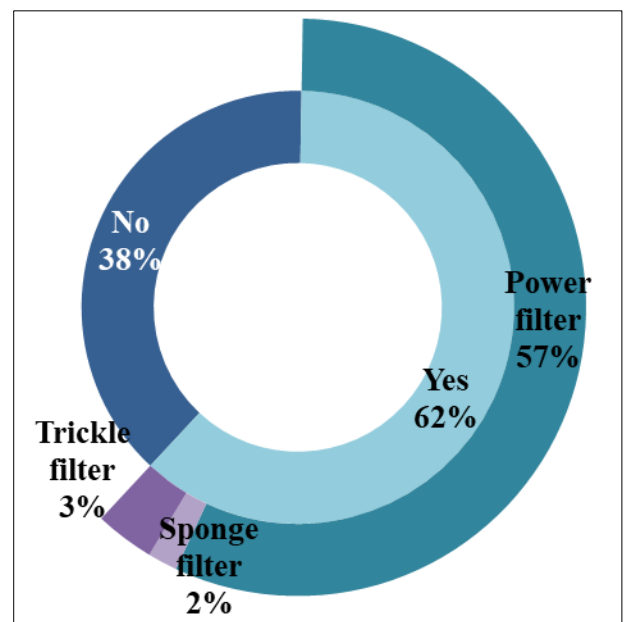


Fig 15: Filter use in aquarium

**Disease Observed by aquarium users**

only 2 numbers of aquarium keepers identified some clinical sings of diseased like fin rot, white spot, Partial loss of appetite, gill flu etc. in their aquarium. Faruk *et al.* (2012) [4] The respondents identified diseases that included white spots, ulcers, tail and fin rot, dropsy, ich and mouth fungus.

**Disease treatment**

Ornamental fish keepers usually immediately treat fish in a common way by applying drugs and chemicals directly to the aquarium or use hospital tank when they notice any abnormalities of fish behavior. They use drug which is suggested by ornamental fish shopkeepers. Faruk *et al.* (2012) [4] Found that traders also give suggestion depending on their experience of using drugs to the customer and the aquarium keepers.

### Issue related to Aquarium keeping

Fish owners who responded to the survey reported 87% users having no issue related to aquarium keeping but 13% respondents having issue regarding cleaning of aquarium and feeding of fish. Providing proper awareness and training to home aquarium owners about aquarium maintenance and creating paid jobs like aquarium washers provide a worthy service for pet owners will be the possible solutions to overcome the challenges faced by the pet fish keepers.

### Monthly expenditure

The study revealed that most of aquarium users 77% spend less than 100 rupees on their aquarium per month, 13% respondents spend up to 200 rupees and the rest of the others spent 200 to 500 rupees on their aquarium (Fig. 16). Saha and Patra (2013)<sup>[8]</sup> reported in their study that the majority of people expend for their aquarium up to 50 to 100 rupees.

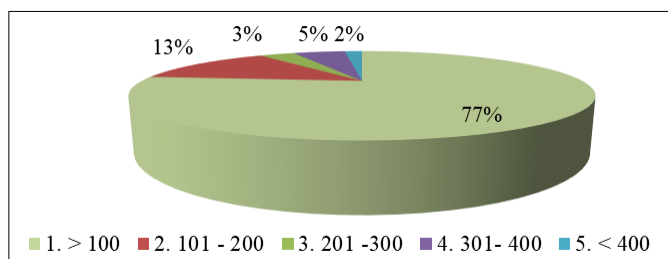


Fig 16: Monthly expenditure

### Conclusion

Ornamental fish keeping is one of the popular hobby in Navsari district. Research finding suggested that proper training for handling of fishes and disease management is foremost need of sector. Hence training to fish owners is necessary. As this sector is growing and having greater opportunity for entrepreneurship development and income generation therefore government has to give priority to this sector by imparting trainings and promoting aquariums at public places.

### Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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