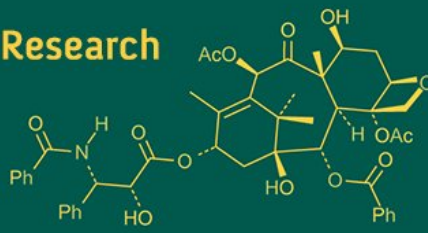
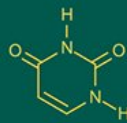


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## Dietary habits and food frequency pattern among tribal women residing in Udaipur District

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**Abstract**

Tribal women play an important role in maintaining household nutrition and preserving traditional food practices. The present study was conducted to assess the food habits and meal consumption patterns of tribal women in four villages of Udaipur district, Rajasthan, namely Amba Fala, Siya Kheri, Bhilo Ka Bedla, and Jogiyon Ka Gurha. A total of 200 tribal women aged 25–40 years were selected through random sampling and dietary information was collected using a structured food frequency questionnaire. The findings revealed that wheat was the staple cereal consumed daily by all respondents, while pulse consumption was mainly monthly and edible seeds were rarely consumed. Buttermilk was the only dairy product consumed regularly by the majority of respondents, whereas the intake of milk, curd, paneer, khoya, and tofu remained low. Mustard oil and soybean oil were the principal cooking oils used. Fruit and non-vegetarian food consumption was generally infrequent, and most respondents (80%) followed a vegetarian diet. The majority of respondents (96%) consumed two meals per day. Potato, onion, coriander leaves, and tea/coffee were consumed regularly, whereas most fruits, vegetables, and green leafy vegetables were consumed seasonally or occasionally. Overall, the findings indicate limited dietary diversity and a high dependence on staple foods, emphasizing the need for culturally appropriate nutrition interventions to improve the nutritional status of tribal women.

**Keywords:** Dietary habits; food frequency; nutritional status; dietary diversity; Udaipur district; Rajasthan.

**Introduction**

India has a population of over 1.21 billion, of which nearly 250 million people live below the poverty line. (Tripathi and Wadhawan, 2017) [9]. A considerable proportion of the tribal population belongs to economically weaker sections, where poverty and limited access to nutritious foods significantly influence dietary practices and nutritional status. Dietary habits are fundamental determinants of human health, lifestyle, and quality of life, as food choices directly affect nutritional status and overall well-being (Singh and Wadhawan, 2019) [8]. These habits are influenced by several factors, including cultural traditions, socioeconomic conditions, geographical location, food availability, religious beliefs, education, and environmental conditions (Gibney *et al.*, 2019) [4]. Among tribal communities, food habits are deeply rooted in indigenous knowledge systems and have evolved over generations through close interaction with the natural environment. Traditional tribal diets mainly consist of locally available cereals, millets, pulses, roots, tubers, green leafy vegetables, fruits, mushrooms, and various forest-based foods, which contribute to nutritional security as well as the conservation of biodiversity (FAO, 2010). Among tribal communities, food habits are deeply rooted in indigenous knowledge systems and have evolved over generations through close interaction with the natural environment. Traditional tribal diets mainly consist of locally available cereals, millets, pulses, roots, tubers, green leafy vegetables, fruits, mushrooms, and various forest-based foods, which contribute to nutritional security as well as the conservation of biodiversity (FAO, 2010). The food habits of tribal women are largely determined by seasonal food availability, environmental conditions, agricultural practices, and household socioeconomic status. In recent years, rapid socioeconomic changes have led to a nutritional transition, resulting in the coexistence of under nutrition and an increasing risk of overweight and non-communicable diseases among some tribal populations (Popkin, 2006) [7]. Furthermore, climate change, deforestation, and biodiversity loss have reduced the

Availability of traditional food resources, adversely affecting household food security and dietary practices (FAO, 2010). This research provides information on the food consumption frequency and meal consumption patterns of tribal women, helping to understand their food habits. The findings may serve as baseline information for future research and support the development of sustainable food and nutrition policies aimed at improving the health and well-being of tribal communities.

### Objective of the study

- To study meal consumption pattern of tribal women.
- To assess food habits of the selected tribal beneficiaries.

## 2. Methodology

The study was conducted in four tribal villages, namely Amba Fala, Siya Kheri, Bhilo Ka Bedla and Jogiyon Ka Gurha of Udaipur district, Rajasthan. A total of 200 tribal women belonging to the age group of 25-40 years were selected through a random sampling technique. A structured interview schedule was developed to measure the dietary intake pattern of the tribal women.

## 3. Results and discussion

However results are classified below under following sub headings

### 3.1 To study meal consumption pattern of tribal women

#### 3.1.1. Meal intake pattern of the respondents

Table: 1 Meal consumption pattern of the tribal women

| Meal intake                | Yes |
|----------------------------|-----|
| Consume only one meal      | 3%  |
| Consume two meal per day   | 96% |
| Consume three meal per day | 1%  |

Table 1 represents the meal intake pattern of the respondents. The findings indicate that the majority of the respondents (96%) consumed two meals per day. In contrast, only 3 per cent respondents consumed one meal per day, while just 1 per cent respondent consumed three meals per day. This shows that a two-meal pattern was the most common among the study population, whereas one- and three-meal patterns were rarely observed. The present findings are supported by Ghosh-Jerath *et al.* (2021)<sup>[3]</sup>, who reported that tribal households commonly consumed two to three meals per day, indicating that a limited meal frequency is a common dietary practice among tribal communities.

### 3.2 To assess food habits of the selected tribal women

#### 3.2.1. Consumption pattern of cereals among tribal women

Table 2: Consumption pattern of cereals

| Cereals    | Daily (%) | Weekly (%) | Monthly (%) | Seasonal (%) | Never (%) |
|------------|-----------|------------|-------------|--------------|-----------|
| Wheat      | 100       | 0          | 0           | 0            | 0         |
| Rice       | 3.5       | 27.5       | 3.5         | 3.5          | 7.5       |
| Maize      | 20        | 6          | 70.5        | 70.5         | 2         |
| Barley     | 0.5       | 0          | 0.5         | 0.5          | 99        |
| Quinoa     | 0.5       | 0          | 0.5         | 0.5          | 99.5      |
| Brown Rice | 0.5       | 0          | 0           | 0            | 99.5      |
| Oats       | 0.5       | 0.5        | 0           | 0            | 98.5      |

Table: 2 represent that the wheat was the predominant cereal consumed by the respondents, with all respondents (100%) reporting daily consumption. Rice was mainly consumed on a monthly basis 58 per cent, followed by weekly consumption 27.5 per cent. Maize was largely consumed seasonally 70.5 per cent reflecting its seasonal availability and the consumption of barley 99 per cent, quinoa 99.5 per cent, brown rice 99.5 per cent and oats 98.5 per cent was negligible, as the majority of respondents reported never consuming these cereals. The findings of the present study are consistent with Ghosh-Jerath *et al.* (2021)<sup>[3]</sup>, Dhoble *et al.* (2022)<sup>[1]</sup>, who observed that cereals constitute the staple diet of tribal communities and are consumed more frequently than other food groups.

#### 3.2.2. Consumption pattern of Pulses among tribal women

Table 3: Consumption of pulses

| pulses      | Daily | Weekly | Monthly | Seasonally | Never |
|-------------|-------|--------|---------|------------|-------|
| Green gram  | 0.5   | 33.0   | 65.0    | 0.5        | 1.0   |
| Black gram  | 0.0   | 34.5   | 63.0    | 1.5        | 1.0   |
| Red gram    | 0.0   | 24.5   | 58.5    | 1.5        | 15.5  |
| Bengal gram | 0.0   | 27.5   | 61.0    | 0.5        | 11.0  |
| Cow Pea     | 0.0   | 2.5    | 33.0    | 0.5        | 64.0  |

Table: 3 represent that results reveal that monthly consumption was the most common frequency for the majority of pulse varieties, particularly green gram, black gram, Bengal gram, and red gram, indicating their regular inclusion in household diets. Weekly consumption was reported by a moderate proportion of respondents, while daily consumption was negligible across all pulse types. In contrast, cow pea emerged as the least consumed pulse, with the highest proportion of respondents reporting that they never consumed it. Overall, the findings suggest that although pulses are an important component of the respondent's diet, they are consumed primarily on a monthly rather than a daily or weekly basis, reflecting limited dietary diversity and irregular pulse intake.

#### 3.2.3 Consumption pattern of edible seed among tribal women

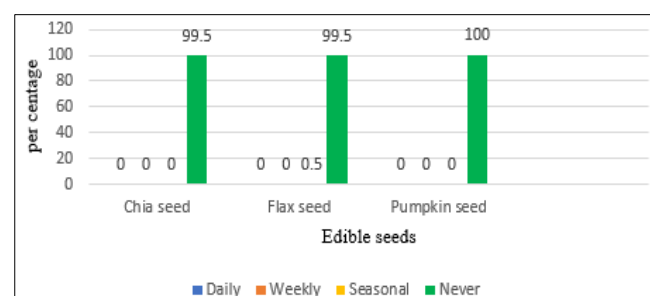


Fig 1: Consumption of edible seeds

Fig. 1 represent that the consumption of edible seeds among the respondents was extremely low. Chia seeds and flax seeds were never consumed by 99.5 per cent of the respondents, while only 0.5 per cent reported consuming them monthly and occasionally, respectively. Pumpkin seeds were never consumed by 100 per cent of the respondents. Overall, edible seeds were rarely included in the regular diet of the respondents.

### 3.2.4 Consumption pattern of milk and milk products among tribal women

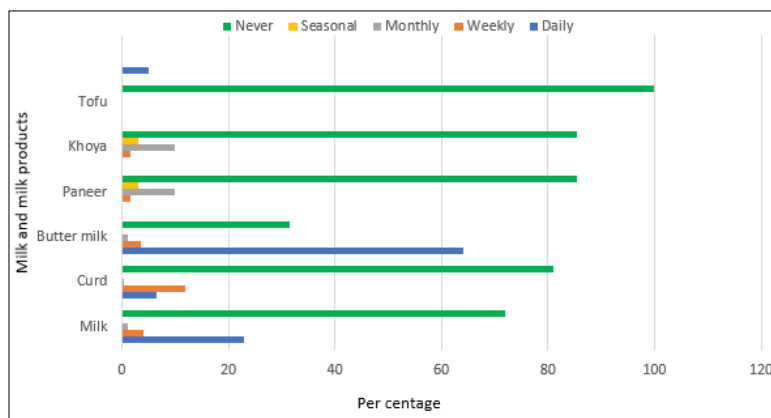


**Fig 2:** Consumption of Milk and milk products

Figure 2 shows the frequency of consumption of milk and milk products among the respondents. Butter milk was the most commonly consumed dairy product, with 64 per cent of the respondents consuming it daily, while 3.5 per cent consumed it weekly and 32.5 per cent never consumed it. Milk was consumed daily by 23 per cent of the respondents and weekly by 4 per cent, whereas 73 per cent reported that they never consumed it. Similarly, curd was consumed daily by 6.5 per cent and weekly by 12 per cent of the respondents, while 81.5 per cent never consumed it. The

consumption of paneer and khoya was comparatively low, with 10 per cent consuming them monthly, 3.0 per cent seasonally, 1.5 per cent weekly and 85.5 per cent never consuming either product. Tofu was not consumed by any of the respondents, as 100 per cent reported that they never consumed it. Similarly, dalda was rarely used, with 89.5 per cent of the respondents never consuming it, while 5.0 per cent consumed it daily and 5.0 per cent consumed it seasonally.

### 3.2.5. Consumption pattern of fat and oil seeds among tribal women

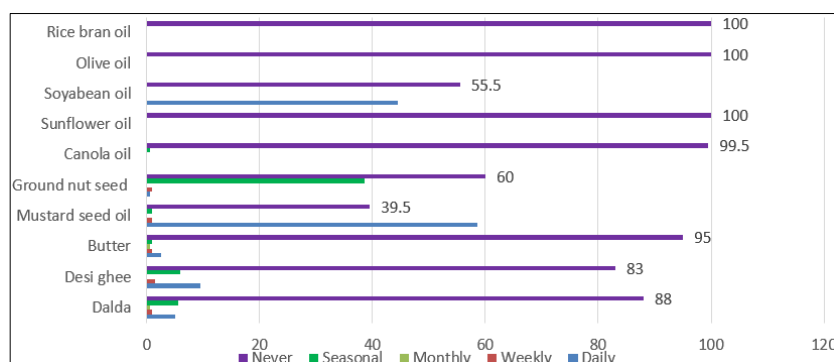


**Fig 3:** Consumption of fat and oil seeds

Fig 3 show that mustard seed oil was the most commonly consumed edible oil, with 59.5 per cent of the respondents consuming it daily, followed by soya bean oil with 44.5 per cent. The majority of the respondents never consumed desi ghee 83.0 per cent, dalda 88.5 per cent, butter 95.5 per cent,

groundnut oil 99.0 per cent, canola oil 99.5 per cent, olive oil 100 per cent, sunflower oil 100 per cent, and rice bran oil 100 per cent. Overall, mustard seed oil and soya bean oil were the major edible oils used by the respondents.

### 3.2.6 Consumption of fruits among tribal women

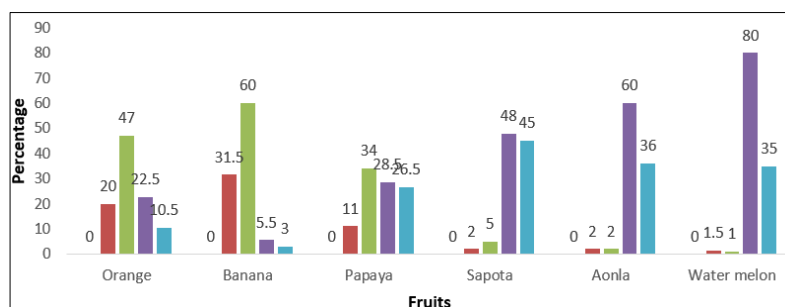


**Fig 4:** Consumption pattern of fruits

Fig. 4 shows that fruit consumption among the respondents was generally low. Watermelon was consumed occasionally by 80 per cent of the respondents, followed by aonla 60 per cent and sapota 48 per cent. Banana was consumed weekly

by 31.5 per cent of the respondents, while 26.5 per cent of the respondents never consumed papaya. None of the respondents reported daily consumption of any fruit, indicating a low level of regular fruit intake.

### 3.2.7 Consumption pattern of meat and meat products

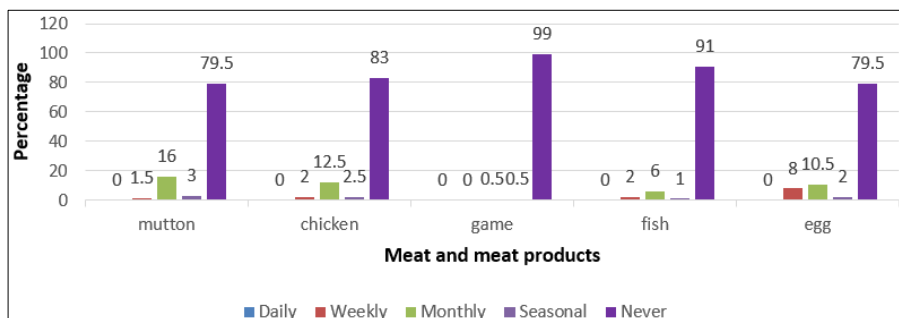


Fig 5: Consumption pattern meat and meat products

Fig. 5 represents the consumption pattern of non-vegetarian foods among the respondents. None of the respondents consumed non-vegetarian foods daily. Seasonal consumption was relatively higher, with mutton consumed by 16 per cent of the respondents, followed by chicken 12.5 per cent, eggs 10.5 per cent, fish 6 per cent, and game meat 0.5 per cent. Weekly and monthly consumption remained very low for all non-vegetarian foods. The majority of the respondents never consumed game meat 99 per cent, fish 91 per cent, chicken 83 per cent, and both mutton and eggs 79.5 per cent. Overall, non-vegetarian food consumption was infrequent, with seasonal consumption being more common than regular intake.

### 3.2.8 Consumption pattern of roots among tribal women

Fig. 6 shows the consumption pattern of root vegetables among the respondents. Potato and onion were the most regularly consumed root vegetables, with 92.5 per cent and 85.5 per cent of the respondents consuming them weekly, respectively. In contrast, carrot 93.0 per cent and radish 91.5 per cent were consumed mainly on a seasonal basis. Beetroot was the least preferred root vegetable, with 89.5 per cent of the respondents reporting that they never consumed it. Overall, potato and onion were consumed more regularly, whereas carrot, radish, and beetroot were consumed infrequently.

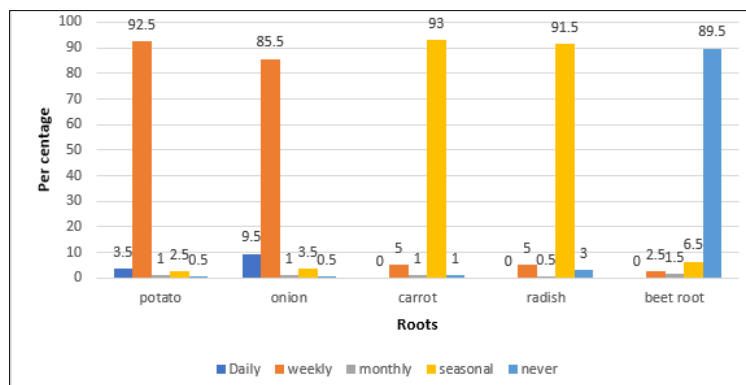


Fig 6: Consumption pattern of roots

### 3.2.9 Consumption pattern of green leafy vegetables

Table: 4 represent that the consumption pattern of green leafy vegetables revealed that coriander leaves were the most regularly consumed item, with 64.5 per cent of the respondents consuming them daily. In contrast, spinach (91%), fenugreek (90%), Bengal gram leaves (85%), radish

leaves (87%), and cabbage (95%) were predominantly consumed seasonally, while their weekly and monthly consumption remained low. Overall, coriander leaves formed a regular part of the respondents' diet, whereas the other green leafy vegetables were mainly consumed on a seasonal basis. **The table is given below:-**

Table 4: Consumption pattern of leafy vegetables

| Green leafy vegetables | Daily (%) | Weekly (%) | Monthly (%) | Seasonal (%) | Never (%) |
|------------------------|-----------|------------|-------------|--------------|-----------|
| Spinach                | 0         | 7.5        | 1           | 91           | 0.5       |
| Fenugreek              | 0         | 8.5        | 1.5         | 90           | 0         |
| Bengal gram leaves     | 0         | 4.5        | 1.5         | 85.5         | 8.5       |
| Radish leaves          | 0         | 5          | 0           | 87.5         | 7.5       |
| Cabbage                | 0         | 4.5        | 0           | 95.5         | 0         |
| Coriander leaves       | 64.5      | 3.5        | 0.5         | 29           | 2.5       |

### 3.2.10. Consumption pattern of the beverages

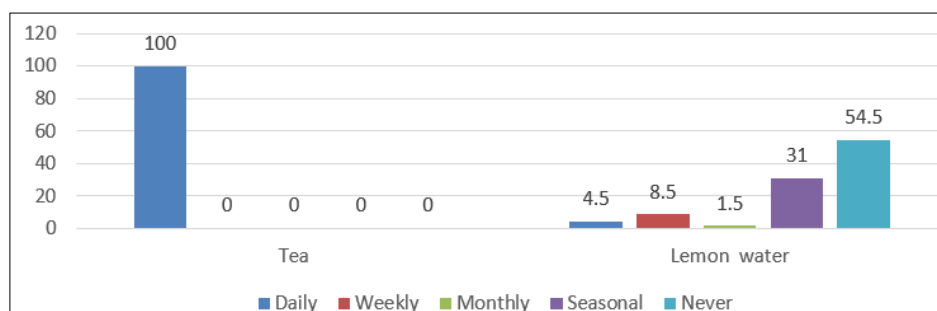


**Fig 7:** Consumption pattern of beverages

**Fig: 7** show the consumption pattern of beverages among the respondents. Tea was consumed daily by all respondents. In contrast, lemonade was consumed less frequently, with 54.5 per cent of the respondents never consuming it and 31.0 per cent consuming it seasonally. Overall, tea/coffee was the most commonly consumed beverage, whereas lemonade consumption was limited. The present findings are consistent with the study conducted by Dhoble *et al.* (2022) <sup>[1]</sup>, who reported that tea was a commonly consumed beverage among tribal women, while the consumption of other beverages was comparatively low. Similarly, a study on tribal communities reported that the

majority of respondents consumed tea or coffee once daily, indicating that tea/coffee is the most frequently consumed beverage among tribal populations.

### 3.2.11 Food habits of the respondents

Fig: 8 represents the dietary pattern of the respondents. The findings reveal that the majority of the respondents 80 per cent were vegetarians, whereas only 20 per cent consumed non-vegetarian foods. This indicates that vegetarian dietary practices were predominant among the study population, with only a small proportion following a non-vegetarian diet

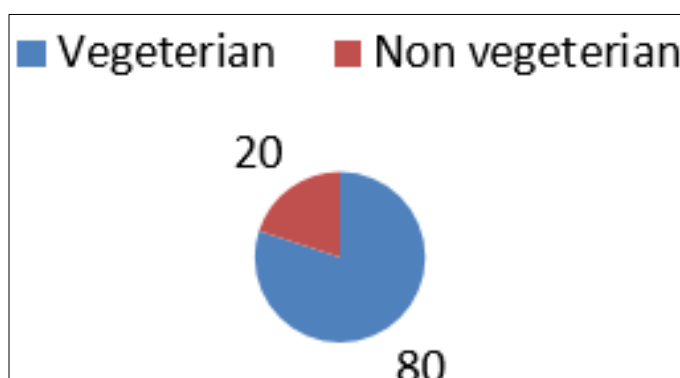


**Fig 8:** Food habits of the respondents

## 4. Conclusion

All of the respondents had consumed a cereal-based diet on a regular. Fruit consumption was generally infrequent, with most fruits being consumed occasionally or fortnightly and no respondent reporting daily consumption. Non-vegetarian foods were rarely consumed, with the majority of respondents never consuming these items and no daily consumption reported. Basis. Pulses were predominantly consumed on a monthly basis, while daily consumption was negligible across all pulse varieties. Buttermilk was the most regularly consumed dairy product, whereas the consumption of milk, curd, paneer, khoya, tofu, and dalda was comparatively low. Mustard seed oil and soybean oil were the principal cooking oils used by the respondents, while the use of other edible oils and fats was minimal.

## Recommendation

1. Nutrition education programmes should be organized to increase awareness among tribal women regarding the importance of a balanced and diversified diet.
2. The regular consumption of nutrient-rich foods such as pulses, milk and milk products, fruits, green leafy vegetables, and edible seeds should be encouraged to

improve dietary quality and reduce the risk of nutrient deficiencies.

3. Awareness should be created about the nutritional value of locally available and traditional foods, including millets, forest foods, and indigenous vegetables, to promote sustainable and healthy dietary practices.

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