Consumption pattern of meat and meat products in and around Nagpur city of Maharashtra

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ARTICLE INFO

ABSTRACT

A study was conducted to understand consumption patterns and factors influencing consumption pattern of meat and meat products in and around Nagpur city. A proportionate random sampling method was used to conduct a survey (sample size of 400) using a bilingual (Marathi and English) questionnaire comprising questions related to the socioeconomic particulars of the consumers, meat and meat products consumption patterns, and factors influencing on it. The study revealed that most respondents were 15 to 30 years (52.5%) and college graduates (35.8%). About 43% of the respondents reported a family income of more than six lakhs. Most of the consumers ate meat for taste (54.4%) and health benefits (27.0%) and responded that they usually consume meat once a week (50.3%). The most preferred meat in and around Nagpur city was poultry meat (50.8%), followed by chevon (27.5%) and Fish & seafood (18.7%). Most respondents (66.8%) were unwilling to pay more for lean meat. The results indicated that most respondents consider safety, nutritional value, taste, market price, availability, and children's meat preference as essential factors influencing meat consumption.

Key words: Socioeconomic, meat Consumption, factors, consumers, Questionnaire.

INTRODUCTION

In a few decades, the dietary structure of many emerging and developing countries has changed radically. The increase in animal protein consumption is a marker of the nutritional transition primarily related to the growing consumption of meat protein because of the rising rate of urbanization, increasing disposable incomes, and greater exposure to new cultures. India has consistently been recognized as a country with a diverse population with different cultures and traditions. Meat consumption has dramatically changed owing to nutritional transition, advancement of lifestyle, and increasing purchasing power of people in India (Mehta

et al. 2015). The different dietary habits of Indian society vary according to religion, culture, tradition, socioeconomic profile, geographical region, etc. Despite the stigmas and taboos, meat consumption is gradually becoming more acceptable and is even seen as a trend among India's younger generation (Khara, et al. 2020).

Maharashtra rank 5th in poultry population, taking 74.3 million poultry birds; along with this, sheep and goat population were 2.7 million and 10.6 million, which are the seventh and sixth largest population in the country, respectively (GOI, 2019) and exported, 11,777.60 metric tonnes of poultry products (Rs 47.90 crore) and 210.89 metric tonnes of processed meat (Rs .8.59 crore) in

2019-2020 (APEDA, 2021). India's meat market is valued at nearly 30 billion dollars, with an annual growth of 20-25 percent (Waghmare, 2021). India is reported to be one of the world's fastest-growing markets in its consumption of poultry (Mintel Global, 2017). Nevertheless, India has much lower levels of meat consumption of 3 kg per capita annually compared to the world average (OECD, 2018). India's consumption of other types of meat, such as buffalo, is also rising. However, specific figures on meat consumption in India are difficult to obtain. Other literature notes that Indians are particularly likely to underreport their consumption due to cultural restrictions and taboos (Bansal, 2016). Meat consumption in India is a relatively under-researched topic. A part from works that discuss general social trends, there is not much literature on meat consumption in contemporary Indian society. The consumption pattern of meat and its products is an essential factor in the development of the livestock sector in general and notable enterprises in particular. Tounder stand changes in consumption patterns, it is necessary to identify the factors influencing meat and meat product purchasing behaviour. This is because it helps to create qualified forecasts for further developments in consumer demand. Moreover, the consumption pattern of many goods has witnessed a drastic change. Meat is consumed not only for its sensory appeal but also because of its sociocultural associations with a novel, modern lifestyle in an urban city. Urban India today is a hybrid of traditional values and a desire for novelty (Mathur, 2014). With this background, the study was formulated to identify the meat consumption patterns of the population in Nagpur city, which has been fast urbanized in the last decade.

MATERIALS AND METHODS

The study was conducted in Nagpur, a third largest city and an important economic centre of the Vidarbha region of Maharashtra and the sub-capital city of Maharashtra, India.The city has shown enhanced industrial development that was augmented by quick urbanization and had a population of 2,405,665 as per the 2011 census. This resulted in a rise in the number of people earning varied incomes, which has the combined advantage of having access to different consumer goods and fresh meat and meat products since many are produced in areas adjoining the city.

Data Collection

Using a pre-validated questionnaire, a proportionate random sampling method was used to collect data from 400 respondents. A bilingual (Marathi and English) questionnaire/interview schedule comprising questions related to socio-economic and educational particulars of the consumers, meat consumption patterns, and factors influencing meat consumption were distributed and then interviewed personally to the respondents to gather the data employing a structured interview format. During the interview, the researchers also had an opportunity to evaluate the quality of opinions, knowledge, and choices of the respondents about assorted meat and meat products. Photography, interviews, and questionnaires were the primary data collection tools for the research objectives.

STATISTICAL ANALYSIS

The data obtained were recorded, tabulated, and analysed statistically using IBM Statistical Package for Social Science (SPSS) version 28 and Microsoft Excel. The responses were grouped and presented in the form of frequencies and percentages.

RESULTS AND DISCUSSION

Socio-economic and educational background of respondents

The socioeconomic and educational background of the respondents has been presented in Table 1. The gender of the majority of respondents was male (86.2%), and female respondents were 13.8%. However, there was a highly significant (P<0.05) variation in the gender population in Nagpur city. Similar findings were observed by Waghmare et al. (2021), who reported 89.12% male consumers in Maharashtra. Moreover, Gossard and York, (2003) found that some factors associated with gender, age, place of residence (Urban or Rural), eating habits and social status of consumers affect meat consumption preference and amount of consumption.

The age group of majority of respondents were in between 15-30 years (52.5%), followed by 31-45 years (31.0%) and 46-60 years (14.5%). The significant advantage of the current study group was that most respondents were from the young (15-30 years) and middle age groups (45 years), respectively, which made up a significant group of the population having a massive impact on the consumption and purchase of meat and meat products. Among all respondents, 94.5% of men were heading the family showing male dominance, whereas only 5.5% of female respondents were head of the family. In Indian condition majority of females are involved in household work and restricted only to cooking, whereas meat purchasing activities are handled by males (Kiran et al., 2018).

Table 1: Socioeconomic and educational background of the respondents in and around Nagpur city.

Parameters Options		Total	P-value
1. Gender			
	Male	345 (86.2%)	**0.002**
	Female	55 (13.8%)	
2. Age Group			
	15-30	210 (52.5%)	
	31-45	124 (31.0%)	**0.145**
	46-60	58 (14.5%)	
	61 & above	8 (2.0%)	
3. Head of Family			
	Male	378 (94.5%)	**0.63**
	Female	22 (5.5%)	
4. Type of Family			
	Nuclear	307 (76.8%)	**0.381**
	Joint	93 (23.2%)	
5. Mode of accommodation			
	Own	182 (45.5%)	
	Rent	1600.0%)	**0.536**
	Ancestral	58 (14.5%)	
Educational status			
	Up to Primary school	2 (0.5)%	
	Less than high school	3 (0.8%)	
	Equivalent to high school	42 (10.5%)	
	Technical school	23 (5.8%)	
	College dropout	15 (3.8%)	**0.056**
	College Graduate	143 (35.8)	
	Postgraduate	26 (6.5%)	
	Professional	137 (34.3%)	
	Others specify	8 (2.0%)	
Family income			
	< 2 lakhs	56 (14.0%)	
	2 - 4 lakhs	61 (15.2%)	**0.000**
	4 - 6 lakhs	111 (27.8%)	
	> 6 lakhs	172 (43.0%)	

Value in the parenthesis indicates the percentage of the response (n=400)
$P<0.05$- The mean difference is significant at a 5% level
$P<0.01$- The mean difference is significant at a 1% level

Most respondents in Nagpur city were from the nuclear family (76.8%), while only 23.2% were from joint families. The results were well supported by Talukder et al. (2020), who reported the presence of nuclear families in most consumers in North Indian cities. Among the respondents, 45% own their homes, 40% live in rented houses, and only 14.5% live in ancestral property.

Regarding the educational background of respondents, most were college graduates (35.8%), whereas 34.3% had professional education. In all, only 6.5% of respon-

dents had a postgraduate degree. The findings were parallel with Reddy and Raju (2010), who reported that most urban consumers (75%) in Hyderabad were either graduates or postgraduates.

About 43% of the respondents had a family income of more than six lakhs, followed by 4-6 lakhs (27.8%), 2-4 lakhs (15.2%) and less than two lakhs (14%). However, there was a significant variation (p<0.05) in family income in Nagpur city.

Consumption pattern of meat and meat products

The analysed data on the consumption pattern of meat and meat products in and around Nagpur city has been depicted in Table 2. It was observed that most people did not eat meat mainly because of religious taboos (50.2%). The second reason cited by respondents was the people who do not eat meat by birth (34.3%). Religious sentiments are essential to all religions towards specific meats as they determine meat consumption. The findings are analogous to Srinivas et al. (2018) and Chandirasekaran et al. (2021), who reported that religious sentiments were the main reason (85%) for not consuming meat in Jagital and Madurai city. Jagadeesh Babu et al. (2010) reported that religious beliefs play an important role in the meat consumption patterns of people and religious sentiments (91.5%) were the main reason for not consuming pork and beef in Chittoor, Andhra Pradesh. Religion influences consumer attitude and behaviour in general (Delener, 1994; Pettinger et al. 2004) and food purchasing decisions and eating habits (Mennel et al. 1992; Shatenstein and Ghadirian, 1997).

Table 2: Consumption pattern of meat and meat products in and around Nagpur city

Parameters	Options	Total	P-value
1. Possible reason for not eating meat by people			
	Do not eat meat by birth	137 (34.3%)	**0.926**
	Religious Taboos	201 (50.2%)	
	Don't Like meat	32 (8.0%)	
	Due to family reasons	18 (4.5%)	
	Due to health issues	12 (3.0%)	
2. Reason for meat consumption			
	Taste	218 (54.4%)	**0.007**
	Habituated	61 (15.3%)	
	Due to guests	13 (3.3%)	
	Due to health benefit	108 (27.0%)	
3. Consumed fresh or frozen			
	Fresh	334 (83.5%)	**0.215**
	Frozen	4 (1.0%)	
	Both	62 (15.5%)	
4. Type of meat prefer			
	Chicken	203 (50.8%)	**0.046**
	Chevon	110 (27.5%)	
	Mutton	8 (2.0%)	
	Fish & Seafood	75 (18.7%)	
	Pork	4 (1.0%)	
5. Frequency of meat consumption			
	Once in week	201 (50.3%)	**0.17**
	Twice in week	122 (30.5%)	
	Daily	8 (2.0%)	
	Occasionally	69 (17.2%)	

6. Place of meat purchase

Roadside local butcher shop	118 (29.5%)	**0.007**
Local meat shop	262 (65.5%)	
Super market	(5.0%)	

7.Meat from young animal or adult animal?

Young animal	273(68.3%)	**0.075**
Adult animal	77(19.3%)	
Spent animal	6(1.4%)	
Based on price	44(11%)	

8.Freezing of meat

Do not freeze	215 (53.8%)	**0.058**
Freeze immediately	30 (7.5%)	
Occasionally	155 (38.7%)	

9.Willingness to pay for lean meat

More	93 (23.2%)	**0.008**
Less	40 (10.0%)	
Same	267 (66.8%)	

Value in the parenthesis indicates percentage of the response (n=400)
$P<0.05$- The mean difference is significant at 5% level
$P<0.01$- The mean difference is significant at 1% level

The results indicated a significant ($p<0.05$) variation in reasons for meat consumption. Most consumed meat for taste (54.4%) and health benefits (27.0%). Nevertheless, 25.3% of total respondents consumed meat due to their habits. These results indicated increased consciousness about health, mainly in the younger generation. These results were well supported by Srinivas et al. (2018) and Jagadeesh Babu et al. (2010), who reported the taste as a significant reason for meat consumption in Jagital and Chittoor. Ayman et al. (2021) reported that most consumers were habituated to chevon and mutton as the main reason for meat consumption in Srinagar. Sunitha (2019) also reported that the significant reason for meat consumption was its habit (32%) and health benefits (28%) in Vilavancode, Tamil Nadu.

Results indicated that most respondents consume fresh meat (83.5%) rather than frozen meat (1.0%). Nevertheless, about 15.5% of respondents consume both fresh and frozen meat. The findings corroborate the earlier observations of Chandirasekaran etal.(2021) and Kiran et al. (2018), who reported a similar trend of fresh meat consumption among consumers. Kavitha and Ajithkumar (2014) reported that most consumers prefer fresh meat (50%), while only 13.1% opted for frozen meat. Singh et al. (2019) reported that irrespective of the sampling zone, most respondents consume hot-served meat (75.50%-97.50%) rather than shelf-packed frozen meat in Ludhiana.

It was found that the most preferred meat in Nagpur city was poultry meat (50.8%), followed by chevon (27.5%), Fish and Seafood (18.7%), Mutton (2.0%) and Pork (1.0%). However, a significant ($p<0.05$) variation in meat preference was observed. The most preferred meat was poultry in Nagpur because of its taste, accessibility, affordability and no religious taboos. The rise in chicken meat consumption could be due to the versatility of the meat consumption, relatively low cost compared to other meat, the acceptance of chicken meat by all religions and an increase in household income (Kiran et al. 2018; Devi et al. 2014). These findings were in agreement with Rao et al.(2017), Kiran et al. (2018), Singh et al. (2019), Talukder et al.(2020) and Waghamare et al. (2021) who reported chicken meat as the most preferred meat by the consumers. The findings contradicted the findings of Suresh (2016) and Ayman et al. (2021), who reported mutton as the most preferred meat in Delhi, Hyderabad and Srinagar due to its nutritional value, and health benefits. The second preference for goat meat is agreed by 27.5% of consumers which were supported with the reports of Talukdar et al. (2020), who found that 34.24% of consumers preferred goat meat as a second preference after chicken meat due to the unbeatable taste, flavour and texture of goat meat. Consumers believe that the small ruminant meat produced in India contains less chemicals because they are mainly grown in an extensive

management system depending on common pasture, with the least application of chemicals.

During the survey, most people responded thatthey usually consume meat once a week (50.3%) compared to twice a week (30.5%), daily (2.0%), and occasionally (17.2%). Similar findings were also reported by Ali et al. (2017), Rao et al.(2017), Kiran et al.(2018),Majagi and Somashekar(2020), Sunitha (2019), Chandirasekaran et al. (2021) and Waghamare et al.(2021) who reported frequencies of meat consumption of the majority of people as once or twice in a week. However, Tekle and Anja (2017) found that the majority of the respondent's frequency of meat consumption was once a month.

Majority of consumers preferably purchase meat from roadside local butcher shops (65.5%), followed by local meat shops (29.5%) and supermarkets (5.0%).The results are well supported by Chandirasekaran et al.(2021), who reported that most respondents (72.5%) prefer to buy fresh meat from road side meat shops indicating that the consumers are unwilling to pay extra for better quality products. Similar findings were also reported by Kiran et al.(2018), Rao et al. (2017) and Talukder et al. (2020) and Waghamare et al.(2021), who reported that 50%, 100%, 41.19% and 70.62% of consumers respectively purchased meat from local butcher shops.

The majority of respondents preferred meat from young animals (68.3%) rather than adults (19.3%) and spent animals (1.4%). Most respondents reported that young animal meat is tender and tastier. However, 11.0% of respondents preferred meat based on its cost rather than the animal's age. Preference for meat from spent animals was negligible (1.4%). These findings were in parallel with Chandirasekaran et al. (2021), who reported 97% of consumers prefer meat from young animals.

Most respondents did not freeze meat (53.8%) after its purchase, and only (7.5%) of consumers freeze the meat immediately after its purchase. Moreover, 38.7% of consumers occasionally freeze their meat, indicating their high inclination towards fresh meat consumption. These findings were in line with Singh et al. (2019), and Waghmare et al. (2021), who found that most consumers favoured hot, fresh meat from animals slaughtered in front of their eyes (90.21%) rather than frozen or chilled meat (9.39%). Similarly Kavitha and Ajithkumar (2014) also reported preference of most consumers to fresh meat (50%) than frozen meat (13.1%).

The result indicated that the majority (66.8%) of respondents were unwilling to pay more for lean meat, indicating unawareness regarding the benefits of lean meat consumption. Nevertheless, 23.2% of respondents were ready to pay more for lean meat which might be due to more health consciousness among these consumers. These findings agreed with Chandirasekaran et al. (2021), who reported that respondents (90%) were unwilling to pay more for lean meat. Priyadharsini (2017)reported that consumers gave more importance to ageing and tenderness and less importance to the leanness of the meat.

Factors influencing consumption pattern of meat and meat products

The analysed data on the factors influencing the consumption pattern of meat and meat products in and around Nagpur city has been depicted in Table 3. The results indicated that most respondents (61.1%) gave importance to safety, nutritional value, taste, market price, availability and children's meat preference for the decision to eat meat. Moreover, 26.8% of consumers accepted that the factors mentioned above influence the decision to eat meat. These might be due to increasing awareness about the effects of inferior quality meat on health and realizing the importance of meat hygiene as essential.The findings were supported by Reddy and Raju (2010), who reported that people would not compromise on meat quality due to experience and quality consciousness in Hyderabad.

The majority of respondents (74.3%) reported high nutritional value in meat as a significant factor influencing the decision to eat meat or not. Rao et al. (2017) and Sunitha (2019) reported that 63.33% and 56% of respondents had current knowledge about meat's nutritive value and consumed meat due to its health benefits in Gannavaram, Andhra Pradesh and Vilavancode, Tamil Nadu respectively. Similarly, Tekle and Anja (2017) reported that most of the respondents had an awareness of meat's importance; Beneficial effects in disease prevention (46%), body building (19%), and protein (9%). In contrast, Jagadeesh Babu et al. (2010) reported that 78% of consumers had no awareness of the nutritive value of meat in Chittoor, Andhra Pradesh.Most respondents (76.8%) felt that taste is a crucial factor influencing the decision to eat meat. These might be due to taste, texture, aroma and appearance as sensory attributes of meat products as they have an influential and distinct impact on the acceptability of meat products. The findings were commensurate with Jagadeesh Babu etal. (2010), who reported that the taste as the primary reason (88%) for meat consumption.

Table 3: Factors Influencing the Consumption Pattern of Meat and Meat Products in and around Nagpur city

Parameters	Options	Total	P-value
1. Guaranteed safe to eat			
	Don't know	20 (5.0%)	**0.036**
	Somewhat Important	107 (26.8%)	
	Not too Important	29 (7.3%)	
	Very Important	244 (61.0%)	
2. High in nutritional value			
	Don't know	16 (4.0%)	**0.024**
	Somewhat Important	75 (18.8%)	
	Not too Important	12 (3.0%)	
	Very Important	297 (74.3%)	
3. Tastes good			
	Don't know	15 (3.8%)	**0.01**
	Somewhat Important	68 (17.0%)	
	Not too Important	10 (2.5%)	
	Very Important	307 (76.8%)	
4. Popularity of meat (based on species)			
	Don't know	34 (8.5%)	**0.323**
	Somewhat Important	140 (35.0%)	
	Not too Important	169 (42.25%)	
	Very Important	57 (14.25%)	
5. Consumption of meat (based on price)			
	Don't know	18 (4.5%)	**0.024**
	Somewhat Important	105 (26.3%)	
	Not too Important	26 (6.5%)	
	Very Important	251 (62.8%)	
6. Consumption of meat available			
	Don't know	40 (10.0%)	**0.565**
	Somewhat Important	156 (39.0%)	
	Not too Important	134 (33.5%)	
	Very Important	70 (17.5%)	
7. Consumption of meat based on children's preference			
	Don't know	24 (6.0%)	**0.985**
	Somewhat Important	179 (44.8%)	
	Not too Important	44 (11.0%)	
	Very Important	153 (38.3%)	

Value in the parenthesis indicates percentage of the response (n=400)
$P<0.05$- The mean difference is significant at 5% level
$P<0.01$- The mean difference is significant at 1% level

Similarly, Singh et al.(2019) reported that consumers preferred taste as their essential criterion for purchasing meat products. Sunitha (2019) also reported that the significant reason for meat consumption was its habit (32%) and health benefits (28%) in Vilavancode, Tamil Nadu.

Most respondents (42.25%) thought that the popularity of meat (based on species) was not too important a factor influencing a decision to eat the meat, followed by 35.0% of consumers who gave importance to somewhat importance to popularity of meat. However, the market price was the most critical factor for most consumers (62.8%) and somewhat important for some consumers (26.3%), influencing a decision to eat or not eat meat. This might be due to cost being the primary factor for meat consumption. These findings corroborate with Jagadeesh Babu et al. (2010), who reported that the cost of meat plays major role in meat consumption patterns in Chittoor. Similarly, Akinwuni et al. (2011) indicated that the cost and income as most limiting factors of meat preference. Shende et al. (2015) reported that the improvement in economic access to food due to increased income, did not result in higher consumption of cereals but increased the consumption of livestock products with rise in the proportion of expenditure on meat, fish and egg in rural areas than in urban Maharashtra. Some consumers (39.0%) give some importance to the availability of meat, as against 33.5% of the consumers who did not give importance to the availability of meat as a factor influencing consumption.Tekle and Anja (2017) reported that challenges to meat availability for consumption were low-income capacity (52%), less meat quality (14%) and cost/price (13%), health problems (10%) and supply shortage (13%).

Consumption of meat based on children's preference was an important factor in influencing the meat consumption of 38.3% of consumers. In contrast, the same was a somewhat important factor for the majority of the respondent (44.8%). These might be due to the health benefits of meat, giving importance to the children's preference for meat consumption. Similar findings were reported by Chandirasekaran et al. (2021)in their study conducted at Madurai, Tamilnadu.

CONCLUSION

It has been observed that consumers' choice of meat species was influenced by their gender, family income, food habit, religion, and their position in the social stratum. Consumers consider safety, nutritional value, taste, market price, availability, and children's meat preference as important factors influencing meat consumption. The study reveals that meat consumption for both chevon and poultry meat would likely increase in the forthcoming years and hence meat production warrants greater policy focus.

COMPETING INTERESTS

The authors do not have any competing interests among themselves or others related to this research work.

ETHICS STATEMENT

Not applicable

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