IMPACT OF COVID – 19 ON FREQUENCY OF FOOD PURCHASE IN FAMILIES OF ANDHRA PRADESH

Abstract

Aim: The study was under taken to know the impact of covid – 19 on frequency of food purchase in families of Andhra Pradesh.

Study design: Ex Post facto research design was adopted for the study.

Methodology: The study comprised of 360 sample of families covering both urban and rural areas of three districts of Andhra Pradesh in all three time periods (before, during pandemic and post pandemic). Frequency of food purchase was used to assess whether there was any change in purchasing pattern in all three time periods among families. The frequency of purchasing food groups was studied on daily, weekly, monthly, yearly basis and whenever required.

Results: The results showed that purchasing frequency is varied in majority of families. After comparison of three time periods it was analyzed that there was statistically significantly correlated difference in purchasing pattern of millets. Non significantly correlated food groups are pulses, fresh fruits, green leafy vegetables, vegetables, milk and milk products, chicken, meat, eggs, fish, sugars, dry fruits, sweets and savories, coffee powder, during 3 time periods.

Conclusion: During pandemic period increase in frequency of purchase was seen in millets, pulses etc; no change in cereals, nuts etc; decrease in chicken, sugars etc;. In post pandemic period increase in frequency of purchase in meat, egg etc; and decrease was noted in millets, fruits etc;

Key words: Covid 19 Pandemic, frequency of food purchase.

1 INTRODUCTION:

Food habits and choices in India are changing due to food markets, urbanization, growth in food prices, uncertainty in food production and unequal distribution during the past decade. This leads to either food insecurity or obesity in people. About 35% of the Indian population are underweight, while the overweight/obesity is estimated about 13% for women

and 10% for men.Foods shopping is directly associated with the income in both urban and rural areas Householders reduced their foods shopping by 0.8% for every 1% increase in food prices.Changes in householders shopping are shifting from food to other items in both urban and rural areas.

In India women are more involved in decisions related to food shopping even though their involvement in decision making is low in financial management. Women are considered to be part of their family's prestige. More than 70% of women take individual decision about the 'items to be cooked' in their homes. A woman is generally perceived as the "queen of kitchen", in taking the decisions about the items to be cooked for their husbands or other family members. In addition to this whether in nuclear or joint families women eat after males and children.This attitude is more under conditions of poverty and during limited access to resources.

The COVID -19 pandemicis caused by a novel coronavirus is a threat to humans.(Zhu *et al*. 2020). Food purchasing during the lockdown period is set by strict rules to people's movement to restrain the spread of Covid-19. The cause of unhealthiness is worst eating habits. Lack of awareness on nutrition,undernourishment influence on food environments (UNSCN, 2020). Consumers aresuffering with a severe crisis that affected their livesin all social, economic, and psychological factors[Mehta *et al*. 2020].

Since the pandemic's long-term crisis has resulted in alterations, had a direct impact on human society [Donthu and Gustafsson 2020].Consumer behavior was shaped by the COVID-19 crisis positively, by paying more attention to prices, preferring towards more the eco-friendly and socially responsible companies [Ivkovic 2021], shopping habits, and food waste management [Polláke*t al*. (2022), Nikolopoulou and Kousloglou (2022)].

Shopping habits changed substantially, or new ones introduced such as online shopping, home deliveries, and cashless payments [Pantano *et al* 2020]. The changes brought by the pandemic such as reduced frequency of shopping, focusing mainly on the essential goods [Valaskova*et al* 2021].

2 METHODOLOGY

Ex Post facto research design was adopted for the study**.** It is defined asan experiment in which a researcher, instead of finding a treatment, examines the effect of a naturally

occurring treatment after it has occurred. In other words it is a study that attempts to discover the pre-existing causal conditions between groups. one is the cause and the other is the effect.

Stratified sampletechnique wasusedtoselectthesamplefromboththeruralandurban areas. The families were selected in such a manner that, 30 from each village were selected. Thus, the total sample selected comprised of180 familiesfromurbanand180fromrural areas. Three districts selected for this study were Krishna, Vishakhapatnam and Chittoor districts of Andhra Pradesh. In 1231 family members they were 406 males and 825 females. Among them 31 males and 59 females were adolescents and rest of them were elderly. These three districts were selected because, among these three districts two districts were pilgrim centers and other district was tourist center. Vijayawada was located on south eastern part of Andhra Pradesh, Tirupati was located on southern part of Andhra Pradesh and Vishakhapatnam was located on north part of Andhra Pradesh.

Consent of the families was taken for participation in the study by explaining the aim of the study. The research study was presented to the Institutional Human Ethics Committee (IHEC) of the university before taking up the study at the field level, and the approval was taken.

2.2 Nature of Data

Quantitative data was used in this study.

2.3 Tools for Data Collection

Food purchasing pattern was measured using the Food purchasing questionnaire which is a self structured questionnaire developed by individual for research purpose. The food purchasing questionnaireconsistedof 21 food groups namely cereals, millets, pulses, fresh fruits, green leafy vegetables, other vegetables, milk and milk products, chicken, meat, egg, fish and other sea food, oils, sugars, nuts, spices, dry fruits, ready to eat foods, baked products, sweets and savouries, beverages, coffee and tea. In each table time period of purchase was mentioned. Eachfood groups frequency of purchase is compared from before pandemic situation to present situation. The codes were represented for time period of purchase were as follows: daily -1, weekly – 2, monthly – 3, yearly – 4, whenever required – 5.

2.4 Statistical analysis

Percentages and Correlation were used to calculate the frequency of food purchase of selected families in all three time periods in three districts of Andhra Pradesh. These

statistical tools were used to see the significant differences in food purchasing patterns of selected families in all three time periods in three districts of Andhra Pradesh.

3 RESULTS AND DISCUSSION

Table 1 Distribution of respondents according to head of the family

S.No	Occupation of the Head	Frequency	Percentage (%)
1	Legislators, Senior Officials & Managers	6	1
2	Professionals	81	23
3	Technicians and Associate Professionals	66	18
4	Clerks	38	11
5	Skilled Workers and Shop & Market Sales Workers	52	14
6	Skilled Agricultural & Fishery Workers	9	3
7	Craft & Related Trade Workers	6	2
8	Plant & Machine Operators and Assemblers	32	9
9	Elementary Occupation	70	19
10	Unemployed	0	0
Total		360	100

Distribution of respondents according to head of the family is represented in Table 1. The data revealed that most of respondents were professionals (23 per cent) followed by elementary occupation (19 per cent), then technicians and associate professionals (18 per cent), Skilled Workers and Shop and Market Sales Workers (14 per cent), Clerks (11 per cent), Plant and Machine Operators and Assemblers (9 per cent), Skilled Agricultural and Fishery Workers (3 per cent), Craft and Related Trade Workers (2 per cent) and Legislators, Senior Officials and Managers (1 per cent) and none were unemployed (0 per cent). The above scale was derived from Kuppuswamy (2019).

Table 2 Distribution of respondents according to education of the Head of the family

S.No	Education of the Head	Frequency	Percentage (%)
1	Profession or Honours	29	8
2	Graduate	133	37

3	Intermediate or diploma	64	18
4	High school certificate	51	14
5	Middle school certificate	27	8
6	Primary school certificate	22	6
7	Illiterate	34	9
Total		360	100

Distribution of respondents according to education of the Head of the family is represented in Table 2. Out of 360 respondents majority of respondents were graduates (37 per cent), followed by intermediate or diploma (18 per cent), high school certificate (14 per cent), illiterate (9 per cent), profession or honours and middle school certificate (8 per cent) and primary school certificate (6 per cent). The above scale was derived from Kuppuswamy (2019).

Table 3 Distribution of respondents according to monthly family income in Rupees

S.No	Monthly Income of the Head	Frequency	Percentage (%)
1	Rs ≥123,322	28	8
2	Rs 61,663-123,321	30	8
3	Rs 46129-61,662	47	14
4	Rs 30,831-46,128	60	16
5	Rs 18,497-30,830	96	26
6	Rs 6,175-18,496	83	24
7	Rs ≤ 6174	16	4
Total		360	100

Table 3 shows the distribution of families according to monthly family income in Rupees per month. Out of 360 respondents 26 per cent earned an income Rs 18,497-30,830 per month, 24 per cent who earned between Rs 6,175-18,496 per month, 16 per cent earned between Rs 30,831-46,128 per month, 14 per cent earned between Rs 46129-61,662 per month, 8 per cent earned Rs ≥123,322 per month and Rs 61,663-123,321 were earned per month, 4 per cent earned Rs ≤ 6174 per month. This scale was derived from Kuppuswamy (2019).

Table 4 Distribution of families based on food purchasing pattern of the families before, during pandemic and in present situation

Respondents were individually distributed according to their frequency of purchase of foods in their families under daily, weekly, monthly, yearly and whenever required in Table 4.

S.No	Foods	Time period	Frequency of Purchase				
			Daily (%)	Weekly (%)	Monthly (%)	Yearly (%)	Whenever Required (%)
1	Cereals	Before pandemic	0	2 (0.55)	358 (99.44)	0	0
		During pandemic	0	2 (0.55)	358 (99.44)	0	0
		Present	0	2 (0.55)	358 (99.44)	0	0
2	Millets	Before pandemic	0	0	227 (63.05)	1 (0.27)	1 (0.27)
		During pandemic	0	0	245 (68.05)	1 (0.27)	2 (0.55)
		Present	0	0	230 (63.8)	1 (0.27)	2 (0.55)
3	Pulses	Before pandemic	0	1 (0.27)	356 (98.88)	3 (0.83)	0
		During pandemic	0	1 (0.27)	357 (99.16)	2 (0.55)	0
		Present	0	1 (0.27)	357 (99.16)	2 (0.55)	0
4	Fruits	Before pandemic	1 (0.27)	274 (76.11)	56 (15.55)	0	4 (1.11)
		During pandemic	1 (0.27)	274 (76.11)	56 (15.55)	0	4 (1.11)
		Present	1 (0.27)	273 (75.83)	57 (15.83)	0	4 (1.11)
5	Green leafy vegetables	Before pandemic	4 (1.11)	304 (84.44)	18 (5)	0	0
		During pandemic	4 (1.11)	306 (85)	17 (4.72)	0	0
		Present	4 (1.11)	306 (85)	17 (4.72)	0	0

S.No	Foods	Time period	Frequency of Purchase				
			Daily (%)	Weekly (%)	Monthly (%)	Yearly (%)	Whenever Required (%)
6	Other vegetables	Before pandemic	9 (2.5)	314 (87.22)	37 (10.27)	0	0
		During pandemic	5 (1.38)	318 (88.33)	37 (10.27)	0	0
		Present	9 (2.5)	313 (86.94)	38 (10.55)	0	0
7	Milk and milk products	Before pandemic	347 (96.38)	2 (0.55)	3 (0.83)	0	0
		During pandemic	346 (96.11)	2 (0.55)	3 (0.83)	0	0
		Present	344 (95.55)	2 (0.55)	3 (0.83)	0	0
8	Chicken	Before pandemic	0	269 (74.72)	23 (6.38)	0	0
		During pandemic	0	262 (72.77)	29 (8.05)	0	0
		Present	0	264 (73.33)	29 (8.05)	0	0
9	Meat	Before pandemic	0	26 (7.22)	178 (49.44)	0	4 (1.11)
		During pandemic	0	28 (7.77)	176 (48.88)	0	4 (1.11)
		Present	0	28 (7.77)	178 (49.44)	0	3 (0.83)
10	Egg	Before pandemic	2 (0.55)	49 (13.6)	265 (73.6)	0	4 (1.11)
		During pandemic	1 (0.27)	50 (13.8)	266 (73.8)	0	3 (0.83)
		Present	1 (0.27)	49 (13.61)	268 (74.44)	0	3 (0.83)

S.No	Foods	Time period	Frequency of Purchase				
			Daily (%)	Weekly (%)	Monthly (%)	Yearly (%)	Whenever Required (%)
11	Fish and other sea foods	Before pandemic	0	28 (7.77)	226 (62.77)	0	2 (0.55)
		During pandemic	0	28 (7.77)	228 (63.33)	0	2 (0.55)
		Present	0	28 (7.77)	228 (63.33)	0	2 (0.55)
12	Oils	Before pandemic	0	4 (1.11)	354 (98.33)	1 (0.27)	1 (0.27)
		During pandemic	0	3 (0.83)	355 (98.61)	1 (0.27)	1 (0.27)
		Present	0	3 (0.83)	356 (98.88)	1 (0.27)	0
13	Sugars	Before pandemic	0	6 (1.66)	348 (96.66)	0	1 (0.27)
		During pandemic	0	6 (1.66)	347 (96.38)	1 (0.27)	0
		Present	0	5 (1.38)	345 (95.83)	1 (0.27)	0
14	Nuts	Before pandemic	0	0	344 (95.55)	0	0
		During pandemic	0	0	344 (95.55)	0	0
		Present	0	0	344 (95.55)	0	0
15	Spices	Before pandemic	0	0	347 (96.38)	12 (3.33)	1 (0.27)
		During pandemic	0	0	347 (96.38)	12 (3.33)	1 (0.27)
		Present	0	0	347 (96.38)	12 (3.33)	1 (0.27)

S.No	Foods	Time period	Frequency of Purchase				
			Daily (%)	Weekly (%)	Monthly (%)	Yearly (%)	Whenever Required (%)
16	Dry fruits	Before pandemic	0	0	238 (66.11)	0	0
		During pandemic	0	0	247 (68.61)	0	0
		Present	0	0	242 (67.22)	0	0
17	Ready to eat foods	Before pandemic	1 (0.27)	31 (8.61)	121 (33.61)	0	6 (1.66)
		During pandemic	1 (0.27)	30 (8.33)	121 (33.61)	0	6 (1.66)
		Present	1 (0.27)	31 (8.61)	122 (33.88)	0	6 (1.66)
18	Baked products	Before pandemic	4 (1.11)	32 (8.88)	229 (63.61)	0	12 (3.33)
		During pandemic	4 (1.11)	32 (8.88)	229 (63.61)	0	12 (3.33)
		Present	4 (1.11)	33 (9.16)	229 (63.61)	0	12 (3.33)
19	Sweets and Savouries	Before pandemic	0	7 (1.94)	235 (65.27)	0	11 (3.05)
		During pandemic	0	8 (2.22)	232 (64.44)	0	11 (3.05)
		Present	0	7 (1.94)	233 (64.72)	0	11 (3.05)

20	Beverages	Before pandemic	1 (0.27)	20 (5.55)	182 (50.55)	0	7 (1.94)
		During pandemic	1 (0.27)	19 (5.27)	181 (50.27)	0	7 (1.94)
		Present	1 (0.27)	18 (5)	182 (50.55)	0	7 (1.94)
21	Coffee	Before pandemic	0	2 (0.55)	272 (75.55)	0	1 (0.27)
		During pandemic	0	2 (0.55)	271 (75.27)	0	1 (0.27)
		Present	0	2 (0.55)	268 (74.44)	0	1 (0.27)
22	Tea	Before pandemic	0	0	291 (80.83)	0	1 (0.27)
		During pandemic	0	0	290 (80.55)	0	1 (0.27)
		Present	0	0	288 (80)	0	1 (0.27)

Out of 360 respondent families the data obtained for food purchasing pattern showed that there was increase in purchase of milk and milk products on daily basis by majority of families during all three time periods namely before, during pandemic and in present situation. Decrease in purchase of fresh fruits, green leafy vegetables, vegetables, eggs, ready to eat foods, baked foods and beverages by few families (0.27 to 1.38 per cent) on daily basis during all three time periods.

There wasincrease in purchase of foods by majority of families on weekly basislike fruits (75 to 76 per cent), green leafy vegetables (84 to 85 per cent), other vegetables (86 to 88 per cent) and chicken (72 to 74 per cent) during all three time periods. Decrease in purchase of other food groups like cereals, pulses, milk, meat, eggs, fish, oils, sugars, ready to eat foods, baked products, sweets and savouries, beverages and coffee powder on weekly basis by few families (0.27 to 9 per cent) during all three time periods.

There was increase in purchase of foods on monthly basis by majority of families like cereals (99 per cent), millets(63 to 68 per cent), pulses(98 to 99 per cent), meat (48 to 49 per cent), eggs (73 to 74 per cent), fish (62 to 63 per cent), oils (98 per cent), sugars(95 to 96 per cent), nuts (95 per cent), spices (96 per cent), dry fruits(66 to 68 per cent), ready to eat foods (33 per cent), baked foods (63 per cent), sweets and savories (64 to 65 per cent), beverages (50 per cent), coffee powder (74 to 75 per cent) and tea powder (80 per cent) during all three time periods. Decrease in purchase of other food groups like fresh fruits, green leafy vegetables, vegetables, milk, chicken were less bought on monthly basis by few families (0.83 to 15 per cent) during all three time periods.

Foods that were less purchased on yearly basis by few families included millets, pulses, oils, sugars and spices (0.27 to 3 per cent) during all three time periods.

Foods that were purchased whenever required by few families included millets, fruits, meat, eggs, fish, oils, sugars, spices, ready to eat foods, baked products, sweets and savouries, beverages, coffee powder and tea powder (43 per cent to 0.27 per cent) during all three time periods.

Table 7 Correlation for frequency of purchasing pattern

S.No			**Correlations**		
			Before	**During**	**Present**
1	Before	Pearson Correlation	1	**. 998****	**1.000****
2	During	Pearson Correlation	**.998 ****	1	**.999****
3	Present	Pearson Correlation	1.000**	.999**	1
** Correlation was significant at the 0.01 level					

After comparison of three time periods the results analyzed showed that there is statistically significantly correlated difference in purchasing pattern of millets. Non

significantly correlateddifference was observed in food groups like pulses, fresh fruits, green leafy vegetables, vegetables, milk and milk products, chicken, meat, eggs, fish, sugars, dry fruits, sweets and savories, coffee powder, during the 3 time periods.

Litton *et al*. (2021) explained among the 484 survey respondents, 36.2% were classified as food-insecure. Food-insecure respondents (17%) reduced their purchase of fresh fruit and vegetable, reasons included poor quality, poor availability, high price, reduced store trips, and concerns of contamination when compared to previous month.

Li *et al*. (2021) reported that covid-19 pandemic poses a threat to global food security, and it changes consumers' food buying and consumption behavior. Investigates trends in Spanish consumers' general food shopping and consumption habits during the lockdown, but also investigates these trends from the perspective of sustainable purchasing. Specifically, total food consumption (C), food expenditure (E), and purchase of food with sustainable attributes (S) were measured. Data collected was from a semi-structured questionnaire distributed online among 1203 participants. The logit models showed that gender, age, employment status, and consumers' experiences were associated with total food consumption and expenditure during the lockdown. In addition, consumers' risk perceptions, shopping places, trust level in information sources, and risk preference were highly essential factors influencing consumers' preferences and sustainable behavior. Consumers' objective knowledge regarding COVID-19 was related to expenditure. Furthermore, family structure only affected expenditure, while income and place of residence influenced food consumption. Mood was associated with expenditure and the purchase of sustainable food. Household size affected purchasing behavior towards food with sustainable attributes.

Muresan *et al*. (2022) collected from Roman households using an online administrated questionnaire. The 784 questionnaires were analyzed by using descriptive statistics and Cluster analysis. Food shopping habits by consumers become more sustainable during the pandemic. The amount of the food loss was decreased and people found ways. The Cluster analysis of 25 food waste behavior factors were wasters (n = 264), careless consumers (n = 227), careful consumers (n = 359). While the wasters chose to plan the shopping and the food menu for the next period, were males with a low level of education, while the careless consumers did not plan before going to shopping, as they discharge lower quantities of food compared with the first group and the careful consumers proved to be the most organized they preoccupied about the menu planning and reuse of leftovers. People were careful about their shopping habits, however, majority did not improve their habits.

Xiaonan*et al*. (2018) stated that participants' self-reported food acquisition and shopping habits, including shopping distance; frequency; store type; transportation mode; use of farmers' markets, food banks/pantries, and church/social service organizations, were used to develop shopping patterns and group residents. Latent class analysis and multinomial logistic regression were used to identify and characterize patterns, respectively. Three patterns were identified, including those who use community food resources, are infrequent grocery shoppers, and use someone else's car or public transportation when shopping (Class 1) (35%), those who use community food resources and are more frequent and proximal shoppers (Class 2) (41%), and those who do not use community food resources and are distal shoppers (Class 3) (24%). Compared with Class 3, Class 1 had comparatively lower socioeconomic status. Class 2 also had comparatively lower socioeconomic attributes except for income. Class 2 was not significantly different from Class 1 except that a higher proportion in Class 1 saw food access as a problem. No significant differences across classes were found regarding fruit and vegetable recommendation knowledge. Shopping frequency, use of community food resources, transportation methods, and shopping distance were the key factors that defined distinct patterns among residents living in low-income areas.

Thiele *et al*. (2017) used German consumption data in which approximately 12 million food purchases from 13,125 households are recorded. In accordance with healthy diet criteria the food purchases were assigned to 18 food groups of the German Food Pyramid. Based on these groups a factor analysis with a principal component technique was applied to identify food patterns. For these patterns nutrient and energy densities were examined. Using regression analysis, associations between pattern scores and socio-economic as well as attitude variables, reflecting personal statements about healthy eating, were analyzed. In total, three food purchase patterns could be identified: a natural, a processed and a traditional one. The first one was characterized by a higher purchasing of natural foods, the second by an increased purchasing of processed foods and the third by a meat-oriented diet. In each pattern there were specific diet quality criteria that could be improved whereas others were in line with actual dietary guidelines. In addition to socio-demographic factors, attitudes were significantly associated with the purchase patterns.

were personally surveyed with a structured questionnaire. These households are spread across

4 CONCLUSION

In conclusion it can be stated that based on peoples affordability status, their needs, convenience and due to restricted timings in pandemic period frequency of food purchase

varied from daily, weekly, monthly basis to whenever required. During pandemic period increase in frequency of purchase was seen in millets. Slight increase was seen in pulses, fruits, green leafy vegetables, other vegetables, eggs, fish, oils, dry fruits. No change in purchase was noted incereals, nuts, spices, baked foods. Slight decrease in purchase was noted in chicken, meat, sugars, beverages, coffee and tea during pandemic. Where as in post pandemic period slight increase in frequency of purchase was noted in chicken, meat, egg, fish, oils, ready to eat foods, sweets, beverages. Where as in post pandemic periodslight decrease in frequency of purchase was noted in millets, fruits, milk and milk products, sugars, dry fruits, coffee and tea.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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