

RESEARCH ARTICLE

A STUDY ON CONSUMER AWARENESS ON FOOD ADULTERATION

Abinaya S, Amerta Varrsni N, Amirtha Bashini J, Anuvarshini PV, Arthy AS, Cecilia Thomas Mwinchumu

GRG School of Management Studies, PSGR Krishnammal College for Women, Coimbatore, Tamil Nadu, India.

Abstract: This study investigates consumer awareness of food adulteration, focusing on packaging and labelling, buying behaviour, and consumer rights. UNSD Goal 3 of the Sustainable Development Goals (SDGs) focuses on ensuring healthy lives and promoting well-being for individuals of all ages. It concentrates on significant health problems such as reproductive, maternal, kids, and youth health, in addition to communicable and non-communicable diseases. The goal emphasizes the importance of universal health coverage, access to safe and affordable medicines and vaccines, and the prevention of needless suffering and premature death from preventable diseases. Priority areas include regions with high disease burdens and marginalized populations, calling for increased investments in research, health financing, and risk reduction strategies. In this context, the present study has focused on the concept of consumer awareness regarding food adulteration. Food adulteration in the long run could be a major threat to health and well-being. Though government has strict rules and regulations for food safety, adulteration in foods is rampant. In order to curb this, consumer awareness regarding the same has to be enhanced. The present study has thus tried to understand the influence of packaging, buying patterns and consumer rights on consumer awareness regarding food adulteration. The study has a descriptive research design. The results indicate packaging and labelling and buying behaviour as the most influential factors in predicting consumer awareness. Clear, informative packaging enhances trust and informed buying decisions. The study recommends prioritizing transparent packaging and consumer education on rights to improve food safety and transparency.

Keywords: *Packaging and labelling, Buying behaviour, Consumer rights, food adulteration, Consumer awareness, UNSD Goal 3.*

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INTRODUCTION

This study examines consumer awareness of food adulteration in Coimbatore City, emphasizing the roles of packaging and labelling, buying behaviour, and consumer rights. Food adulteration, the addition of harmful substances to food for economic gain, poses serious health risks. Trust in food products, clear packaging information and transparent labelling significantly influence consumer awareness and behaviour.

Food adulteration is a widespread issue in India, affecting staples like rice, wheat, dairy products, and spices, with

common adulterants such as chemicals and pesticides. This practice compromises food quality and endangers vulnerable populations, including children, pregnant women, and the elderly. Combating food adulteration requires strict regulations, enhanced surveillance, public awareness, and collaboration among stakeholders.

In fact consumer awareness is more significant in order to curb these food adulteration processes. A study by Brindha & Adlinda (2023) also has found that more and more consumers today are practicing responsible consumption practices.

Aligning with the UN's Sustainable Development Goal 3, Good Health and Well-being, this study highlights the importance of addressing food adulteration to ensure public health and safety. It provides insights for policymakers, food manufacturers, and regulators to develop strategies that protect consumer rights, ensure food safety, and promote industry transparency.

LITERATURE REVIEW

Bannor RK *et. al.*, (2022) in their study conducted in Ghana analyzed data from 130 consumers using descriptive statistics, factor analysis, and multinomial profit analysis. It found that consumers choose tinned tomatoes for their accessibility, affordability, attractive packaging, and shelf life.

However, only one-fifth frequently read labels. Factors influencing brand choice included age, residential status, and nutritional benefits. Two consumer segments were identified: health label and conventional label, with health label consumers being the majority. Consumers in Ghana prioritize accessibility and affordability in tinned tomatoes but have low food safety consciousness

Vemula S R *et. al.*, (2014) in their study conducted in Abha, Saudi Arabia, which examined urban supermarket shoppers' use of food label information. It considered income levels, gender, and education as independent factors affecting consumer perceptions and expertise with packaged foods. Overall, the study underscores the importance of raising awareness and knowledge about packaged food, particularly through labelling, to influence consumer behaviour positively.

Sachithananthan V 2017, in their study conducted in Abha, Saudi Arabia, assessed 407 mall shoppers' attitudes and knowledge about packaged food additives.

Socioeconomic factors influenced attitudes, with high-income females and low-income individuals showing a preference for fresh food over packaged options. Gender disparities in label reading were noted, influenced more by exposure than income or education. The study highlights the need for increased awareness and knowledge about packaged food through labelling.

Bitzios M *et. al.*, (2017) in their study explore the relationship between consumer perceptions, purchasing decisions, and product labelling, focusing on traceability and country-of-origin labelling (COOL). It discusses how traceability, food safety, enabling technologies, and food fraud impact consumer information needs, emphasizing the complexities and implications for risk assessment and communication strategies in the food industry. The study recommends enhancing consumer education on traceability, to improve consumers' understanding and trust in food safety and labelling systems.

Dutta S *et. al.*, (2017) in their study conducted in Anand, Gujarat, assessed consumer awareness of pre-packaged food labelling. It found that 86.7% of participants read labels, but only one third felt well-informed. Education and gender significantly influenced awareness. Price was a key motivator for reading labels. The study stresses the importance of improving labelling, consumer education for informed food choices and the practical use of label information in purchasing decisions.

Yeasmin D *et. al.*, (2022) in their study conducted in Dhaka, Bangladesh and examined food adulteration concerns among urban consumers through 38 interviews. Supermarket customers were more concerned about adulteration than wet market customers. The study found that participants highlighted the need for credible information and it recommends

the establishment of a government testing program to provide trustworthy information on food adulteration and urges stronger control measures by authorities and other stakeholders to address this issue.

Thangaraj S *et. al.*, (2022) in their study conducted in Chennai assessed consumer awareness of food adulteration and purchasing preferences using data from 50 respondents. Many literate consumers lacked knowledge about adulteration, leading to poor purchasing practices. The study found that while most post-graduate respondents were aware of food adulteration, significant issues remain with low consumer awareness and the prevalence of common adulterants like stones and mud; it recommends implementing stringent food policies, ensuring proper storage and handling by wholesalers, guiding customers on product quality, and conducting educational programs to increase awareness and vigilance regarding food adulteration.

Sapkota S *et. al.*, (2016) in their study based in Kathmandu Valley surveyed 207 consumers about adulteration in rice grains. Consumers preferred local brands and assessed quality based on cleanliness. Low legal awareness was noted. The study calls for minimum quality standards and regulatory efforts to reduce adulteration, it recommends increased government inspections and stricter enforcement against adulteration, enhanced consumer education through media, and future research into adulteration of other products in both urban and rural areas of Nepal.

Gautam A, 2019 in their study conducted in Lucknow district, examined women's knowledge, attitudes, and practices (KAP) regarding food adulteration. Using 300 samples, the study found no significant age-related differences in KAP scores for most items, except cereals and spices.

Younger participants had higher KAP scores for cereals. No significant association was found between age and consumer rights or food safety awareness, it recommends conducting impartial scientific studies to better understand the prevalence of food adulteration and educating consumers about common adulterants and their health effects.

Yeasmin D *et. al.*, (2022) in their study explored customer perceptions of food adulteration in Dhaka, Bangladesh, through 38 interviews with supermarket and wet market customers. Findings revealed widespread concern, with participants estimating 70% of foods, especially fish, milk, and vegetables, as adulterated. Supermarket customers were more concerned than wet market customers, both groups highlighting the invisible nature and health risks of adulteration. The study emphasized the government take action by implementing credible food sampling and testing protocols, strengthening inspection models, and providing training to address food adulteration effectively.

Arefin A *et. al.*, (2020) in their study based in Dhaka, Bangladesh focused on consumer awareness and behaviour regarding food adulteration. The study highlights that despite the enactment of the Food Safety Act, 2013, combating food adulteration remains a significant challenge in Bangladesh due to misleading advertising and inadequate consumer awareness; it recommends enhancing consumer education on food safety and rights to better navigate and address food adulteration issues.

Daisy JJ *et. al.*, (2019) in their study conducted in Salem, Tamil Nadu, examined food adulteration practices. It found widespread adulteration in both local and branded items, with educated individuals being less susceptible, but highlighted that food malpractices are increasing and detection efforts are often delayed, especially concerning adulterated branded products like milk

and ghee; it recommends more effective and timely detection measures, improved regulatory actions, and quicker legal processes to address food adulteration issues. Despite awareness, few participants took action against adulteration. The study underscores the need for improved regulatory enforcement.

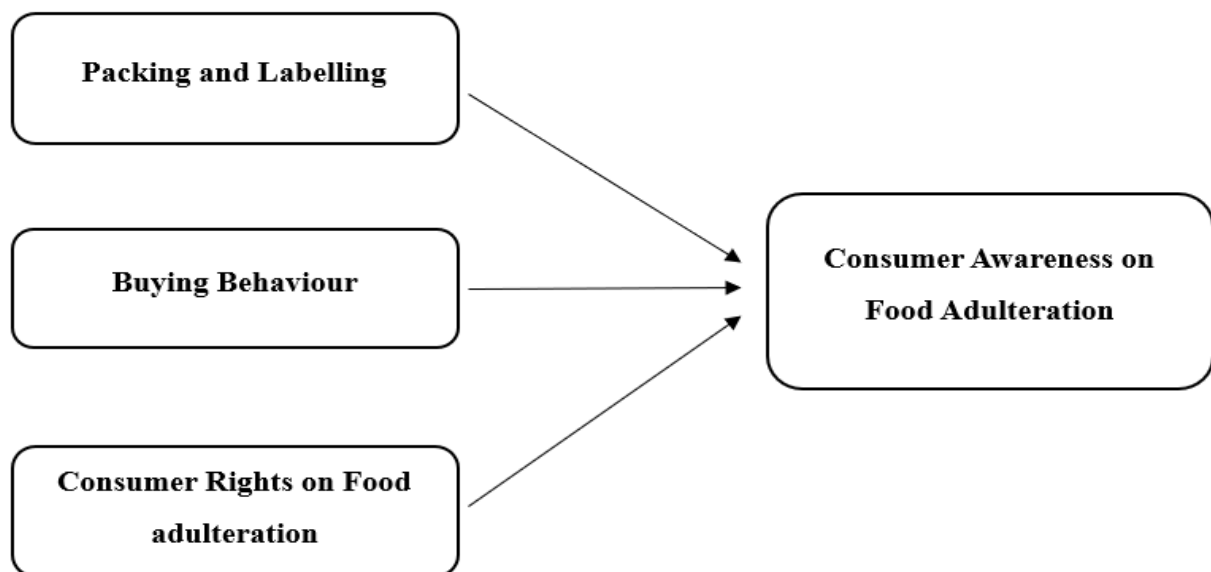
Thangaraj S S *et. al.*, (2020) in their study based in Chennai evaluated consumer awareness of food adulteration and their complaint-giving behaviour. It found that most respondents were unwilling to file complaints, indicating a lack of consumer action. Despite existing regulations, food adulteration persists due to unethical practices by some business units and low consumer awareness; it recommends stricter government oversight and regular inspections, increased consumer education on identifying adulterated foods, and encouraging consumers to report adulteration to improve food safety.

Singh AK *et. al.*, (2023) in their conceptual study explore international

humanitarian law (IHL) in armed conflicts, focusing on food security for civilians and combatants. It highlights the need for implementing IHL principles to ensure safety and rights during conflicts. The study reveals the challenging balance between upholding the fundamental rights of combatants and meeting the operational needs of armed forces, highlighting the importance enhancing processes to ensure the effective implementation of safety measures and food provisions for combatants.

Stevens SK, (2019) in their study review the history of food safety and traceability regulations, emphasizing efforts by USDA FSIS and FDA to improve traceability rules. It discusses the challenges of enforcing regulations in a diverse industry and the lack of global harmonization. So the study recommends focusing on improving enforcement mechanisms and developing internationally aligned traceability requirements to better manage food safety risks.

THEORETICAL FRAMEWORK



OBJECTIVE OF THE STUDY

- To assess the level of consumer awareness regarding food adulteration, Packaging and labelling, Buying

Behaviour and Consumer Rights on Food Adulteration.

- To analyze the influence of packaging and labelling information on

consumers' awareness of food safety and quality.

- To investigate the relationship between consumer buying behaviour and their awareness of food adulteration issues.
- To examine the extent to which consumer rights impact their understanding and response to food adulteration practices.

RESEARCH METHODOLOGY

This study measures consumer awareness about adulterated food. It reveals that many consumers can't distinguish between adulterated and original products due to similar packaging, labelling, and price changes.

The research examines purchasing patterns and the thought process behind buying decisions to identify areas for strengthening consumer rights and empowering informed choices. A survey method with questionnaires was used, and data were analyzed using PSPP software. The study employs a descriptive research design, conducted among general consumers, with 120 responses collected through stratified sampling.

ANALYSIS AND DISCUSSION

Table 1 Displays the reliability scores (Cronbach's Alpha) of the various constructs. All constructs a good reliability with Cronbach's Alpha more than 0.8.

Table 1: Reliability analysis

Constructs	No. of items	Cronbach's Alpha
Consumer Awareness on food adulteration	6	.85
Packaging and Labelling	5	.81
Buying behaviour	5	.72
Consumer rights	5	.82

Percentage Analysis

Table 2: Demographic profile of the respondents

Demographic Factor	Dimensions	Frequency	Percentage
Gender	Male	48	40.0
	Female	69	57.5
	Others	3	2.5
Age	18-24 years	73	60.8
	25-35 years	20	16.7
	36-45 years	14	11.7
	Above 45 years	13	10.8
Educational Qualification	School Level	8	6.7
	Undergraduate	70	58.3
	Postgraduate	38	31.7
	Doctorate	1	.8
	Other	3	2.5
Marital Status	Single	77	64.2
	Married	37	30.8
	Divorced	0	0
	Widowed	3	2.5
	Living with partner	2	1.7
	Prefer not to say	1	.8
	Employed full time	40	33.3
Employment status	Employed part time	5	4.2
	Unemployed	46	38.3
	Retired	1	.8
	Self employed	18	15.0
	Prefer not to say	10	8.3
	Own home	51	42.5

Living situation	Hostel	26	21.7
	Rent an apartment/home	24	20.0
	Live with family/friends	19	15.8
	Others	0	0
Dietary habits	Regularly consume processed foods	32	26.7
	Prefer organic or locally sourced products	30	25.0
	Gluten-free diet	2	1.7
	Vegetarian	27	22.5
	Mostly plant-based with occasional animal products	18	15.0
	None	4	3.3
	Others	7	5.8
Cooking at home	Very often	38	31.7
	Often	20	16.7
	Sometimes	25	20.8
	Rarely	20	16.7
	Very rarely	17	14.2

The sample includes 48 (40%) males, 69 (57.5%) females, and 3 (2.5%) individuals who identify as 'Others'. There are no respondents who prefer not to disclose their gender. The majority of respondents fall within the age range of 18-24 years, constituting 73 (60.8%) of the sample. 20 (16.7%) respondents are aged 25-35 years, 14 (11.7%) fall in the range of 36-45 years, and 13 (10.8%) are above 45 years old.

The majority of respondents have completed their undergraduate education, comprising 70 (58.3%) of the sample. 38 (31.7%) have pursued postgraduate studies, while only a small portion of the sample has education levels at the school level (8, 6.7%) or other qualifications.

The largest proportion of respondents are single, accounting for 77 (64.2%) of the sample. 37 (30.8%) are married, and there are very few respondents who are widowed, living with a partner, or prefer not to disclose their marital status.

A significant portion of respondents are unemployed, comprising 46 (38.3%) of the sample. 40 (33.3%) are employed full time, followed by 18 (15.0%) who are self-employed. There are also respondents who are employed part-time, retired, or prefer not to disclose their employment status. Most respondents own their own homes (51, 42.5%) or live in hostels (26, 21.7%).

A smaller portion rent apartments or homes, while some live with family or friends. The most common dietary preference among respondents is regularly consuming processed foods (32, 26.7%) or preferring organic or locally sourced products (30, 25.0%). Other dietary habits include being vegetarian, mostly plant-based with occasional animal products, or following a gluten-free diet. Respondents vary in their frequency of cooking at home, with 38 (31.7%) reporting doing so very often and 20 (16.7%) often. Others cook at home sometimes, rarely, or very rarely.

Table 3: Descriptive statistics

Variables	Mean
Consumer Awareness on food adulteration	3.74
Packaging and Labelling	3.65
Buying behaviour	3.41
Consumer rights	3.46

From this table it is evident that the respondents have exhibited significant levels of awareness on food adulteration

(M = 3.74), Packaging and Labelling (M = 3.65), Buying behaviour (M = 3.41) and Consumer rights (M = 3.46).

Table 4: Correlation analysis

		Packaging and Labelling	Buying behaviour	Consumer rights
Consumer awareness on food adulteration	Pearson correlation	.663**	.576**	.612**
**. Correlation is significant at the 0.05 level (2-tailed)				

Correlation analysis result shown in table 4 has yielded a correlation coefficient of .663, .576, 0.612a ($p < 0.000$), thus proving that there exists strong

positive correlation between consumer awareness on food adulteration, packaging and labelling, consumer rights and buying behaviour at 0.05 levels.

Table 5: Regression analysis

R	R ²	Adjusted R ²	F	Sig
.72	.52	.51	41.50	.000

Table 6: Regression coefficients

Factors	Unstd. Coeff		Std. Coeff	t	Sig
	B	Std. Error	Beta		
(CONS)	.81	.27	.00	2.96	.004
Packaging and Labelling	.42	.08	.42	4.92	.000
Buying behavior	.22	.10	.20	2.19	.031
Consumer rights	.20	.10	.20	1.96	.053

As per the result displayed in this Table, adjusted R square value is 0.51. This implies that 51% variability in the dependent and i.e. consumer awareness on food adulteration is being predicted by the independent variables, packaging and

labelling, buying behaviour and consumer rights.

Regression equation:

Consumer awareness on food adulteration = .81 + 0.42 packaging and labelling + 0.22 buying behaviour + 0.20 consumer rights.

Table 7: Friedman ranking test

	Mean rank	Rank
Brand	3.12	1
Price	3.14	2
Packaging	3.19	3
Quality	3.67	4
Offers and discounts	3.86	5
Food certifications	4.02	6

A Friedman's ranking test has been conducted for the attributes of a food brand from the respondents. It can be seen that the respondents have given Brand have ranked 1 higher on the basis of what attract the most while buying a food product followed by, price ranked 2,

packaging ranked 3, Quality ranked 4, Offers and discount ranked 5 and Food certifications has the least rank of 6. The ranking as given in the above table is valid as the Chi square table values ($\chi^2 = 27.30$, $p < 0.000$) are statistically significant.

Table 8: Analysis of Variance (Anova)

Demographic Factors	Dimension	Mean				F				Sig			
		CA	PL	BB	CR	CA	PL	BB	CR	CA	PL	BB	CR
Gender	Male	3.60	3.50	3.31	3.36	1.63	1.22	.63	.61	.201	.300	.535	.547
	Female	3.86	3.77	3.48	3.53								
	Prefer not to say	3.28	3.53	3.53	3.27								
	Others	0	0	0	0								
Age	18-24 years	3.68	3.53	3.35	3.33	.37	1.20	.39	1.21	.773	.314	.764	.308
	25-35 years	3.83	3.89	3.53	3.39								
	36-45 years	3.82	3.80	3.53	3.67								
	Above 45 years	3.90	3.83	3.46	3.69								
Educational Qualification	School level	3.63	3.33	3.57	3.28	.89	.43	1.19	1.06	.473	.786	.320	.378
	Undergraduate	3.66	3.66	3.28	3.35								
	Postgraduate	3.96	3.68	3.56	3.68								
	Doctorate	3.17	3.80	3.80	4.00								
	Other	3.56	4.07	3.93	3.47								
Marital status	Single	3.83	3.67	3.44	3.41	2.51	.61	.35	.82	.045	.659	.842	.82
	Married	3.66	3.69	3.34	3.54								
	Divorced	0	0	0	0								
	Widowed	3.83	3.47	3.67	4.07								
	Living with partner	1.92	2.70	3.00	2.90								
	Prefer not to say	3.67	3.80	3.80	2.80								
Employment status	Employed full time	3.91	3.81	3.52	3.61	.74	.88	.83	.48	.596	.498	.533	.792
	Employed part time	3.93	3.92	3.84	3.36								
	Unemployed	3.67	3.44	3.31	3.37								
	Retired	3.17	3.80	3.80	4.00								

	Self Employed	3.5 0	3.7 0	3.2 2	3.3 2								
	Prefer not to say	3.8 0	3.7 6	3.5 4	3.4 8								
Living situation	Own home	3.7 4	3.7 7	3.4 1	3.5 3	.21	.96	.58	.28	.89 0	.41 5	.62 9	.83 6
	Hostel	3.6 3	3.5 2	3.3 5	3.4 0								
	Rent an apartment/home	3.8 1	3.7 3	3.5 9	3.3 4								
	Live with family/friends	3.8 1	3.4 2	3.2 8	3.4 7								
	Others	0	0	0	0								

From the above table it is inferred that there is a significant relationship in Consumer awareness between people of varied marital status with significant level of ($p=0.045<0.05$). Here singles are more aware about the consumer awareness practices.

SUGGESTIONS

Educate the public about food adulteration, packaging, labelling, and proper buying behaviour to highlight the potential health impacts. Address future health concerns by emphasizing the significant risks posed by chemicals in adulterated foods, which can harm both current and future generations.

Ensure transparency from food manufacturers and sellers regarding adulteration, packaging, and labelling, while encouraging consumers to be vigilant about their purchases. Given the poor eating habits due to busy lifestyles, especially among youngsters, nutritionists should promote awareness for healthier choices. Lastly, foster cooperation among companies and startups to advocate for natural, organic foods over chemical-based alternatives.

CONCLUSION

The study focused on consumer awareness of food adulteration, its relation to packaging, labelling, buying behaviour, and consumer rights. Food adulteration is increasing due to unhealthy eating habits and poses a risk of chronic diseases. Technological advancements have led to more processed

foods with additives, increasing health risks. Eating healthy is often more expensive than unhealthy options, leading many to choose the latter. The government and health institutions should ensure food safety before market entry, and individuals should be cautious about their buying behaviour to protect their health. By addressing these issues, the study supports SDG 3's mission to promote health and well-being, highlighting the critical role of food safety, consumer awareness, and access to nutritious food in achieving global health goals.

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