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Factors associated with knowledge regarding food adulteration among rural and urban women in Telangana state

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Abstract

Food adulteration is a major food safety concern that adversely affects consumer health and food quality. The present study was conducted to examine the relationship between selected socio-economic, communication and behavioural characteristics and knowledge regarding food adulteration among rural and urban women in Telangana state. An Ex-Post Facto research design was adopted and 180 women respondents (90 rural and 90 urban) were selected through a multistage sampling procedure. Data were collected using a structured interview schedule and analyzed using Karl Pearson's correlation coefficient. The findings revealed that occupation, social participation, media exposure and detection practices were positively and significantly associated with knowledge among rural and urban women, whereas education, media exposure, market access, information-seeking behaviour and purchasing behaviour showed a positive and significant relationship with knowledge among urban women. The study emphasizes the need for targeted knowledge enhancement and consumer information initiatives to enhance knowledge regarding food adulteration and promote safe food consumption practices.

Keywords: Food adulteration, knowledge, rural women, urban women, food safety, consumer knowledge

Introduction

Food adulteration has emerged as a major food safety and public health concern worldwide due to its adverse effects on food quality, nutritional value and consumer health. It involves the intentional or unintentional addition of inferior, harmful or unauthorized substances to food products or the removal of valuable constituents, thereby compromising food safety and quality (Haji *et al.*, 2023) [3]. The problem has intensified with increasing food demand, rapid urbanization, commercialization of the food sector and inadequate consumer awareness, resulting in continued prevalence of adulteration in both developed and developing countries (Pririti *et al.*, 2024) [4]. Common adulterants such as artificial colours, detergents, synthetic chemicals and non-food substances have been associated with various health hazards including allergies, toxicity, nutritional deficiencies, digestive disorders, kidney damage and cancer (Essuman *et al.*, 2022) [1].

Recent statistics highlight the seriousness of the issue in India. According to the FSSAI Annual Report (2023–2024), more than 1.5 lakh food samples were tested across the country, of which over 33,000 samples were found to be adulterated. Telangana has also reported a considerable

prevalence of food adulteration, with approximately 15 per cent of tested food samples being identified as adulterated (The Times of India, April 11, 2025) [7]. Consumer education and awareness are therefore essential for improving food safety, as informed consumers are better able to identify common adulterants and adopt simple household methods for detecting adulterated food products (Savalapurapu *et al.*, 2025) [5].

Women play a pivotal role in household food management, including the purchase, preparation and storage of food, making their awareness regarding food adulteration crucial for safeguarding family health (Singh *et al.*, 2025) [6]. As primary decision-makers in many household food-related activities, women's knowledge and awareness can significantly influence food selection, purchasing practices and the adoption of preventive measures against food adulteration. Understanding the factors associated with knowledge regarding food adulteration among rural and urban women is therefore essential for designing effective consumer education and food safety interventions. Hence, the present study was undertaken on factors associated with knowledge regarding food adulteration among rural and urban women in Telangana.

Materials and Methods

The present study was conducted in Telangana state using an Ex-post Facto research design. A multistage sampling procedure was adopted for the selection of the respondents. The sample comprised 180 women respondents, including 90 rural and 90 urban women selected through random sampling technique.

Data was collected through personal interviews using a structured and pre-tested interview schedule developed in accordance with the objectives of the study. Information on the selected socio-economic, communication and behavioural characteristics of the respondents was obtained along with their knowledge regarding food adulteration.

Knowledge was assessed using a set of statements covering various aspects of food adulteration. Appropriate scores were assigned to the responses and the overall knowledge score was computed for each respondent.

The collected data were coded, tabulated and analyzed using suitable statistical tools. Karl Pearson's correlation was employed to determine the relationship between the selected independent variables and knowledge regarding food adulteration among rural and urban women respondents.

Results and Discussion

Factors associated with knowledge of food adulteration.

Table 3.1: Correlation analysis of independent variables with knowledge

S. No	Variables	Rural Knowledge 'r' Value	Urban Knowledge 'r' Value
1.	Age	-0.078NS	0.037NS
2.	Education	0.047NS	0.398**
3.	Occupation	0.235*	0.081NS
4.	Marital status	0.063NS	0.047NS
5.	Family type	0.072NS	0.085NS
6.	Family size	0.094NS	0.081NS
7.	Annual family income	0.083NS	0.064NS
8.	Social participation	0.362**	0.073NS
9.	Media exposure	0.224*	0.452**
10.	Market access	0.065NS	0.379**
11.	Information seeking behaviour	0.091NS	0.435**
12.	Purchasing behaviour	0.052NS	0.342**
13.	Detection practices	0.314**	0.095NS
14.	Consumption pattern	0.130NS	0.058NS

* = Significant at 0.05 level of probability

** = Significant at 0.01 level of probability,

NS = Non Significant

The correlation analysis revealed notable differences in the factors associated with knowledge regarding food adulteration among rural and urban respondents. Among rural respondents, occupation ($r=0.235^*$), social participation ($r=0.362^{**}$), media exposure ($r=0.224^*$) and detection practices ($r=0.314^{**}$) showed a positive significant relationship with knowledge.

The association of occupation with knowledge may be attributed to the greater involvement of respondents in agricultural and allied activities, which often require regular handling, purchasing and observation of food products. Such experiences may enhance knowledge regarding food quality and adulteration-related issues. In addition, frequent interaction with local markets and food vendors may

provide opportunities to gain practical knowledge related to food quality and safety.

Social participation showed a strong positive relationship with knowledge indicating that participation in Self Help Groups, community organizations and village-level activities provides opportunities for information exchange, discussion and exposure to awareness initiatives related to food safety. Such social networks often serve as important channels for disseminating health and consumer-related information within rural communities.

Media exposure was also positively associated with knowledge, suggesting that respondents who frequently accessed communication channels were more likely to encounter information on food adulteration, consumer rights and health-related concerns. Regular exposure to awareness campaigns and educational messages may contribute to improved understanding of food safety issues.

The significant association between detection practices and knowledge indicated that respondents who actively observe food quality and practice simple methods of identifying adulteration are likely to possess greater knowledge regarding food adulteration. Practical exposure may reinforce knowledge by enabling respondents to relate information to their day-to-day food handling experiences.

Among urban respondents, education ($r=0.398^*$), media exposure ($r=0.452^{**}$), market access ($r=0.379^{**}$), information seeking behaviour ($r=0.435^{**}$) and purchasing behaviour ($r=0.342^{**}$) were positively and significantly associated with knowledge regarding food adulteration.

The positive relationship between education and knowledge suggests that higher educational attainment may enhance an individual's ability to comprehend food-related information, including labels, certifications, ingredient details and food safety guidelines. Educated consumers may also be better equipped to evaluate the reliability and relevance of food-related information.

Media exposure exhibited the strongest association with knowledge, highlighting the important role of both traditional and digital media in increasing consumer knowledge regarding food adulteration and its health consequences. The widespread availability of information through multiple media platforms may facilitate continuous exposure to food safety messages.

Better market access may expose consumers to a wider range of food products and product information, thereby improving their familiarity with food quality standards and safety considerations. Greater interaction with organized retail outlets and packaged food products may further enhance knowledge regarding quality indicators and food safety practices.

Similarly, respondents with higher information-seeking behaviour were more likely to acquire and update their knowledge through active engagement with various information sources. This proactive approach towards obtaining information may contribute to a better understanding of food adulteration and related consumer concerns.

The significant association between purchasing behaviour and knowledge further suggests that consumers who pay greater attention to product information and quality attributes during purchase decisions tend to possess greater knowledge regarding food adulteration-related issues.

Careful evaluation of food products before purchase may enable consumers to make more informed and safer food choices.

Overall, the findings suggest that knowledge regarding food adulteration is primarily influenced by factors that enhance access to information, promote consumer knowledge and encourage active engagement in food-related decisions. While, social participation and practical exposure played a significant role in shaping knowledge among rural women, educational attainment, media exposure, market access, information-seeking behaviour and informed purchasing practices emerged as the key determinants of knowledge among urban women. These findings highlight the importance of strengthening consumer awareness initiatives, promoting food safety education and improving access to reliable information sources through community-based and media-driven approaches to enhance public knowledge regarding food adulteration and support informed food choices.

Conclusion

The study highlights the importance of consumer knowledge in addressing the growing concern of food adulteration and ensuring informed food choices. The findings revealed that the factors influencing knowledge varied between rural and urban women, indicating that knowledge regarding food adulteration is shaped by the socio-economic, communication and behavioural characteristics of consumers. As women play a pivotal role in food purchasing, preparation and household food management, enhancing their knowledge is essential for ensuring safer food choices and protecting family health. The findings of the study provide valuable insights for food safety authorities, extension agencies and consumer education programmes in developing targeted and context-specific knowledge initiatives to strengthen consumer knowledge and promote safe food consumption practices.

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