

Influence of Food Labels and Advertisements on Eating Habits Among Pregnant and Non-Pregnant Women in Chengalpattu District, Tamil Nadu: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Background: Food labelling is a key population-level intervention to promote informed dietary choices and prevent diet-related non-communicable diseases (NCDs). However, its effectiveness is often limited by low utilisation and competing influences such as aggressive food marketing. In India, rapid dietary transitions and increased consumption of processed foods have contributed to a rising burden of overweight and NCDs. Pregnancy represents a critical window for nutritional behaviour change, yet evidence comparing the influence of food labels and advertisements on dietary practices among pregnant and non-pregnant women remains scarce.

Objective: To assess and compare the influence of food labels and food advertisements on eating habits among pregnant and non-pregnant women in Chengalpattu district, Tamil Nadu.

Methods: A hospital-based comparative cross-sectional study was conducted among 300 women (pregnant and non-pregnant) attending selected health facilities. Data were collected using a structured, pre-tested questionnaire assessing food label awareness and utilisation, exposure to food advertisements, and eating-out behaviour. Descriptive statistics, chi-square tests, and multivariable logistic regression were applied to identify associations and independent predictors.

Results: Overall, 58.7% of participants were aware of food labels; however, consistent utilisation remained suboptimal. Pregnant women demonstrated significantly higher awareness compared to non-pregnant women (78.7% vs 38.7%, $p < 0.001$). Food advertisement influence was reported in 13% of participants, with higher susceptibility among women with higher education (AOR = 3.19; 95% CI: 1.42–7.16). Eating-out behaviour was observed in 44% of participants and was significantly higher among younger and non-pregnant women. Socio-demographic factors, particularly education, socio-economic status, and urban residence, showed stronger associations with dietary behaviours than pregnancy status.

Conclusion: While pregnancy enhances initial awareness of food labels, sustained utilisation and healthier eating practices are primarily driven by socio-demographic determinants rather than pregnancy alone. The relatively low influence of food advertisements suggests a complex interaction between awareness and behaviour. Strengthening behaviour-oriented nutrition education, along with simplified and interpretive food labelling strategies, is essential to improve dietary decision-making and reduce the burden of NCDs.

Keywords: Food labelling, Food advertisements, Dietary behaviour, Pregnant women, Non-communicable diseases, India

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Introduction

Food labelling is an important public health strategy that seeks to provide consumers with easily accessible, accurate, and transparent information about food products in order to assist them become aware of their dietary options. With the goal to help consumers compare goods and choose healthier options, nutrition labels convey important information such as ingredients formulation,

nutrient content, serving size, and health warnings. In an effort to promote transparency, ensure consumer rights, and minimize the risks linked to diet, governments and international organizations mandate or suggest labels, that are created through regulatory frameworks informed by scientific data on nutrition and disease prevention. In an effort to encourage better food environments and have an impact on consumer behavior and food industry

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reformulation, nutrition labeling—especially front-of-pack labeling—has achieved acceptance worldwide as an economical population-level intervention. ^(1,2,3)

Unhealthy diets are considered to be among the leading causes of death and morbidity around the world, and they have a substantial effect on overweight and non-communicable diseases (NCDs) like diabetes and cardiovascular disorders. ⁽⁴⁾ Although effectiveness varies depending on label design and consumer literacy, systematic reviews and meta-analyses have discovered that information on nutrition labels can positively influence food purchases, reduce energy intake, and encourage producers to modify products with less of harmful nutrients ^(5,6). Consumer understanding and good buying habits are rising in nations that use interpretive front-of-pack labels, such as warnings and nutrient ratings ⁽⁷⁾.

India's increased consumption of packaged and processed foods is due to rapid development, a growing economy, and changing habits. As HFSS foods became more widely available and distributed, national surveys and observational studies reveal that the prevalence of overweight and obesity is rising in several Indian states ⁽⁸⁾. Overweight prevalence has increased than the national norm in 22 states, according to the Comprehensive National Nutritional Survey (CNNS), indicating the rising burden of diet-related NCDs ⁽⁹⁾. Considering the fact that Indian food labelling laws are on par with the laws of other countries, research shows customers still rarely read nutrition labels, focused more on production and expiration dates than nutritional value. The usefulness of labels in guiding healthy food choices is further diminished by aggressive food marketing, complicated label styles, and lack of nutrition knowledge. ^(10,11)

Dietary preferences are heavily influenced by food marketing and advertising, especially when it comes to digital and television media. With more than 167 million households in India having televisions, food commercials, which frequently push meals high in energy but low in nutrients, have a strong platform. ⁽¹²⁾ Increased nutritional needs and heightened concern for the health of the mother and fetus are features of pregnancy, a nutritionally sensitive time. Although there is not much research on pregnant women's usage of food labels and the impact of food marketing, qualitative evidence indicates that pregnancy may be a crucial time to establish healthy eating habits and seek nutrition information. Also, nobody else has ever looked at these factors that influence among women in Tamil Nadu's Chengalpattu district. In order to provide information for focused nutrition education and policy interventions, this study attempts to evaluate and compare the impact of food labels and advertisements on the eating habits among pregnant and non-pregnant women in this group ⁽¹³⁾.

Methodology

A hospital-based comparative cross-sectional study was conducted over a period of three months in Chengalpattu district, Tamil Nadu, among women aged 16–45 years to assess the influence of food labels and food advertisements on eating behaviour. The study population comprised two groups: pregnant women attending antenatal clinics and non-pregnant women accessing general outpatient services at a selected tertiary care hospital. Eligible participants were those who had

been residing in the study area for a minimum of six months and were able to comprehend and respond to the questionnaire in Tamil or English; women with severe illness or inability to provide informed consent were excluded. Prior to data collection, ethical approval was obtained from the Institutional Ethics Committee, and written informed consent was obtained from all participants after explaining the purpose and confidentiality of the study. The sample size was calculated based on prevalence estimates reported by Juhee Kim, which indicated food label usage of 68.6% among pregnant women and 66.1% among non-pregnant women; using these proportions with a 95% confidence level and adequate power, the minimum sample size was estimated to be 288, which was further inflated by 10% to compensate for potential non-response and incomplete data, resulting in a final sample size of 300 participants. A stratified random sampling technique was adopted to ensure equal representation of both groups; participants were stratified into pregnant and non-pregnant categories, following which simple random sampling was employed within each stratum to recruit participants, with pregnant women selected from antenatal clinics and non-pregnant women from general outpatient departments. Data collection was carried out using a pre-tested, structured questionnaire developed after literature review and expert validation, consisting of four sections: Section A captured socio-demographic variables including age, education level, occupation, monthly income, pregnancy status, and place of residence; Section B assessed awareness and utilisation of food labels, including frequency of label reading, ability to interpret nutritional information, attention to components such as calories, fats, sugars, expiry date, and ingredient lists, and the role of labels in influencing purchasing decisions; Section C evaluated exposure to food advertisements across various media platforms (television, social media, print media) and assessed their perceived influence on food preferences, cravings, and purchasing behaviour; and Section D assessed eating-out behaviour, including frequency of consuming outside food, preference for fast foods or processed foods, and contextual factors influencing such behaviour. The questionnaire was pilot-tested among a small subset of participants to ensure clarity, reliability, and cultural appropriateness, and necessary modifications were made prior to final data collection. Data were coded and entered into Microsoft Excel and subsequently analyzed using jamovi version 2.6.44. Descriptive statistics were used to summarize the data, with categorical variables expressed as frequencies and percentages and continuous variables summarized as mean and standard deviation. Inferential statistics were applied to examine associations between socio-demographic variables and outcome variables (food label awareness, influence of food advertisements, and eating-out behaviour) using the Chi-square test. Further, multivariable binary logistic regression analysis was performed to identify independent predictors of these outcomes while controlling for potential confounders; results were reported as adjusted odds ratios (AORs) with 95% confidence intervals. Model adequacy and goodness-of-fit were assessed prior to interpretation. A p-

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value of less than 0.05 was considered statistically significant throughout the analysis.

Results

A total of **300 women** participated in the study, including pregnant and non-pregnant women

Variable	Pregnant n (%)	Non pregnant (%)	Total (n%)
Age (years)			
16–29	130(86.7%)	144(96)	274(91.3)
30–45	20(13.3%)	6(4)	26(8.7)
Education level			
School level	109(72.7)	83 (55.3)	192(64)
College and above	41(27.3)	67 (44.7)	108(36)
Employment status			
House wife	115(76.7)	102 (68)	217(72)
Employed	35(23.3)	48 (32)	83(27)
Monthly income (₹)			
Upper	9(6)	16(10.7)	25(8.3)
Upper middle	43(28.7)	37(24.7)	80(26.7)
Lower middle	80(53.3)	85(56.7)	165(55)
lower	18(12)	12(8)	30(10)
Place of residence			
Rural	24(16)	125(83.3)	149(49.7)
Urban	126(84)	25(16.7)	151(50.3)

Table 1. Socio-demographic characteristics of the study participants (n = 300)

The socio-demographic characteristics of the participants are shown in Table/ Fig-1. The majority of women were aged 16–29 years (91.3%), while 8.7% were aged 30–45 years. Most participants had school-level education (64%), and 36% had college-level education or above. Nearly three-fourths of the participants were homemakers (72%), while 27% were employed.

With respect to socio-economic status, more than half of the participants belonged to the lower-middle class (55%), followed by the upper-middle class (26.7%). Only 8.3% belonged to the upper socio-economic category. Participants were almost equally distributed between urban (50.3%) and rural (49.7%) areas.

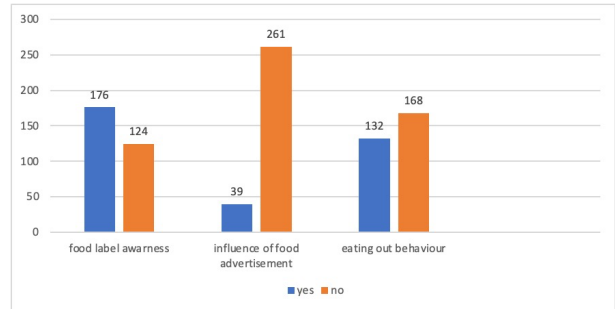


Fig-1 prevalence Food Label Awareness, Influence of Food Advertisements, and Eating-Out Behavior

As depicted in Fig-1, 176 participants reported being aware of food labels, whereas 124 were not aware. The influence of food advertisements on food choices was reported by only 39 participants, while 261 participants stated that advertisements did not influence their choices. Regarding eating-out behavior, 132 participants reported consuming food outside the home, whereas 168 participants did not.

Variable	Food label awareness n (%)	χ^2 , p-value	Advertisement influence n (%)	χ^2 , p-value	Eating-out behavior n (%)	χ^2 , p-value
Age						
16-29	155(56.6)	$\chi^2 = 5.74$, p = 0.017	38(13.9)	$\chi^2 = 2.11$, p = 0.146	123(44.9)	$\chi^2 = 1.02$, p = 0.313
30-45	21(8.8)		1(3.8)		9(34.6)	
Education						
School	56(51.9)	$\chi^2 = 3.23$, p = 0.072	26(24.1)	$\chi^2 = 18.3$, p < 0.001	42(38.9)	$\chi^2 = 1.79$, p = 0.18
College	120(62.5)		13(16.8)		90(46.9)	
School						
Employment status						
Housewife	45(54.2)	$\chi^2 = 0.937$, p < 0.333	13(15.7)	$\chi^2 = 0.719$, p < 0.396	29(34.9)	$\chi^2 = 3.82$, p = 0.05
Employed	131(60.4)		26(12)		103(47.5)	
Socio-economic status						
Lower middle	12(48)	$\chi^2 = 10.9$, p = 0.012	3(12)	$\chi^2 = 1.45$, p = 0.693	5(20)	$\chi^2 = 14.03$, p = 0.003
Upper middle	57(71.4)		10(12.5)		67(40.6)	
Upper	86(52.1)		20(12.1)		20(66.7)	
Upper	21(70)		6(20)			

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mid dle Mid dle Lo wer mid dle						
Plac e of res- i- den ce Ur- ban Ru- ral	113(74 .8) 63(42. 3)	$\chi^2 =$ 32. 8, p < 0.0 01	8(5.3) 31(20 .8)	$\chi^2 =$ 15.9, p < 0.00 1	86 (57) 46(30 .9)	$\chi^2 =$ 20. 7, p =< 0.0 01
Pre gna ncy sta- tus Pre gna nt Non - pre gna nt	118 (78.7) 58 (38.7)	$\chi^2 =$ 49. 5, p < 0.0 01	10 (6.7) 29 (19.3)	$\chi^2 =$ 10.6, p = 0.00 1	86 (57.3) 46 (30.7)	$\chi^2 =$ 21. 6, p =< 0.0 01

Table 2. Association between socio-demographic variables and food label awareness, influence of food advertisements, and eating-out behavior among women (n = 300)

The association between socio-demographic variables and food label awareness, influence of food advertisements, and eating-out behavior is presented in Table/Fig-2.

Food label awareness was significantly associated with age, socio-economic status, place of residence, and pregnancy status. A significantly higher proportion of women aged 30–45 years were aware of food labels compared to those aged 16–29 years ($\chi^2 = 5.74$, $p = 0.017$). Women belonging to the upper-middle and lower-middle socio-economic classes showed significantly higher food label awareness ($\chi^2 = 10.9$, $p = 0.012$). Urban residents had significantly higher awareness compared to rural residents ($\chi^2 = 32.8$, $p < 0.001$). Pregnant women demonstrated significantly greater food label awareness than non-pregnant women ($\chi^2 = 49.5$, $p < 0.001$).

The influence of food advertisements was significantly associated with education, place of residence, and pregnancy status. Women with college-level education and above were significantly more likely to be influenced by food advertisements compared to those with school-level education ($\chi^2 = 18.3$, $p < 0.001$). Urban residents reported higher advertisement influence than rural residents ($\chi^2 = 15.9$, $p < 0.001$). A significant association was also observed between pregnancy status and advertisement influence ($\chi^2 = 10.6$, $p = 0.001$).

Eating-out behavior showed a significant association with socio-economic status, place of residence, and pregnancy status. Participants belonging to the upper and upper-middle socio-economic classes reported higher eating-out behavior ($\chi^2 = 14.0$, $p = 0.003$). Urban residents were significantly more likely to eat outside food compared to rural residents ($\chi^2 = 20.7$, $p < 0.001$). Eating-out behavior was also significantly higher among non-pregnant women ($\chi^2 = 21.6$, $p < 0.001$).

Pre- dic- tor vari- able	Foo d la- bel awa- ren- ess AO R (95 % CI)	p- val ue	Ad- ver- tise- ment influ- ence AOR (95% CI)	p- val ue	Eat- ing- out be- havior AOR (95% CI)	p- val ue
Age ≥ 30 <30*	1.71 (0.4 5– 6.49)	0.4 29	1.27 (0.13– 12.93)	0.8 37	0.28 (0.10– 0.79)	0.0 16
Preg- nanc y sta- tus Preg- nant Non- preg- nant *	2.30 (0.7 8– 6.79)	0.1 30	1.13 (0.35– 3.69)	0.8 40	—	0.9 85
Edu- ca- tion Col- lege Scho ol*	1.15 (0.6 4– 2.07)	0.6 47	3.19 (1.42– 7.16)	0.0 05	1.64 (0.90– 3.00)	0.1 08
Mar- ital sta- tus Mar- ried Un- mar- ried*	—	0.9 86	0.93 (0.07– 12.23)	0.9 56	—	0.9 84
Em- p- loy- ment Em- p- loye d Un- em- p- loye d*	0.94 (0.5 2– 1.68)	0.8 22	1.52 (0.68– 3.38)	0.3 09	0.67 (0.37– 1.20)	0.1 79

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Residence Urban	—	0.9 87	0.15 (0.01– 1.79)	0.1 36	—	0.9 91
Rural*						
Socio-economic status: Upper	0.62 (0.18– 2.12)	0.4 48	0.30 (0.06– 1.57)	0.1 53	0.17 (0.04– 0.67)	0.0 11
Mid- dle	2.12)	0.1 93	0.30(0. 09- 0.95)	0.0 41	0.43(0. 18- 1.07	0.0 69
Lower- mid- dle *	0.54					

Table 3. Multivariable Binary logistic regression analysis (n = 300) Foote note: Reference categories (*)

After adjustment for confounding variables, none of the socio-demographic factors showed a statistically significant association with food label awareness. However, education level remained significantly associated with influence of food advertisements, with women having college-level education and above being nearly three times more likely to be influenced by advertisements compared to those with school-level education (AOR = 3.19; 95% CI: 1.42–7.16; p = 0.005).

With respect to eating-out behavior, women aged 30 years and above had significantly lower odds of eating outside food compared to younger women (AOR = 0.28; 95% CI: 0.10–0.79; p = 0.016). Participants belonging to the upper socio-economic class also had significantly lower odds of eating-out behavior (AOR = 0.17; 95% CI: 0.04–0.67; p = 0.011). No other variables showed a statistically significant association in the adjusted analysis.

Exploratory Factor Analysis:

The exploratory factor analysis was carried out on the data in order to determine the factors for using food labels, the influence of food advertisement, and dietary behaviors. The data were suitable for carrying out factor analysis, with a significant Bartlett’s Test of Sphericity: $\chi^2 = 895$, do = 210, p < 0.001, with a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.644. Internal Consistency Cronbach’s alpha is 0.70 which shows acceptable reliability. The model’s fit included average residuals of 0.077 with an adjusted TLI of 0.684.

Factor Loadings				
	Factor			Uniqueness
	1	2	3	
Do you read and compare ingredient lists of similar food products before purchasing?	0.698			0.491
How often do you check for	0.689			0.517

nutritional information on food labels?				
Do you check food labels before purchasing packaged food items?	0.627			0.564
Do you believe that food advertisements should include clearer health warnings?	0.451			0.775
Do food labels influence your food purchasing decisions?	0.436			0.772
How often do you eat fast food (e.g., burgers, pizza, fried foods)?		0.750		0.307
Have you noticed any misleading food advertisements that later changed your perception about a product?		0.560		0.683
Do you consciously choose foods that are labeled as "healthy" or "low-fat" based on packaging claims		0.490		0.662
How often do you buy food products that are endorsed by celebrities or influencers?		0.462		0.702
How frequently do you see food advertisements?		0.545		0.674
How often do you include fresh fruits in your diet?			0.609	0.550
How often do you consume packaged or processed foods?			0.436	0.753
Do advertisements make you crave or desire certain foods (e.g., fast food,			0.396	0.829

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snacks, sugary drinks)?				
How easy do you find it to understand the information on food labels?			0.332	0.872
Do advertisements influence your decision to buy a particular food product?			0.314	0.901
Cronbach alpha				0.70
KMO				0.644
Bartlett's Test of Sphericity χ^2				895
Df				210
Significance				>0.001
Note. 'Minimum residual' extraction method was used in combination with a 'ProMax' rotation, Factor 1: Food Label Utilisation, Factor 2: Advertisement Exposure, Factor 3: Dietary Behaviour				

Table 4: Exploratory Factor Analysis

Discussion

The present study explored the influence of food labels and advertisements on eating behaviors among pregnant and non-pregnant women, with particular emphasis on the role of socio-demographic characteristics. Food label awareness and eating-related practices were found to be strongly influenced by education, socio-economic status, and place of residence rather than pregnancy status alone. Urban women demonstrated higher awareness of food labels compared to their rural counterparts, consistent with findings from several Indian studies that report better utilization of food labels in urban settings^{29,30}. However, this urban-rural difference did not remain significant after adjustment, indicating that access alone does not ensure sustained label use and highlighting the importance of behavior-focused nutrition education.

Education and socio-economic position emerged as key determinants shaping food-related decision-making behaviors. Similar to consumer-based studies that report high levels of label reading focused on price and expiry dates but limited nutritional interpretation^{23,26}, the present study found that awareness varied across socio-demographic strata, yet sustained utilization of food labels remained limited. Attitudinal factors alone were insufficient to maintain label use after adjustment, aligning with regional behavioral studies that document gaps between awareness and consistent practice²⁵.

With respect to pregnancy status, pregnant women initially exhibited higher awareness of food labels compared to non-pregnant women. However, this association did not persist after controlling for socio-demographic variables in multivariable analysis, suggesting that pregnancy per se did not independently sustain food label awareness. These findings indicate that while pregnancy may act as an initial trigger for heightened awareness, education, socio-economic status, and residential context

exert a stronger and more sustained influence on food-related behaviors. Similar observations have been reported by Kim et al., who noted increased label reading during pregnancy without consistent translation into healthier food choices¹⁴.

Traditional food beliefs and taboos have historically influenced maternal dietary practices in Indian settings. Studies from Tamil Nadu and South India have documented persistent food taboos and culturally driven dietary restrictions despite adequate literacy^{15,16}. In contrast, the present findings suggest a gradual transition from culturally driven practices toward modern determinants of food choice, where socio-demographic characteristics outweigh pregnancy-related beliefs alone. This shift is consistent with systematic reviews reporting a move away from cultural dietary restrictions toward socio-economic and educational influences on maternal nutrition²⁸. Unlike studies primarily focused on dietary intake that report limited dietary diversity and micronutrient inadequacies among pregnant women^{18,20}, the current study assessed behavioral dimensions related to food choice and decision-making. The findings reinforce the distinction between nutritional intake and food-related behaviors, demonstrating that education and socio-economic position shape awareness and practices more strongly than pregnancy status^{18,19}.

The influence of food advertisements and eating-out practices also varied across socio-demographic groups. Interestingly, higher education appeared to increase susceptibility to advertisements without ensuring consistent label-based decision-making. This discrepancy between knowledge, attitude, and practice has been documented among educated consumers and medical students, where awareness does not consistently translate into routine label utilisation^{21,22,27}.

Experimental evidence suggests that “diet” or “healthy” labels may influence taste perception without producing meaningful behavioral change²⁴. In contrast, the present community-based findings indicate that food-related behaviors among women are predominantly shaped by socio-demographic factors, education, and residential context rather than perceptual effects of labelling alone.

Overall, the findings underscore that while pregnancy may prompt initial food-related awareness, sustained behavioral change is largely determined by education, socio-economic status, and place of residence. These results highlight the need for targeted, behavior-oriented nutrition education strategies that extend beyond pregnancy-centric or awareness-only interventions.

Conclusion

Although pregnancy increased initial food label awareness, sustained utilization and healthier eating behaviors were predominantly shaped by socio-demographic factors rather than pregnancy status. Food advertisements had limited influence on adult women’s dietary choices, with greater susceptibility observed among educated and urban groups. Increased eating-out practices among younger, non-pregnant women suggest dietary transitions. Strengthening behavior-oriented nutrition education and simplified food labelling is essential for promoting informed dietary choices and mitigating diet-related non-communicable diseases.

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Recommendation

Community-based nutrition education initiatives should focus on strengthening practical understanding and routine use of food labels, particularly among women from rural areas and those with lower levels of formal education. Adoption of simplified and interpretive food labeling systems, such as front-of-pack indicators, may enhance comprehension and support healthier purchasing decisions. Stronger regulatory oversight of food advertisements is recommended to minimize misleading nutritional claims, especially in media platforms targeting urban and educated populations. Behavior change communication related to healthy eating and reduced consumption of outside foods should be incorporated into existing maternal and women's health programmes. Public health strategies addressing diet-related non-communicable diseases should adopt an integrated approach that combines consumer education, regulatory action, and community participation

Limitations

The cross-sectional nature of the study precludes establishing causal relationships between food label use, advertisement exposure, and eating behaviors. Information on dietary practices and the influence of advertisements was obtained through self-reporting, which may have introduced recall and reporting biases. As the study was confined to a single district, the findings may not be fully generalizable to other geographic or socio-cultural contexts. The absence of objective measures of dietary intake and food purchasing behavior limits assessment of actual nutritional outcomes. Furthermore, detailed exposure to digital and social media-based food advertising was not explored, potentially underestimating the overall impact of marketing.

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References

- Lin, X., Xu, Y., Pan, X., Xu, J., Ding, Y., Sun, X., Song, X., Ren, Y., & Shan, P. (2020). Global, regional, and national burden and trend of diabetes in 195 countries and territories: an analysis from 1990 to 2025. *Scientific Reports*, 10(1). <https://doi.org/10.1038/s41598-020-71908-9>
- Food labelling: *FAO: Food and Agriculture Organization of the United Nations*. Food Labelling. (n.d.). <https://www.fao.org/food-labelling/en/>
- JE, M. S. J. S. (n.d.). *Effect of educational interventions on understanding and use of Nutrition Labels: A systematic review*. *Nutrients*. <https://pubmed.ncbi.nlm.nih.gov/30287766/>
- World Health Organization. (n.d.). *Obesity and overweight*. World Health Organization.

<https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

- Shangguan S; Afshin A; Shulkin M; Ma W; Marsden D; Smith J; Saheb-Kashaf M; Shi P; Micha R; Imamura F; Mozaffarian D; ; (n.d.). *A meta-analysis of food labeling effects on consumer diet behaviors and industry practices*. *American journal of preventive medicine*. <https://pubmed.ncbi.nlm.nih.gov/30573335/>
- An R; Shi Y; Shen J; Bullard T; Liu G; Yang Q; Chen N; Cao L; (n.d.). *Effect of front-of-package nutrition labeling on food purchases: A systematic review*. *Public health*. <https://pubmed.ncbi.nlm.nih.gov/33517247/>
- Taillie, L. S., Reyes, M., Colchero, M. A., Popkin, B., & Corvalán, C. (n.d.). *An evaluation of Chile's law of food labeling and advertising on sugar-sweetened beverage purchases from 2015 to 2017: A before-and-after study*. *PLOS Medicine*. <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003015>
- SW, P. B. L. (n.d.). *Global nutrition transition and the pandemic of obesity in developing countries*. *Nutrition reviews*. <https://pubmed.ncbi.nlm.nih.gov/22221213/>
- Comprehensive National Nutrition Survey (2016-2018) | knowledge. (n.d.). <https://knowledge.unicef.org/resource/comprehensive-national-nutrition-survey-2016-2018>
- Consumer Awareness and status of food labeling in selected supermarkets of Puducherry: An exploratory study Jain S, gomathi R, kar ss - *int j adv med health res*. (n.d.-b). <http://www.ijamhrjournal.org/article.asp?aulast=Jain&page=40&issn=2349-4220&issue=1&spage=36&volume=5&year=2018>
- Vemula SR, Gavaravarapu SM, Mendu VV, Mathur P, Avula L. Use of food label information by urban consumers in India – a study among supermarket shoppers. *Public Health Nutr*. 2014;17(9):2104–2114. Available from: <https://pubmed.ncbi.nlm.nih.gov/23965761/> pubmed.ncbi.nlm.nih.gov¹
- Our glorious years at a glance*. Telecom Regulatory Authority of India. (n.d.). <http://www.trai.gov.in/>
- Arabin, B., & Baschat, A. A. (2017, April 13). *Pregnancy: An underutilized window of opportunity to improve long-term maternal and infant health-an appeal for continuous family care and interdisciplinary communication*. *Frontiers in pediatrics*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5389980/>
- Kim J, Imai S, Mathews H. Does Pregnancy Increase Use and Awareness of Nutrition Information in Food Labels? *Matern Child Health J*. 2017 Jun;21(6):1387-1395. doi: 10.1007/s10995-016-2245-0. PMID: 28105545. K. Kouser Banu <https://doi.org/10.1007/s10995-016-2245-0>
- Banu KK, Prathipa A, Anandarajan B, Sheriff AI, Muthukumar S, Selvakumar J. Food taboos during antenatal and postpartum period among the women of rural and urban areas of Tamilnadu. *Int J Biomed*. 2016 Aug 30;7(8):393-6. <https://doi.org/10.7439/IJBAR.V7I8.3539>
- Andersen LT, Thilsted SH, Nielsen BB, Rangasamy S. Food and nutrient intakes among pregnant women in rural Tamil Nadu, South India. *Public Health Nutrition*. 2003;6(2):131-137. doi:10.1079/PHN2002367

Influence of Food Labels and Advertisements on Eating Habits Among Pregnant and Non-Pregnant Women in Chengalpattu District, Tamil Nadu: A Hospital-Based Cross-Sectional Study

<https://doi.org/10.1079/PHN2002367>

17. Barney AM, Isaac BT, Cherian AG, Abraham VJ, Danda S. Dietary pattern and factors influencing dietary intake among pregnant women consuming vegetarian and non-vegetarian diets in rural South India. *Indian J Nutr Diet*. 2020 Apr;57:197-204.

<https://doi.org/10.21048/ijnd.2020.57.2.24511>

18. Singh AK, Malhotra B, Mohan SK, Joshi A. Evaluation of dietary choices, preferences, knowledge and related practices among pregnant women living in an Indian setting. *Journal of clinical and diagnostic research: JCDR*. 2015 Aug 1;9(8):LC04.

<https://doi.org/10.7860/JCDR/2015/14463.6317>

19. Annie Anbarasi S, Ponmozhi N, Subhashini M et al. A Comparative Assessment on Dietary Habits of Pregnant Women in Urban and Rural Areas. *Indian Journal of Public Health Research and Development*/Volume 15 No. 3, July-September 2024.

<https://doi.org/10.37506/k3057e89>

20. Jain, Sejal; Gomathi, R1; Kar, Sitanshu Sekhar. Consumer Awareness and Status of Food Labeling in Selected Supermarkets of Puducherry: An Exploratory Study. *International Journal of Advanced Medical and Health Research* 5(1):p 36-40, Jan-Jun 2018. | DOI: 10.4103/IJAMR.IJAMR_48_17

https://doi.org/10.4103/IJAMR.IJAMR_48_17

21. Arunkumar M, Varakumari E, Thozhanenjan I, Vijayarathikayan M, Pandian S, Bhandari A, Grace A. Decoding food labels: a study on the knowledge, attitudes, and practices of young medical students in Chennai. *Cureus*. 2025 Apr 20;17(4).

<https://doi.org/10.7759/cureus.82657>

22. Verma, Prerna; Rathod, Hetal; Johnson, S.; Palal, Deepu; Sohkhet, Gracia; Jadav, Vallari; Borah, Nirankush; Nallapu, Sandeep; Gangurde, Shweta; Vishwakarma, Kavita; Mahajan, Anil; Jadhav, Sudhir L.; Joon, Shubham. Influence of Packed Food Labeling on Shopping Practices: A Cross-Sectional Study. *Indian Journal of Community Medicine* 49(3):p 484-488, May-Jun 2024. | DOI: 10.4103/ijcm.ijcm_977_22

23. Wansink B, Van Ittersum K, Painter JE. How diet and health labels influence taste and satiation. *Journal of food science*. 2004 Dec;69(9):S340-6.

<https://doi.org/10.1111/J.1365-2621.2004.TB09946.X>

24. D., V., Many, J. N., & Kirupa, S. S. (2021). Attitude and Practices of Food Labels among Consumers in Puducherry Region - A Cross Sectional Study. *The Indian Journal of Nutrition and Dietetics*, 58(S2), 123-132.

<https://doi.org/10.21048/IJND.2021.58.S2.28016>

<https://doi.org/10.21048/IJND.2021.58.S2.28016>

25. V K, C A, Begum K. Exploring the Impact of Food Labels on Consumer Purchasing Decisions: A Study on Awareness and Preferences. *Eur. J. Nutr. Food. Saf.* [Internet]. 2024 Nov. 8 [cited 2026 Jan. 20];16(11):44-51. Available from: <https://journalejnfs.com/index.php/EJNFS/article/view/1575>

26. Annamalai, Sinthiyal; Gopichandran, Vijayaprasad1,. Knowledge, attitudes and utilization of food labels among undergraduate medical students in a medical college in Chennai – A cross sectional survey. *Indian Journal of Community and Family Medicine* 8(1):p 33-38, Jan-Jun 2022. | DOI: 10.4103/ijcfm.ijcfm_50_21

27. de Diego-Cordero R, Rivilla-Garcia E, Diaz-Jimenez D, Lucchetti G, Badanta B. The role of cultural beliefs on eating patterns and food practices among pregnant women: a systematic review. *Nutr Rev*. 2021 Aug 9;79(9):945-963. doi: 10.1093/nutrit/nuaa119. PMID: 33119079.

<https://doi.org/10.1093/nutrit/nuaa119>

28. Bailey C, Garg V, Kapoor D, Wasser H, Prabhakaran D, Jaacks LM. Food choice drivers in the context of the nutrition transition in Delhi, India. *Journal of nutrition education and behavior*. 2018 Jul 1;50(7):675-86.

<https://doi.org/10.1016/j.jneb.2018.03.013>

29. Chellamuthu L, Ramasubramani P, Kanagat S. Assessment of Practices on Purchase of Packaged Foods and Utilization Patterns of Food Labels among Adults in Puducherry. *Indian Journal of Community Medicine*. 2025 May 1;50(3):458-64.

https://doi.org/10.4103/ijcm.ijcm_30_23

30. Kumar N, Kapoor S. Do labels influence purchase decisions of food products? Study of young consumers of an emerging market. *British Food Journal*. 2017 Feb 6;119(2):218-29.

<https://doi.org/10.1108/BFJ-06-2016-0249>