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Constraints faced by households in consumption of vegetables in Chhattisgarh: A Garrett ranking analysis

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Abstract

Vegetable consumption is widely recognized as a cornerstone of balanced diets, yet households across diverse socioeconomic contexts encounter multiple barriers that restrict adequate intake. With a focus on demographic and economic factors, this study examines household-level barriers to vegetable intake. The goal was to comprehend the barriers that households have while trying to get and eat veggies. Household preferences about the problems faced were prioritized using Garrett's ranking system. In eight districts of Chhattisgarh, 385 families provided primary data. Interestingly, while high prices emerged as the most critical constraint, time-related preparation barriers were considered least important. This study illustrates how these constraints collectively reduce dietary diversity and compromise nutritional outcomes, as evidenced by household survey data. The findings highlight the necessity of comprehensive policy measures, such as price control, enhanced storage facilities, reinforced supply chains, encouragement of nutrition education, and assistance for regional vegetable production. To improve family vegetable intake and improve public health outcomes, such actions are crucial.

Keywords: Vegetable, household, consumption, constraint, public health

Introduction

Everyone agrees that eating enough vegetables is essential to a balanced diet, which improves nutritional status, lowers the risk of chronic illnesses, and improves general health. Despite these well-established advantages, households in a variety of socioeconomic contexts frequently find it difficult to consume the required amounts of vegetables. Vegetable consumption is influenced by a variety of complicated structural, cultural, and economic variables in addition to personal preferences. Designing successful programs that support dietary variety and public health requires an understanding of these limitations. Vegetable consumption patterns are greatly influenced by household-level obstacles in many emerging nations, including India. Access to veggies is sometimes hampered by high market pricing, low household income, and a lack of fresh supply. These issues are made worse by seasonal variations and poor storage facilities, and decreased intake is a result of cultural preferences for staple foods and a lack of knowledge about their nutritional advantages. Regular vegetable intake is further discouraged by time restrictions related to cleaning, chopping, and cooking, especially in metropolitan homes with hectic schedules. Together, these complex obstacles jeopardize nutritional outcomes and impede dietary adequacy. In light of this, the current study aims to

investigate the barriers to vegetable consumption that families encounter, with an emphasis on demographic and economic factors. Based on primary data gathered from 385 homes in eight districts of Chhattisgarh, household preferences for different concerns were systematically ranked using Garrett's ranking approach. The project intends to offer evidence-based insights into the behavioral and structural reasons limiting vegetable intake by identifying and rating these restrictions. The results are anticipated to guide integrated policy interventions that can collectively increase household vegetable intake and improve public health outcomes, such as price regulation, enhanced storage infrastructure, strengthened supply chains, nutrition education, and support for local vegetable production.

Materials and Methods

The present study was conducted in the Raipur, Bilaspur, Durg, Raigarh, Surguja, Surajpur, Kanker and Bastar districts of Chhattisgarh. From all this districts 385 households were selected as respondents. Thus, a sample of 385 households was selected stratified randomly which covers south, north, east and central part of Chhattisgarh. The primary data was collected through personal interview method with the help of structured Questionnaire, specially designed for the study. Collected data were classified, tabulated and analyzed by

using statistical methods like Garrett ranking analysis to rank the constraints. The information regarding constraints was collected through personal interview method. Garrett ranking technique was used to analyses the constraints. Garrett's Ranking Technique provides the change of orders of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution is that the constraints are arranged based on their severity from the point of view of respondents. Hence, the same number of respondents on two or more constraints may have been given different rank.

Garrett's formula for converting ranks into percent is as below:

$$\text{Percent position} = 100(R_{ji} - 0.5) \div N_j$$

R_{ji} = 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th Ranks
 N_j = Total rank given by 385 respondents = 8

Using the table provided by Garrett and Woodworth (1969), the percentage position of each rank was translated into scores. The total number of respondents for whom scores were added was divided by the sum of the individual respondents' scores for each constraint. The constraints were ranked based on the order of these mean scores for each constraint.

Results and Discussion

the constraints faced by consumers in the consumption of vegetables as assessed through the Garrett Ranking Technique. The ranking was determined based on the total Garrett scores and mean Garrett scores obtained for each identified constraint. Vegetables are often more expensive compared to staple foods was found to be the most important limitation, ranking first with a mean Garrett score of 53.40 and a total Garrett score of 20,560. This implies that one of the main obstacles to households regularly consuming veggies is their comparatively high cost. With a mean Garrett score of 53.10 and a total Garrett score of 20,444, the restriction Limited purchasing power reduces affordability of

vegetables came in second rank. The findings show that customers' ability to buy enough veggies is greatly impacted by decreased household income and insufficient purchasing power. With a mean Garrett score of 50.33 and a total Garrett score of 19,377, Perishability discourages purchase in bulk and reduces shelf life achieved third place. This result suggests that customers are deterred from purchasing veggies in greater quantities by worries about spoiling and storage losses. With a mean Garrett score of 49.05 and a total Garrett score of 18,883, the limitation Consumers may not recognize the health benefits of vegetables secured the fourth position. This demonstrates how low nutritional understanding affects vegetable intake habits. Additionally, Consumption fluctuates with availability of vegetables season-wise leading to inconsistency was rated fifth, with a mean Garrett score of 48.64 and a total Garrett score of 18,725, suggesting that regular consumption habits are impacted by seasonal fluctuations in vegetable availability. With a mean Garrett score of 48.11 and a total Garrett score of 18,524, Supply chain gaps and weak distribution limit access was ranked sixth, indicating that distribution and market accessibility problems also play a role in consumption limitations. With a mean Garrett score of 46.89 and a total Garrett score of 18,051, the restriction Busy schedules discourage peeling, cutting, or cooking vegetables was ranked seventh. This suggests that modern lifestyles and time restrictions have a minor impact on vegetable intake. Cultural or habitual choices override nutritional awareness was the respondents' least significant limitation, ranking eighth with the lowest overall Garrett score of 17,896 and a mean Garrett score of 46.48. The Garrett ranking analysis shows that the biggest obstacles to vegetable intake are financial ones, namely the high cost of vegetables and consumers' restricted purchasing power. While cultural preferences and time-related variables are somewhat fewer major restraints in the research region, issues pertaining to perishability, nutritional knowledge, seasonal availability, and distribution systems all affect consuming behavior. Specifically, the high cost of fruits and consumers' limited purchasing power are the main obstacles to fruit consumption.

Table 1: Constraints faced by consumers in consumption of vegetables

Sl. No.	Constraints
C1	Vegetables are often more expensive compared to staple foods.
C2	Limited purchasing power reduces affordability of Vegetables.
C3	Cultural or habitual choices override nutritional awareness.
C4	Supply chain gaps and weak distribution limit access.
C5	Perishability discourages purchase in bulk and reduces shelf life.
C6	Consumption fluctuates with availability of Vegetables season wise leading to inconsistency.
C7	Consumers may not recognize the health benefits of Vegetables.
C8	Busy schedules discourage peeling, cutting, or cooking Vegetables.

Table 2: Frequency of How Many Respondents Have Given 1st To 8th Rank for Each Constraint

	C1	C2	C3	C4	C5	C6	C7	C8
Rank1	99	77	18	33	60	35	43	20
Rank2	35	57	51	56	46	45	45	50
Rank3	39	40	54	45	48	60	46	53
Rank4	45	40	49	44	43	47	65	52
Rank5	48	55	45	43	40	55	52	47
Rank6	32	42	49	60	54	51	38	59
Rank7	40	31	72	60	47	42	40	53
Rank8	47	43	47	44	47	50	56	51
Total	385	385	385	385	385	385	385	385

Table 3: Percent Position and Garrett Value for Each Constraint

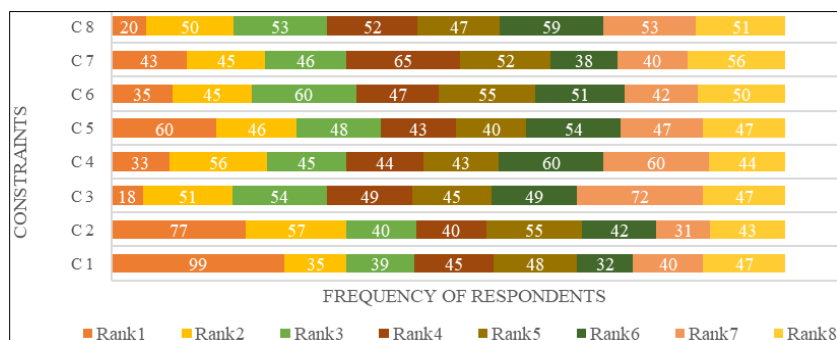
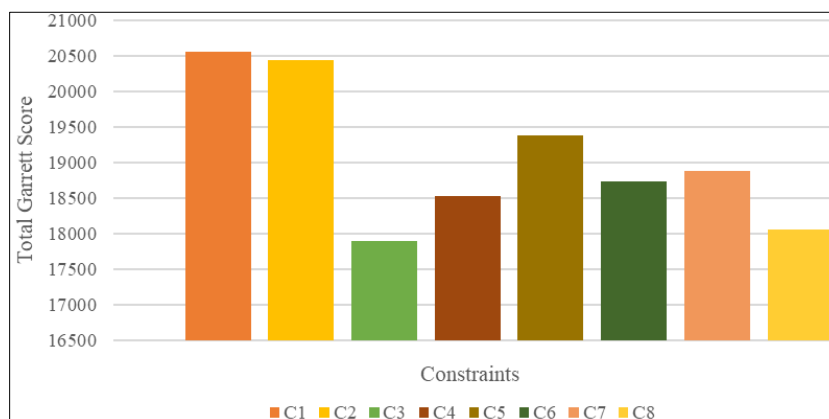
Sl. No.	$100 (R_{ji}-0.5) \div N_j$	Percent Position	Garrett Value
C1	$100(1-0.5)/8$	6.25	79
C2	$100(2-0.5)/8$	18.75	67
C3	$100(3-0.5)/8$	31.25	59
C4	$100(4-0.5)/8$	43.75	53
C5	$100(5-0.5)/8$	56.25	46
C6	$100(6-0.5)/8$	68.75	40
C7	$100(7-0.5)/8$	81.25	32
C8	$100(8-0.5)/8$	93.75	20

Table 4: Total Garrett Score for Each constraint

Constraints	C1	C2	C3	C4	C5	C6	C7	C8
1x79	7821	6083	1422	2607	4740	2765	3397	1580
2x67	2345	3819	3417	3752	3082	3015	3015	3350
3x59	2301	2360	3186	2655	2832	3540	2714	3127
4x53	2385	2120	2597	2332	2279	2491	3445	2756
5x46	2208	2530	2070	1978	1840	2530	2392	2162
6x40	1280	1680	1960	2400	2160	2040	1520	2360
7x32	1280	992	2304	1920	1504	1344	1280	1696
8x20	940	860	940	880	940	1000	1120	1020
Total score	20560	20444	17896	18524	19377	18725	18883	18051

Table 5: Mean Score and Garrett Ranking for Each Constraint

Sl. No.	Constraints	Mean Score	Garrett Ranking
C1	Vegetables are often more expensive compared to staple foods.	$20560/385=53.40$	1
C2	Limited purchasing power reduces affordability of Vegetables.	$20444/385=53.10$	2
C3	Cultural or habitual choices override nutritional awareness.	$17896/385=46.48$	8
C4	Supply chain gaps and weak distribution limit access.	$18524/385=48.11$	6
C5	Perishability discourages purchase in bulk and reduces shelf life.	$19377/385=50.33$	3
C6	Consumption fluctuates with availability of Vegetables season wise leading to inconsistency.	$18725/385=48.64$	5
C7	Consumers may not recognize the health benefits of Vegetables.	$18883/385=49.05$	4
C8	Busy schedules discourage peeling, cutting, or cooking Vegetables.	$18051/385=46.89$	7

**Fig 1:** Respondent (N=385) Ranking to Each Constraint**Fig 2:** Total Garrett Score for Each Constraint

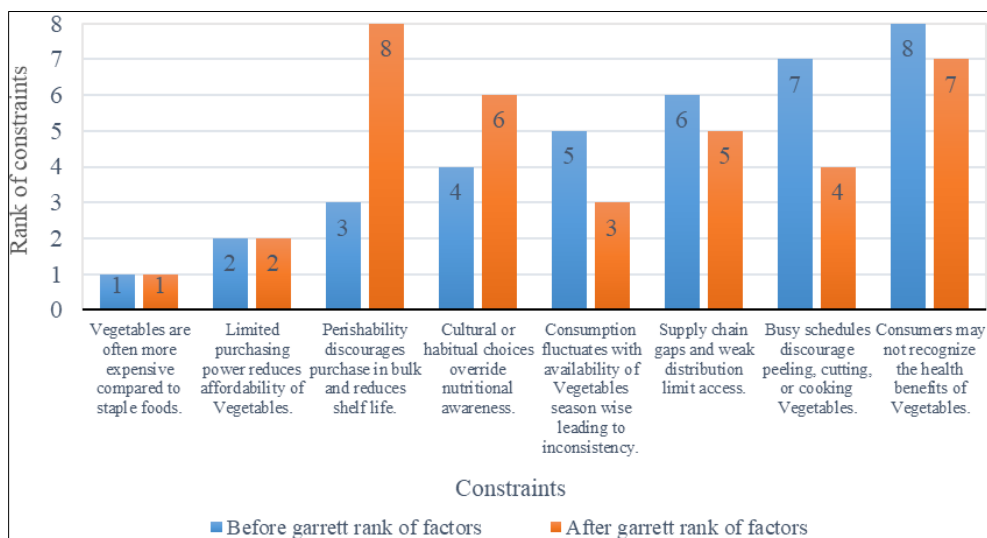


Fig 3: Comparative Graph of Ranking to Constraint Faced by Households in Consumption of Vegetables Before and After Garrett Ranking Analysis.

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