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Sustainable diets for good nutrition and health among the citizens of Bhopal city

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Abstract

The concept of sustainable diets is not new but it is now in limelight. Changes to more sustainable dietary patterns are needed to reduce environmental hazards. However, in doing so, nutritional, cultural, social and economic aspects also need to be considered. Sustainable diets are defined by the Food and Agriculture Organization (FAO) of the United Nations as “those diets with low environmental impacts that contribute to food and nutrition security and to healthy life for present and future generations.

Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe, and healthy, while optimizing natural and human resources.”(1) Most studies support that there are environmental benefits if the consumption of fruits and vegetables is increased and the consumption of animal-based foods is reduced. Besides climatic changes, the effects of consumption of food can be seen in various other aspects of the environment, such as land use, water footprint, energy or fossil use. Other aspects of sustainability also need to be taken into account like social and economical, nutritional and health. Among the different scenarios a vegan diet followed by a vegetarian diet, a diet replacing meat and poultry, and a “healthy” diet had the largest potential to reduce GHGE (Green house Gas Emission). It was concluded that there is a “need for a far more complete assessment of the environmental, social, and economic impacts of foods and diets.” A vegan diet followed by a vegetarian diet and a “healthy” diet would result in the greatest improvement in land use demand. While a lower consumption of foods from animal sources may be more environmentally friendly. Additionally, from a nutritional, cultural, social and economic perspective, reducing or eliminating animal-based foods from our diets may not be the real solution. More research is needed to identify the dietary changes needed to achieve sustainable, healthy diets that are feasible and acceptable.

Keywords: Sustainability, vegetarian diet, environment, nutrition, health

Introduction

Enhancing the efficiency of irrigation, rationalizing the use of fertilizers, and adopting farming techniques that can help to preserve soil from erosion while improving crop are solutions that undoubtedly can make an important contribution to making food production more sustainable. A trend has been observed worldwide in which, as income increases, traditional diets are replaced by diets high in calories, processed foods, meat, refined sugars and fats. This diet transition is responsible in part for the global increase of people being overweight and obesity and incidence of related non-communicable diseases, such as Type II Diabetes, and of negative effects on the environment.

Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.”

There is a need to take a 360 degree turn, and eat fresh, vegetables and fruits, to take a turn towards vegetarian food. The present study is done to bring an awareness among the citizens of Bhopal city.

Aim: To make the citizens aware about sustainable, diverse, healthy and nutritious foods.

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Objective

1. To identify the model of sustainable diets with regards to nutritional, economic and environmental perspective.
2. To know the preferences pattern to purchase vegetarian food products.
3. To know the consumption pattern for vegetarian food products.
4. Effect of sustainable diet according to occupational status of the respondents.

Methods/Study Design

Interviews were carried out in order to get insights on

consumers’ attitudes, knowledge and perception as well as current behaviour towards sustainable healthy eating. Based on current understanding, the six components introduced in the campaign “Livewell 2020” will be used as a starting point to discuss different elements of sustainable healthy eating with the interviewees.

Interviewees were asked about healthy food, eating habits, their preferences for vegetarian food from where they purchased fruits, vegetables and meat and the reasons. They were asked about sustainable food, slow fire cooking, nutrition and organic food, shelf-life of food, whether they preferred fast food.

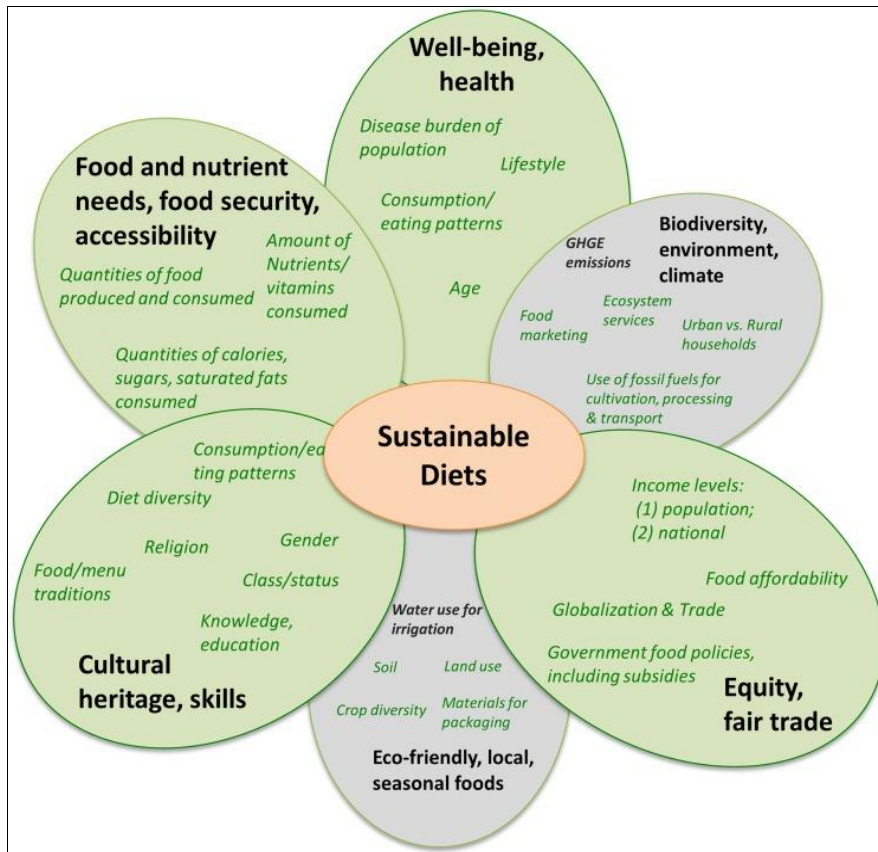


Fig 1: Model of: Key Components of Sustainable Diet

Respondents were selected from the local offices of Bhopal city. It is often seen that respondent have unfavourable dietary habit i.e. consuming a diet of limited variety, high snacking, consuming more high-fat foods (including fast foods), more soft drinks, and less fruits and vegetables. Such habits may have a long-lasting effect on their health.

Based on the literature review and information collected through in-depth interviews a questionnaire was developed, pre-tested and validated on a judgment sample of 100 respondents.

The preliminary questionnaire was designed to assess a wide range of sustainable healthy eating behaviours such as: purchase of local foods, meat, dairy and plant consumption, portion, size, processed food consumption, food packaging and seasonal food.

Result and Discussion

According to the review collected on sustainable diet following components were found strongly covered on the respondents. The components were studied further for health and nutrition and consumption of vegetarian diet.

Table 1: Key Components of Sustainable Diet (SD)

S. No	Key Components of SD	Respondents
1.	Health	70%
2.	Environment	50%
3	Eco Friendly	70%
4	Cultural Heritage	35%
5	Local Seasonal Foods	65%

Table 2: Sources of Information about the key component of a sustainable diet

S. No	Sources of Information	No. Respondents	Percentage
1	Friends	35	35
2	Relatives	08	08
3	Advertisement	26	26
4	Colleagues	29	29
5	Any other	02	02
	Total	100	100%

Table 2 shows that 35 percent of the respondents came to know about the sustainable diet through friends, 08 percent came to know through relatives, 26 percent of came to know through advertisement, 29 percent came to know through colleagues and 2 percent came to know through other sources.

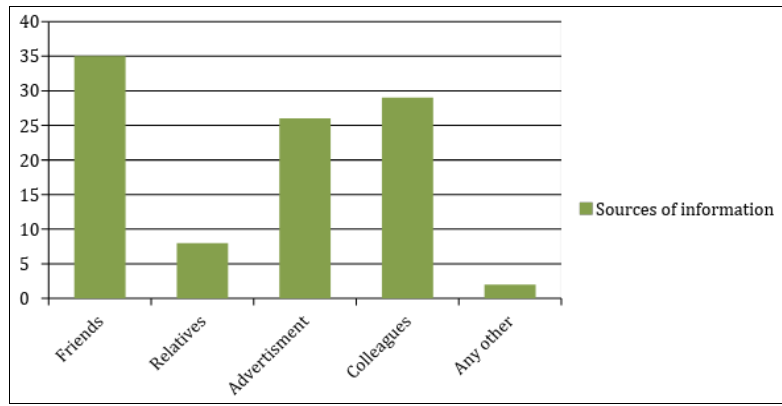


Fig 2: Sources of Information

Table 3: Age wise classification of Respondents in Bhopal city

S. No	Age Group	No of Respondants	Percentage
1	25-35	15	15
2	35-45	45	45
3	45-55	30	30
4	55 +	10	10
	Total	100	100

It is clear from Table 3.that 15 percent of respondents are from 25 -35 years, 45 percent of respondents are from the age group of 35 to 45 years, 30 percent in the ages between 45 to 55 years, 15 percent in the age between 25 to 35 years and 10 percent of the respondents are in the age group of above 55 years. It is evident from the table that majority of the respondents are from the age group of 35 to 45 year.

Table 4: Occupation wise classification of Respondents in Bhopal city

S. No	Occupation level	No. of Respondents	Percentage
1	Working	Government	16
		Private	25
		Business	10
		Others	5
2	Non working	44	44
	Total	100	100

Table 5: Effect of Respondents occupation upon the key components of sustainable diet.

S. No	Components (variables)	No. of Nonworking					No. of working					Total
		S.A	A	N	D		S.A	A	N	D		
1	Health Consciousness	30	10	4	--	--	38	12	5		100	
2	Environmental Concern	25	10	7	2	--	27	15	10	2	100	
3	Eco-friendly	20	12	10	1		25	12	8	6	100	
4	Cultural Heritage	22	15	4	3	--	30	20	3	3	100	
5	Local Seasonal foods	20	15	5	2		22	18	10	5	100	

There is S.A represented strongly agree, A for agree, N for neutral, D is disagree

In terms of Health consciousness factor, working and non-working both the respondents (68percent) consider vegetable products to be healthier. Almost 42 percent of them believe vegetarian food to be of better quality since they are free of pesticides and chemical residues. Other factors that influence the female respondents buying behavior towards food products are environment concern (52 percent), price (45 percent), knowledge about /vegetarian organic products (42percent) and family and others influence also (42 percent).

It could be attributed to the friends they meet, the kind of environment they live in and also the kind of advertisements they watch on television. There has been a paradigm shift in the way females have started becoming aware about the nutrition, healthy food, vegetarian diet etc.

Statistical Analysis: Descriptive statistics and chi square test, respectively are used in order to identify statistical significance to demographic variables, influence female respondents preferences on food products. The level of significance is set at a=0.05.

Table 6: Ranking behavior upon the key components of sustainable diet on respondents in Bhopal city.

S. No	Respondants Ranking	No. of respondents	Percentage
1	Strongly agree	68	68
2	Agree	22	22
3	Neutral	9	9
4	Disagree	1	1
5	Strongly Disagree	--	--
	Total	100	100

Chi-Square 0.05

P-value	Df	X ²	S/Ns
0.00001	4	179.2	5

Table 6. Shows that health is a major factor influencing respondents preferences on food products. The scores

obtained were statistically analyzed by Chi –Square test. The p – value is 0.00001. This result is significant at $p < 0.05$

indicates that the independent variable affect the dependent variable and regression analysis statistically reliable.

Table 7: Respondants Preference for the purchase of vegetarian Food Products

S. No	Particular	No of Working Respondants	Percentage	No of Non-working Respondent	Percentage	Total (%)
1	Cereal& Pulses	12	12	14	14	26
2	Fruits& Vegetables	6	6	4	4	10
3	Dairy Products	4	4	3	3	7
4	Green Tea & Beverages	24	24	17	17	41
5	Oils & Ghee	6	6	4	4	10
6	Other food products	4	4	2	2	6
	Total	56		44		100

Table 7. Shows the intake of vegetarian food product by the respondents out of the total 100 respondents. From the above table it is inferred that 26 percent of the f respondents purchase cereal and pulses, 10 percent of the consumers purchase fruits and vegetables, 7percent of the respondents purchase dairy products, 10 percent of the respondents purchase oils and ghee, 6 percent of respondents buy other food products and 41 percent i.e. majority of respondents prefer to buy green tea and beverages. Mostly respondents are

taking green tea regularly. This clearly indicates that there is a growing concern about healthcare. They have become conscious about their weight too.

Statistical Analysis

Descriptive statistics and chi square test, respectively are used in order to identify statistical significance to demographic variables, female respondents preference on food products. The level of significance is set at $\alpha=0.05$.

Table 8: Preferences of Respondents on Consumption of Vegetarian Food Products

S. No	Food products	No. of Respondents	Percentage
1	Cereal & Pulses	26	26
2	Fruits & Vegetables	10	10
3	Dairy products	7	7
4	Green tea & Beverages	41	41
5	Oils & Ghee	10	10
6	Other food products	6	6
	Total	100	100

Chi-Square 0.05

P-value	Df	X ²	S/Ns
0.00001	5	58.73	6

Table 8.shows that respondents have different preferences when buying vegetarian food products. The scores obtained were statistically analyzed by Chi –Square test. The p – value is 0.00001. This result is significant at $p < 0.05$ indicates that the independent variable affect the dependent variable and regression analysis statistically reliable.

Conclusion

- Sustainability and healthy eating have not been in respondents behaviour.
- The importance and need for developing interventions aiming at increasing consumers' sustainable healthy eating behaviour through influencing their attitudes, self-efficacy and knowledge is highlighted.
- Incorrect eating habits may be harmful for health and are proved to contribute to the development of (chronic) diet-related diseases among young adults.
- Consumers behaviour related to food slightly supports the key components of sustainable development.
- Therefore, it seems reasonable to identify the determinants of consumer attitudes and behaviour in relation to sustainable healthy eating.
- Additionally, from a nutritional, cultural, social and economic perspective, reducing or eliminating animal-based foods from our diets may not be the optimal solution.
- There is an awareness among the respondents specifically in new area of Bhopal city. It's more economical and

healthy to buy fresh vegetables and fruits from local markets. It would be sustainable and more hygienic.

- More research is needed to identify the dietary changes needed to achieve sustainable, healthy diets that are feasible and acceptable.

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