



EFFECT OF VEGETARIAN AND NON-VEGETARIAN DIET ON AGEING WITH SPECIAL REFERENCE TO FACIAL WRINKLES

Ayurveda

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ABSTRACT

Dietary factors are seen to affect the ageing of the skin as noted by the appearance of wrinkles. However, most of the clinical trials and observational studies carried out in this area is with respect to supplements as opposed to whole food. While dietary supplements are found effective in slowing down the rate of ageing process, it has its own drawbacks such as increased cost of the product and unavailability to remote areas. Therefore, finding dietary factors and ingredients that affect the appearance of wrinkles as a whole is the need of the hour. This study has been carried out on people of the coastal region, therefore, the dietary factors can be applied to all the individuals living in coastal areas for decelerating the rate of ageing of the skin. 200 subjects: 100 vegetarians and 100 non-vegetarians of both sexes were interviewed to analyse their dietary habits in detail. Their wrinkle scale was noted down. An association between the wrinkle scale and dietary trends were observed and analysed. It was found that a good wrinkle scale did not entirely depend upon the subject being vegetarian or non-vegetarian. It was majorly dominated by the other dietary factors such as eating at inappropriate time and quantity and physical activity.

KEYWORDS

Diet, Wrinkles, Ageing, Ayurveda.

Introduction:

If you can slow the biological process of ageing, even a minor slowdown in the rate at which we age yields improvements in virtually every condition of frailty and disability and mortality that we see in later ages.

~S. Jay Olshansky.

Ageing is a process of degeneration of the physical, mental, intellectual and sensory faculties and it is inevitable. However, the rate of ageing process is controlled by various factors such as food, lifestyle, pollution and mental functions. Different people age differently. Some may show a faster degeneration of the physical faculties- such as appearance of wrinkles, while some may show a faster degeneration of the mental faculties- such as loss of memory. Food is the most important factor that influences the rate of ageing process. Hence, the precise dietary factors that accelerate and decelerate the rate of ageing process in the current era must be identified. This research aims at studying the dietary patterns and factors that affect the ageing of the skin i.e., factors influencing the appearance of wrinkles.

In today's era, a large population all across the world suffers from early ageing. This is due to a number of intrinsic and extrinsic factors such as diet, lifestyle, occupation, etc. Ayurveda states that ageing is characterised by

- diminishing physical elements, as analysed by their quality and action
- diminishing sensory functions, as analysed by their grasping power
- poor memory, etc.

the quality of a Dhatu can be assessed directly or by their Upadhatu or organs which portray their strength. Therefore, in this study, the effect of diet on early ageing w.r.t wrinkles has been analysed. Skin is an Upadhatu of Mamsa Dhatu and also portrays the strength of Rasa Dhatu, Rakta Dhatu and Majja Dhatu. A vitiation of these Dhatus due to wrong dietary practises will directly reflect on the skin which can be observed directly with the help of a wrinkle scale.

NEED OF STUDY: This research work is necessary to understand the dietary causes that affect the health of the skin. The knowledge of these dietary factors will help in the graceful ageing of the skin. This will also reduce the drug dependency on cosmetic multivitamin and mineral demand. Moreover, a dietary change is a lesser financial burden than to opt for other drugs and procedures that prolong or hide the wrinkles.

AIM: To study and analyse the dietary causes that affect the rate of

ageing of the skin.

OBJECTIVES:

- To study the dietary habits of 200 subjects of Anupa Desha, i.e., marshy or wetlands.
- To observe the wrinkle scale of the subjects.
- To find an association between dietary habits and the wrinkle score.

Materials and Methods:

- Sample Size- 200 individuals. 100 vegetarians and 100 non-vegetarians.
- Food Questionnaire and Consent Form
- Modified Fitzpatrick Wrinkle scale

Inclusion Criteria-

1. Age:- 40-80yrs.
2. Vegetarian samples- Subjects consuming a vegetarian diet since birth.
3. Non- Vegetarian samples- subjects consuming this diet since birth with its frequency being more than 3 times a week.
4. Individuals of both sexes.

- Place of Study- Mangalore
- Objective Assessment Criteria- The wrinkles were assessed on the basis of a Modified Fitzpatrick Wrinkle Scale. The subjects were scored 0, 1, 2 Or 3 on the basis of the depth of the wrinkles. The subject was asked to sit straight with a still face. The MFWS was then correlated with the nasolabial wrinkles of the subject. The picture on the scale that corresponded the most was observed. The corresponding score was then noted. Score 0 indicated no wrinkles while score 3 indicated deep wrinkles.
- Statistical Analysis- Chi-square test, fisher's exact test and Kruskal Wallis Test was used for the analysis of data.

OBSERVATION AND RESULTS:

Table 1: Association between vegetarian and non-vegetarian Diet and Wrinkle Scale in (Age: 40-50 Years)

Parameters	Diet: Vegetarian (n = 25)	Diet: Non-Vegetarian (n = 39)	p value
Quantity			0.8671
Heena	2 (8.0%)	4 (10.3%)	
Sama	11 (44.0%)	14 (35.9%)	
Ati	12 (48.0%)	21 (53.8%)	

Dominant Ahar Rasa***			<0.0011
Astringent	0 (0.0%)	0 (0.0%)	
Bitter	2 (8.0%)	0 (0.0%)	
Salty	2 (8.0%)	0 (0.0%)	
Sour	13 (52.0%)	14 (35.9%)	
Spicy	0 (0.0%)	25 (64.1%)	
Sweet	8 (32.0%)	0 (0.0%)	
Ahar Rasa Satmya***			<0.0011
3	0 (0.0%)	0 (0.0%)	
4	9 (36.0%)	0 (0.0%)	
5	4 (16.0%)	7 (17.9%)	
6	12 (48.0%)	32 (82.1%)	
Adhyashan (Yes)	13 (52.0%)	25 (64.1%)	0.3362
Vishamashan (Yes)	17 (68.0%)	19 (48.7%)	0.1292
Physical Activity (Yes)	16 (64.0%)	23 (59.0%)	0.6882
Frequency of Non-Vegetarian Food (Days/Week)	NaN ± NA	5.41 ± 1.39	-3
Content			1.0002
Predominantly Eggs	0 (0.0%)	0 (0.0%)	
Mixed	0 (0.0%)	22 (56.4%)	
Predominantly Dried Fish	0 (0.0%)	2 (5.1%)	
Predominantly Fish	0 (0.0%)	15 (38.5%)	
Wrinkled Skin			0.0851
Scale 0	10 (40.0%)	8 (20.5%)	
Scale 1	7 (28.0%)	21 (53.8%)	
Scale 2	8 (32.0%)	8 (20.5%)	
Scale 3	0 (0.0%)	2 (5.1%)	

***Significant at $p < 0.05$, 1: Fisher's Exact Test, 2: Chi-Squared Test, 3: Wilcoxon Test In this age group, the vegetarians scored better in Wrinkle Skin.

Table 2: Association between Diet and Wrinkle Scale in (Age: 51-60 Years)

Parameters	Diet: Vegetarian (n = 45)	Diet: Non-Vegetarian (n = 30)	p value
Quantity***			<0.0011
Heena	1 (2.2%)	8 (26.7%)	
Sama	28 (62.2%)	5 (16.7%)	
Ati	16 (35.6%)	17 (56.7%)	
Dominant Ahar Rasa***			<0.0012
Astringent	6 (13.3%)	0 (0.0%)	
Bitter	5 (11.1%)	0 (0.0%)	
Salty	0 (0.0%)	2 (6.7%)	
Sour	21 (46.7%)	11 (36.7%)	
Spicy	4 (8.9%)	17 (56.7%)	
Sweet	9 (20.0%)	0 (0.0%)	
Ahar Rasa Satmya			0.0861
3	0 (0.0%)	0 (0.0%)	
4	12 (26.7%)	2 (6.7%)	
5	11 (24.4%)	8 (26.7%)	
6	22 (48.9%)	20 (66.7%)	
Adhyashan (Yes)	24 (53.3%)	16 (53.3%)	1.0001
Vishamashan (Yes)	25 (55.6%)	16 (53.3%)	0.8501
Physical Activity (Yes)	28 (62.2%)	22 (73.3%)	0.3171
Frequency of Non-Vegetarian Food (Days/Week)	NaN ± NA	5.77 ± 1.22	-3
Content			1.0001

Predominantly Eggs	0 (0.0%)	2 (6.7%)	
Mixed	0 (0.0%)	14 (46.7%)	
Predominantly Dried Fish	0 (0.0%)	0 (0.0%)	
Predominantly Fish	0 (0.0%)	14 (46.7%)	
Wrinkled Skin			0.7402
Scale 0	2 (4.4%)	1 (3.3%)	
Scale 1	10 (22.2%)	7 (23.3%)	
Scale 2	26 (57.8%)	20 (66.7%)	
Scale 3	7 (15.6%)	2 (6.7%)	

***Significant at $p < 0.05$, 1: Chi-Squared Test, 2: Fisher's Exact Test, 3: Wilcoxon Test In this age group, non-vegetarians scored better in the Wrinkle scale.

Table 3: Association between vegetarian and non-vegetarian Diet and Wrinkle Scale in (Age: 61-70 Years)

Parameters	Diet: Vegetarian (n = 22)	Diet: Non-Vegetarian (n = 17)	p value
Quantity***			0.0071
Heena	4 (18.2%)	0 (0.0%)	
Sama	9 (40.9%)	2 (11.8%)	
Ati	9 (40.9%)	15 (88.2%)	
Dominant Ahar Rasa***			<0.0011
Astringent	3 (13.6%)	0 (0.0%)	
Bitter	0 (0.0%)	0 (0.0%)	
Salty	0 (0.0%)	0 (0.0%)	
Sour	8 (36.4%)	8 (47.1%)	
Spicy	1 (4.5%)	9 (52.9%)	
Sweet	10 (45.5%)	0 (0.0%)	
Ahar Rasa Satmya			0.4561
3	2 (9.1%)	2 (11.8%)	
4	5 (22.7%)	3 (17.6%)	
5	5 (22.7%)	1 (5.9%)	
6	10 (45.5%)	11 (64.7%)	
Adhyashan (Yes)***	9 (40.9%)	13 (76.5%)	0.0262
Vishamashan (Yes)	14 (63.6%)	6 (35.3%)	0.0792
Physical Activity (Yes)	15 (68.2%)	13 (76.5%)	0.7251
Frequency of Non-Vegetarian Food (Days/Week)	NaN ± NA	6.12 ± 1.22	-3
Content			1.0002
Predominantly Eggs	0 (0.0%)	4 (23.5%)	
Mixed	0 (0.0%)	9 (52.9%)	
Predominantly Dried Fish	0 (0.0%)	0 (0.0%)	
Predominantly Fish	0 (0.0%)	4 (23.5%)	
Wrinkled Skin			0.0821
Scale 0	0 (0.0%)	0 (0.0%)	
Scale 1	1 (4.5%)	0 (0.0%)	
Scale 2	4 (18.2%)	8 (47.1%)	
Scale 3	17 (77.3%)	9 (52.9%)	

***Significant at $p < 0.05$, 1: Fisher's Exact Test, 2: Chi-Squared Test, 3: Wilcoxon Test. In this age group, the non-vegetarians scored better in Wrinkle Skin.

Table 4: Association between vegetarian and non-vegetarian Diet and Wrinkle Scale in (Age: 71-80 Years)

Parameters	Diet: Vegetarian (n = 8)	Diet: Non-Vegetarian (n = 14)	p value
Quantity			0.8621
Heena	2 (25.0%)	4 (28.6%)	
Sama	4 (50.0%)	5 (35.7%)	
Ati	2 (25.0%)	5 (35.7%)	

Dominant Ahar Rasa***			0.0151
Astringent	2 (25.0%)	0 (0.0%)	
Bitter	0 (0.0%)	0 (0.0%)	
Salty	0 (0.0%)	1 (7.1%)	
Sour	2 (25.0%)	6 (42.9%)	
Spicy	1 (12.5%)	7 (50.0%)	
Sweet	3 (37.5%)	0 (0.0%)	
Ahar Rasa Satmya ***			<0.001
3	2 (25.0%)	0 (0.0%)	
4	3 (37.5%)	0 (0.0%)	
5	3 (37.5%)	4 (28.6%)	
6	0 (0.0%)	10 (71.4%)	
Adhyashan (Yes)	2 (25.0%)	5 (35.7%)	1.0001
Vishamashan (Yes)	4 (50.0%)	7 (50.0%)	1.0001
Physical Activity (Yes)	5 (62.5%)	8 (57.1%)	1.0001
Frequency of Non-Vegetarian Food (Days/Week)	NaN ± NA	6.00 ± 1.66	-2
Content			1.0003
Predominantly Eggs	0 (0.0%)	0 (0.0%)	
Mixed	0 (0.0%)	8 (57.1%)	
Predominantly Dried Fish	0 (0.0%)	2 (14.3%)	
Predominantly Fish	0 (0.0%)	4 (28.6%)	
Wrinkled Skin			1.0003
Scale 0	0 (0.0%)	0 (0.0%)	
Scale 1	0 (0.0%)	0 (0.0%)	
Scale 2	0 (0.0%)	0 (0.0%)	
Scale 3	8 (100.0%)	14 (100.0%)	

***Significant at $p < 0.05$, 1: Fisher's Exact Test, 2: Wilcoxon Test, 3: Chi-Squared Test In this age group, both groups had the same Wrinkle Scale.

DISCUSSION:

The vegetarians scored a better wrinkle scale in one group while the non-vegetarians scored better in 2 age groups. Thus, it is evident from the above observations that the wrinkle scale not only depends on the food content but also on the right method of consumption of these ingredients.

Irrespective of the age group, the non-vegetarians who had a better wrinkle scale, consumed fish regularly (more than 5 times a week), consumed food that was predominantly spicy and had congeniality to more than 4 tastes. Although they seemed to consume more food, yet they were found to be free of Aam. This is due to their indulgence in strenuous physical activity. It is also to be noted that these individuals belonged to the Anoop Desha and hence have a congeniality to fish. This is due to the fact that people belonging to this area have kapha naturally accumulated in their body. The Abhishyandi and Ushna property of the fish results in aggravating as well as liquefying the Kapha Dosha in the body. This liquefaction leads to emaciation thereby preventing Srotorodha and natural eradication of the accumulated Kapha. The natural dominance of Kapha in people of this region prevents early drying up due to Vata which prevents early appearance of wrinkles. This effect is further affected positively by the quantitative consumption of food as well as physical activity. Physical activity maintains the tone of the Mamsa Dhatu. A healthy Mamsa Dhatu gives rise to a healthy skin.

The ones who scored poorly among non-vegetarians are the ones who mostly had a mixed diet especially comprising of dried fish, mostly having food in insufficient or excess quantity and consuming sour taste. Most of them also consume tobacco regularly. Regular consumption of tobacco leads to accumulation of toxic elements such as nicotine and tar in the body tissues. The body tries to expel these toxic elements from the body. One of the routes of expulsion is the Svedavaha Srotas which has Twacha or skin as its Moolasthan or excreting site. The consumption of sour food and dried fish leads to

accumulation of Kapha Dosha and Vata Dosha thereby causing Srotorodha. This prevents the toxic wastes of the tobacco from leaving the skin and it hence gets lodged there resulting in early ageing of the skin.

In vegetarians, the ones who scored better are the ones who mostly consume food in adequate amount, regularly consume milk or ghee and regularly indulge in physical activity. Such individuals are healthy due to the regular consumption of milk and ghee. These two ingredients are responsible for carrying out Rasayan Karma, hence, nourishment of all the Dhatus. Well-nourished Dhatus give rise to a healthy skin. Since they also indulged in physical activities, they keep the aggravating Kapha in control. Although this group consumes sour and sweet food items, yet they are healthy because of the proper quantity in which the food is consumed. The consumption of adequate amount of food ensures proper nourishment of the Dhatus without causing an increase in the Kapha.

The vegetarians who have scored poorly in the wrinkle scale are the ones who consume food in excess quantity, food dominated by sweet and sour tastes. Though they consume milk and ghee regularly, they indulge in Adhyashan which results in improper conversion of these healthy ingredients. In this case, the most important cause of early ageing of the skin is due to consumption of excess amount of food. Although the content of the food consumed is healthy, yet its excessive consumption leads to Srotorodha, thereby leading to inadequate nourishment to the Dhatus. This results in a malformed skin which shows early signs of ageing.

Conclusions:

- Consuming food in appropriate quantity and of good quality leads to graceful ageing of the skin.
- Indulgence in physical activities prolongs the ageing of the skin and also overcomes the ill effects of some wrong dietary practises such as Adhyashan up to an extent.
- Consumption of healthy food in excess also leads to early ageing of the skin.
- Fish eaters who had a dominance of sour and spicy food in their diet had a decelerated ageing of the skin. Vegetarians who consumed milk and ghee in proper quantity had a decelerated ageing of the skin.
- Abhishyandi is a dominant property of people belonging to Anoop Desha. The ones who eradicated this either by diet (sour and spicy food) or by physical work or both are seen to have a slower rate of ageing of the skin.

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