Research Article

ESTIMATION OF FACIAL WRINKLES AMONG DIFFERENT DEHA PRAKRITI VOLUNTEERS

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ABSTRACT

Background: Ayurveda is an ancient medical science. The body is governed by three humors in Ayurveda called dosha: Vata, Pitta, and Kapha. Aim: Variation in facial wrinkles among different deha prakriti with the help of the wrinkles assessment scale. Material and Method: This analytical cross-sectional study was conducted at the institute and its periphery. Initially, 500 female volunteers were screened based on inclusion and exclusion criteria. Out of which, 310 were assessed for their prakriti with standard prakriti proforma of MUHS. Facial wrinkles were evaluated with the help of a wrinkles assessment scale of 180 female volunteers. Result: The average number of wrinkles was significantly higher in pitta pradhan prakriti compared to kapha pradhan and Vata pradhan prakriti. Premature ageing signs (wrinkles) were higher in Pitta pradhan prakriti.

Keywords: Dosha, Prakriti, Valee, Wrinkles

INTRODUCTION

Ayurveda is an ancient science that emphasises maintaining the health of human beings and curing disease.[1] In Ayurveda, all the body processes are believed to be governed by the balance of three humors called dosha, namely Vata, Pitta, and Kapha.[2] Dominance of dosha at the time of shukrashonita samyoga (during conception) determine the basic physical, physiological and psychological constitution of the volunteers called prakriti. Skin is a complex organ covering the entire surface of the body. It provides a physical barrier between the body and the environment.[3] Skin quality depends on the body's condition of almost dosha and dhatu. Acharya Charaka mentioned that ushna guna is responsible for 'kshipra vali' in pitta dominant prakriti. Pitta dosha is responsible for degenerative changes due to its specific properties like ushna, tikshna, vistra, amla etc.[4] With the increase in age, the quality of each dhatu inside the body starts diminishing gradually. Both intrinsic and extrinsic factors induce skin ageing. Intrinsic ageing is an inevitable physiological process that results in thin, dry skin, fine wrinkles and gradual dermal atrophy. Prakriti gives an idea for maintaining healthy-looking skin by adopting proper aahar-vihar. So here we studied which skin type (according to prakriti) is more prone to premature ageing and which type of skin (as per prakriti) shows variation in skin wrinkles.

Research Question: Is there any variation in facial wrinkles among different deha prakriti volunteers?

Objectives Primary Objective: Estimating facial wrinkles among different deha prakriti volunteers with the help of Wrinkles Assessment Scale (WAS).

Secondary Objective: To enlist the presence of wrinkles-causing factors in different deha prakriti female volunteers with the help of a questionnaire.

Review of Literature

Prakriti: The Ayurveda states one of the fundamental concepts of the basic constitution, i.e., prakriti, which remains constant throughout one's lifetime. This prakriti expresses the body functions in the form of volunteers' morphological, physiological and mental behaviour. Prakriti means the manifestation of unique characteristics due to the predominance of doshas (Vata, Pitta and Kapha, the functional component of the body); in these, prakriti indicates the predominance of specific dosha in a human being. Therefore, the prakriti of some people is dominated by Vata, some others by Pitta, some others by Kapha and some others by the combination of two doshas and in some cases, equilibrium is maintained by dosha. However, all these factors mentioned above are essential in determining prakriti.

Ageing: Ageing is known as "jara" and is defined as what has become old by wearing out "jiryati iti jara". It is the process of becoming old. The stage at which the loosening of body parts occurs is called jirna awastha.[5] In Ayurveda, each dosha has been designed for specific functions depending upon its guna. Increased Pitta dosha levels lead to increased Agni and the metabolic level of biotransformation and, thus, energy consumption. Ageing is the accumulation of changes in an organism or objects over time. It is a phenomenon of the body and is characterised by degeneration in which anatomical structures are affected, following which physiology is also disturbed. These physiological changes result in various types of tissue destruction and the premature manifestation of ageing.[6]

Skin Ageing: Skin ageing means your skin changes as you age. The most common visible signs of skin ageing are wrinkles. In Sharangdhara Samhita, a sequential degenerative phase of ten decades in an average 100-year life span in which two decades are the indicator of skin condition, third chavi (loss of lustre or fine wrinkles due to shoshana/inability to get proper nutrition) and fifth twak (loss of skin glow due to dhatukshaya/degenerative changes due to increased Vata) thus 30-50 years of age is seen related to degenerative changes of the skin. Skin ageing is characterised by wrinkling, loss of elasticity, laxity and rough textured appearance. The ageing process is accompanied by phenotypic changes in cutaneous cells and structural and functional changes in extracellular matrix components such as collagen, elastin and proteoglycans that are required to provide tensile strength, elasticity and hydration of the skin, respectively. Development of fine wrinkles begins to take place at the age of the 30s and gradually increases after the age of 35 years.[7]

Wrinkles: Wrinkles term as 'Valee' in Ayurveda. Valee means 'Shlathacharmavan'. In Pitta prakriti dominant person, there is natural 'shithilatva' in their dhatu due to drava guna; therefore, loosening of tissue takes place, leading to wrinkles formation much earlier than in people of Kapha pradhan and Vata pradhan prakriti. Excessive consumption of food substances dominant in kshara (caustic/ sharp) and lavana rasa (salty) cause shaithilya in mamsa and other dhatu of the body and lead to the formation of wrinkles at an early stage of life.[8] A slight furrow or crease in the skin, especially of the face from ageing, is called a wrinkle. Wrinkles occur with the relaxation of the skin caused by receding papillae and degeneration of elastin and collagen fibres at the dermal-epidermal junction. For the assessment of wrinkles, Wrinkles Assessment Scale is available.[9]

MATERIALS AND METHODS

Initially, 500 female volunteers were screened based on inclusion and exclusion criteria. Out of which, 310 were assessed for their prakriti with standard prakriti proforma of MUHS. Facial wrinkles were evaluated with the help of a wrinkles assessment scale of 180 female volunteers in GAC, Nagpur, Maharashtra, India and informed written consent from all volunteers was taken. All female volunteers' knowledge of the study's aim and procedure was provided to all the volunteers. Case report forms of all volunteers filled and prakriti parikshan done with the help of prakriti parikshan proforma. Vata padhan, Pitta pradhan and Kapha pradhan are three groups in both age groups, i.e., 20-30 years and 35-50 years, divided based on prakriti and captured the photographs of all female volunteers with DSLR before this instruction given to all female volunteers that not to apply any cosmetics or moisturiser on the face before 24 hours of facial wrinkles assessment. Assessment of facial wrinkles in both groups with the help of the wrinkles assessment scale, indirectly by comparing photographs of volunteers with the wrinkles assessment scale. Personal data and pictures of the volunteers were secured as only the wrinkles score was displayed, not the photos. IEC approved the proposal for the study entitled.

Method of measurement
- Prakriti parikshan done on the basis of prakriti parikshan proforma of Maharashtra University of Health Science Volunteers categorised accordingly.
- Facial wrinkles assessment by Wrinkles Assessment Scale (WAS).

Wrinkle Assessment Scale
The wrinkles assessment scale assesses wrinkles. This photographic scale includes an assessment of 11 sites of facial wrinkles. These sites are,
1. Horizontal forehead line,
2. Glabellar frown line,
3. Periorbital line,
4. Periauricular line,
5. Cheek line,
6. Nasolabial folds,
7. Radial upper line and lower line,
8. Corner of the mouth,
9. Marionette line,
10. Labiomental crease,
11. Horizontal Neck fold.
All the wrinkles are categorised into six grades, 0-5. This grade indicates 0-No wrinkles, 1-Just perceptible wrinkle, 2-Shallow wrinkle, 3-Moderately deep wrinkle, 4-deep wrinkle, well-defined edges, 5-Very deep wrinkle, redundant fold.

Inclusion Criteria
1. Healthy female volunteers.
2. Age 20-50 years.
3. Volunteers belonging to middle socio-economic status.
4. Volunteers willing to participate in the study.

Exclusion Criteria
1. Pregnant, lactating women and post-menopausal women.
2. Volunteers suffering from any dermatological disorder.
3. Volunteers undergoing any skin treatment, surgery and HRT.
4. Volunteers suffering from Hypertension, Diabetes Mellitus, Bronchial Asthma etc.
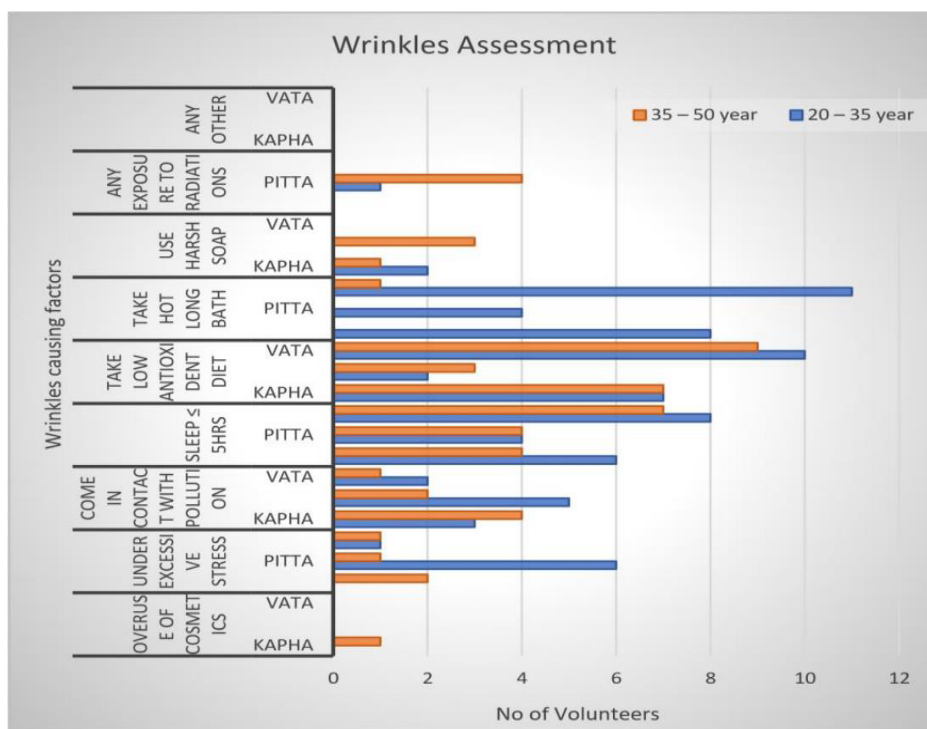5. Volunteers with any addiction like tobacco chewing, smoking, alcohol etc.

Sampling Technique: Simple random method
Sample Size: n = 180
Study Design: Analytical - Cross-sectional Study

Data Management and Analysis Procedure
Scores of facial wrinkles lines were compared among different deha prakriti by performing the Kruskal-Wallis One-Way ANOVA test. Factors associated with facial wrinkles were compared among different deha prakriti individuals and age groups by performing a Chi-square test. The One-Way ANOVA test compared total wrinkles in different deha prakriti. Bonferroni test was used to compare the difference between any two deha prakriti. Multiple comparisons were performed to observe facial wrinkles among different deha prakriti individuals.

OBSERVATION AND RESULTS

Table 1: Correlation of total wrinkles among different deha prakriti volunteers

Prakriti	Mean	SD	Range
Kapha	2.86	1.79	0-6
Pitta	4.44	4.36	0.5-24
Vata	2.82	1.77	0-7.5
F value	6.581		
p-value	0.0372, Significant		

Bar diagram 2 shows the presence of wrinkles-causing factors among different deha prakriti volunteers.

Table 2: Assessment of wrinkles of 90 volunteers having different deha prakriti volunteers in the age group 20-35 years (n=90)

Wrinkles	Prakriti			P value	Significance
		Mean	SD		
1.Horizontal Forehead Line	Vata	0	0	0.1323	#NS
	Pitta	0.06	0.025		
	Kapha	0	0		
2.3Glabellar frown lines	Vata	0	0	1.000	#NS
	Pitta	0	0		
	Kapha	0	0		
3.Periorbital lines	Vata	0.10	0.24	0.4694	#NS
	Pitta	0.05	0.15		
	Kapha	0.05	0.15		
4.Periauricular lines	Vata	0	0	1.000	#NS
	Pitta	0	0		
	Kapha	0	0		
5.Cheeck lines	Vata	0.03	0.18	0.3679	#NS
	Pitta	0	0		
	Kapha	0.41	0.49		
6.Nasolabial fold	Vata	0.43	0.48	0.9296	#NS
	Pitta	0.46	0.50		
	Kapha	0.18	0.33		
7.Radial upper-lower lip line	Vata	0.12	0.31		
	Pitta	0.30	0.44	0.1762	#NS
	Kapha	0	0		
8.Corner of the mouth	Vata	0.033	012	0.2211	#NS
	Pitta	0.10	0.30		
	Kapha	0	0		
9.Marionette line	Vata	0	0	1.000	#NS
	Pitta	0	0		
	Kapha	0	0		
10.Labiomental Crease	Vata	0.033	0.18	0.4081	#NS
	Pitta	0.10	0.30		
	Kapha	0	0		
11.Horizontal neck folds	Vata	0.75	0.43	0.0217	*S
	Pitta	1.21	0.44		
	Kapha	0.86	0.62		
Total Wrinkles	Vata	1.53	0.88		
	Pitta	2.30	1.06	0.0141	*S
	Kapha	1.48	0.88		

*S- significant, #NS- Non-significant

In the Age Group 20-35 years

In vata prakriti volunteers' total wrinkles measured, their mean is 1.53 and SD 0.88; in Pitta prakriti volunteers' total wrinkles measured, their mean is 2.30 and SD 1.06.

In Kapha prakriti volunteers' total wrinkles measured, their mean 2.30 and SD 1.06 p-value is 0.0141, Significant.

Table 3: Assessment of wrinkles of 90 volunteers with different deha prakriti volunteers aged 35-50 years. (n=90)

Wrinkles	Prakriti	35 – 50 years		p-value	Significance
		Mean	SD		
1.Horizontal Forehead Line	Vata	0.11	0.28	0.2723	NS
	3Pitta	0.33	0.57		
	Kapha	0.20	0.36		
2.Glabellar frown lines	Vata	0	0	0.0160	*S
	Pitta	0.23	0.62		
	Kapha	0	0		
3.Periorbital lines	Vata	0.35	0.41	0.0853	#NS
	Pitta	0.75	0.85		
	Kapha	0.45	0.46		
4.Periauricular lines	Vata	0.066	0.25		
	Pitta	0.16	0.44	0.4703	#NS
	Kapha	0.083	0.26		
5.Cheeck lines	Vata	0	0	0.1275	#NS
	Pitta	0.11	0.31		
	Kapha	0.10	0.40		
6.Nasolabial fold	Vata	1.23	0.62	0.5291	#NS
	Pitta	1.06	0.89		
	Kapha	1.08	0.74		
7.Radial upper -lower lip line	Vata	0.15	0.29	0.0006	HS
	Pitta	0.62	0.65		
	Kapha	0.15	0.35		
8.corner of the mouth	Vata	0.23	0.38	0.3114	#NS
	Pitta	0.48	0.67		
	Kapha	0.38	0.48		
9.Marionette line	Vata	0	0	0.0465	*S
	Pitta	0.10	0.30		
	Kapha	0	0		
10.Labiomental Crease	Vata	0.066	0.25	0.2083	#NS
	Pitta	0.45	0.98		
	Kapha	0.10	0.30		
11.Horizontal neck folds	Vata	1.76	0.56	0.5670	#NS
	Pitta	2.06	0.94		
	Kapha	1.80	0.61		
Total Wrinkles	Vata	4.11	1.46	0.0465	*S
	Pitta	6.58	5.30		
	Kapha	4.25	1.28		

*s- significant, #Ns- Non-significant, HS- Highly Significant In age group – 35-50 years

In Vata prakriti volunteers' total wrinkles measured, their mean is 4.11 and SD 1.46.

In the Pitta prakriti volunteers' total wrinkles measured, their mean is 6.58 and SD 5.30 in the Kapha prakriti volunteers' total wrinkles measured; their mean is 4.25 and SD 1.28 p-value is 0.0465, Significant.

Multiple comparison test showed that Kapha - Pitta (p=0.014, S), Pitta-Vata (p=0.010, S) and Kapha-Vata (p=1.000, NS)

Table 4: Presence of wrinkles causing factors among 20-35 years in different deha prakriti volunteers.

Factors	Prakriti	20 – 35 years		p-value
		YES	NO	
Overuse of Cosmetics	Vata	0	30	
	Pitta	0	30	
	Kapha	0	30	
	Vata	1	29	
	Pitta	6	24	--
	Kapha	0	30	
Come in contact with pollution	Vata	2	28	0.432
	Pitta	5	25	NS
	Kapha	3	27	
Sleep ≤ 5 hours	Vata	8	22	0.435
	Pitta	4	26	
	Kapha	6	24	NS
Take low antioxidant diet	Vata	10	20	0.003
	Pitta	2	28	
	Kapha	7	23	HS
Take a long hot bath	Vata	11	19	0.197

	Pitta	4	26	NS
	Kapha	8	22	
Use Harsh soap	Vata	0	30	0.197
	Pitta	0	30	
	Kapha	2	28	NS
Any exposure to radiation	Vata	0	30	0.394
	Pitta	01	29	NS
	Kapha	0	30	
Any other	Kapha	0	30	-
	Pitta	0	30	
	Vata	0	30	

Among 90 volunteers in Vata, Pitta, and Kapha prakriti volunteers, 20 - 35 years of age showed an association between - wrinkles and a low antioxidant diet. (p-value 0.003)

Table 5: Presence of wrinkles causing factors among 20-35 years in different deha prakriti volunteers.

Factors	Prakriti	35 – 50 years		p value
		YES	NO	
Overuse of Cosmetics	Vata	0	30	0.364
	Pitta	0	30	NS
	Kapha	1	29	
Under Excessive stress	Vata	1	29	0.334
	Pitta	1	29	NS
	Kapha	2	28	
Come in contact with pollution	Vata	1	29	0.338
	Pitta	2	28	NS
	Kapha	4	26	
Sleep ≤ 5 hours	Vata	7	23	0.077
	Pitta	4	26	NS
	Kapha	4	26	
Take low antioxidant diet	Vata	9	21	0.196
	Pitta	3	27	NS
	Kapha	7	23	
Take a long hot bath	Vata	1	29	0.097
	Pitta	0	30	NS
	Kapha	0	30	
Use Harsh soap	Vata	0	30	0.160,
	Pitta	3	27	NS
	Kapha	1	29	
Any exposure to radiation	Vata	0	30	0.015
	Pitta	4	26	S
	Kapha	0	30	
Any other	Vata	0	30	1.000
	Pitta	0	30	NS
	Kapha	0	30	

In Vata, Pitta, and Kapha prakriti volunteers, having age group 35 – 50 years showed an association between - wrinkles and radiation. (p-value 0.015)

DISCUSSION

Prakriti is an expression of one's constitution. The dosha guna reflects the formation of prakriti. Pitta dosha is the teja mahabhuta pradhan dosha. Hemadri mentioned 'Swedane Ushna[10] as it increases heat in the body and leads to increase cellular metabolism. Ushna, tikshna, drava, vistra, amla etc., are the gunas of pitta dosha. The average number of wrinkles found more in Pitta dominant prakriti volunteers due to its ushna and tikshna guna. Also, there is 'shithilatva' in their dhatu due to Drava guna, as Charaka Acharya mentioned that ushna guna responsible for 'Kshipra Vali' in Pitta dominant prakriti. Pitta is responsible for degenerative changes due to its specific properties like ushna, tikshna, vistra, and amla guna.

Skin is the site of Vata dosha and is called 'sparshenendriya' adhisthan. Ruksha, parush and vishad are the dominant guna of Vata dosha. Hemadri described the Vata dosha lakshan as it causes shoshan, i.e., drying of substance.[11] This ruksha guna also causes shoshan of jala, so moisture cannot retain for longer. This leads to more dryness in Vata pradhan prakriti, and sankocha guna of Vata dosha forms wrinkles as age passes. Kapha dosha has a predominance of prithvi and aap mahabhut. Aap mahabhut has snigdha, drava, stimit, and sheeta attributes. Due to these attributes, kledana and snehan karma were done by aap mahabhut through Kapha dosha on the human body. Prithvi mahabhut has sthir guna; due to this, in Kapha prakriti, moisture retains for a longer time. In Kapha prakriti rate at which the water reaches the stratum corneum from the body is high, the evaporation rate of water from the skin surface is less, and the ability of the stratum corneum to hold the moisture is high. Kapha pradhan volunteers showed a smaller number of wrinkles in the age group 20-35 years compared to Vata pradhan and Pitta pradhan. This is because of the snigdhta, sheetata and shlkshnata guna of Kapha dosha, which maintains adequate moisture in the skin. In 35-50 years, the average number of wrinkles occurred less than Pitta pradhan prakriti and more than Vata pradhan prakriti. This is due to Kapha kshay in old age leads to reduce the compactness of tissue resulting in the loosening of tissue.

This study was taken to observe the variations in facial wrinkles among different deha prakriti volunteers, and results show statistically significant. In this study, we tried to enlist wrinkles-causing factors; in the age group 20-35, a low antioxidant diet showed a significant effect as a p-value less than 0.05. The antioxidants in dietary foodstuffs include biotin, omega-3, iron, zinc, and vitamins A, C and E. As most of the volunteers consume low antioxidants, diet cause free radicals in our body, leading to signs like wrinkles. In the age group 35-50 years, radiation exposure showed a significant effect as a p-value less than 0.05. UV light damages skin tissue protein called metalloproteinase enzyme which creates and reforms collagen and speeds the natural ageing, which is the primary cause of wrinkling.

CONCLUSION

Skin ageing, i.e., average number of wrinkles, was higher in Pitta pradhan prakriti than in Vata and Kapha prakriti. Premature ageing signs (wrinkles) were higher in Pitta dominant prakriti. With the help of the wrinkles assessment, the study's objective was achieved. In this study, a low antioxidant diet and radiation exposure are risk factors for wrinkle formation.

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