



Research Article

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ASSESSMENT OF BODY FAT PERCENTAGE WITH SPECIAL REFERENCE TO DHATU SARA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: In Ayurveda, Dhatusarata refers to excellent part of Dhatu, influencing physical and mental composition of an individual. It not only ensures the optimum function of the Dhatu but also an indicator of resistance against Dhatupradoshaj Vikara and thus contribute towards overall immunity of the body. Fat is an important component of the body it's important to keep non-essential body fat at a healthy level for long term wellness. Body Fat % is key indicator of personalized health assessment, hormonal and metabolic function and several health risk like Cardiometabolic diseases, certain cancers. Objective: To Assess body fat % with special reference to individual Dhatu Sara. Methods: Total 487 subjects were screened for Dhatu Sarata. This observational cross-sectional study was conducted on 210 healthy individuals aged 20- 40 years of either sex selected on the basis of predefined inclusion and exclusion criteria. Dhatusarata was determined using validated Ayurvedic proforma and Body fat % was measured using 3D DXA scan. Data was statistically analyzed to identify significant variations in Body fat % among different Dhatusarata individuals. Observation Result: Maximum Body fat% was observed in individuals of Shukra Sarata while minimum body fat % was observed Asthi Sarata. However, no statistically significant correlation was observed between body fat % and Dhatu sarata (P-value > 0.05). The r value indicates weak positive correlation in Body Fat % and Rasa and Shukra Sarata while Negative correlation between remaining all dhatu sarata. Conclusion: The study did not find a significant correlation between Dhatusarata and body fat.

Keywords: Dhatu Sarata, Body Fat Percentage, Cross Sectional Study

INTRODUCTION

Body composition is the proportion of fat and non-fat mass in the body. Body fat can be found in muscle tissue, under the skin (subcutaneous fat) and around the organs (visceral fats). An essential fat protects internal organs, stores energy and regulates important body hormones. Non-essential body fat is the fat not needed for body functions. It is used for storage, insulation and contributes towards subcutaneous and visceral fat. Hormones, genetics, family history and certain medical conditions may affect the non-essential body fat but often it is the result of eating too many calories and lack of physical activity during the day. Fat is an important component of the body it's important to keep non-essential body fat at a healthy level for long term wellness. The level of body fat percent for men and women is given by American council on Exercise.

Description	Women	Men
Essential Fat	10% – 13%	2% – 5%
Athletes	14% – 20%	6% – 13%
Fitness	21% – 24%	14% – 17%
Acceptable	25% – 31%	18% – 24%
Obese	> 32%	> 25%

Lower body fat may cause eating disorders, amenorrhea and decreased bone mass with increased risk of stress fracture and osteoporosis. However, overconsumption of fats may lead to array of disorders viz. cardiovascular disorders, stroke, diabetes and various types of cancers.

Dosha, Dhatu, Mala are considered as the fundamental constituents of human body in Ayurveda. Dosha act as the rheostats, Dhatu (Tissues) are the building blocks of the body while Mala are the waste products which needs to be thrown out of the body to maintain health. Among these, Dhatu takes part in the formation of human body and are nourished and maintained by the proper digestion of ingested food. Sarata of a particular Dhatu may decrease or improve owing to diet and lifestyle.

Sara is illustrated as Vishuddhatara Dhatu¹ i.e. essence of all Dhatu or Dhatu which is in a vivid state performing its functions at optimum level and is resistant towards diseases of that peculiar Dhatu. Seven Dhatu Sara analyses along with Satva Sara are described in Charaka Samhita. One should not get confused about the strength of an individual by the outer appearance. In spite of having short stature, a lean and thin person may have greater body strength owing to Dhatu Sarata than a plump, well-built person. The analogy of ants carrying more than double the load of their body weight despite of their smaller size is given to understand the concept of Sara.² Different physical and psychological sign and symptoms are depicted in Ayurved Samhitas owing to peculiarity of each Dhatu and their functions. These characters are helpful in deciding the Sara status of each Dhatu and thereby strength of the body.

The Dhatu Sara Parikshana is one of the Dashavidha Pariksha which measures the robustness of all the Dhatu (Tissues) and thereby strength of the body. This examination is useful in healthy as well as diseased person. Thus, Dhatu Sara Parikshana is

qualitative analysis of body tissues. Acharya Sushruta has explained the effect of Dhatu Sara on longevity and opulence. The longevity and prosperity progressively increase from Twak Sara to Satva Sara.³ Acharya Charak has indicated Sara Parakishana for the knowledge of strength of the body. Thus, Dhatu Sarata Parikshana in Ayurveda is indicative of fitness and nutritional status of the particular tissue of the body.

Dual Energy X-ray absorptiometry (DEXA) is the most accurate and popular method for quantifying fat, lean and bone tissue.⁴ DEXA not only measures total body fat percentage but also area of visceral and subcutaneous fats which are direct indicator of visceral and subcutaneous fats. Body fat percentage directly influences the health and indicates towards potential risk of morbidity.

Ayurveda describe fat as the entity that endows Snigdhta (unctuousness / oiliness) to the body. In Dhatu Sara Assesment, Snigdha characteristics is mentioned in Rasa / Twak Sara, Rakta Sara, Meda Sara, Majja Sara and Shukra Sara. Therefore, this study is designed to explore the prevalence of Dhatu Sarata and its association with body fat percentage.

Need of the Study: Dhatu Sarata is a widely implemented physical examination in health and diseased. However, the textual approach towards this procedure is more qualitative and its interpretation may differ from one physician to other. Pravara (optimum) Sara Purusha are bestowed with physical, mental health while Avar (least) Sara Purusha suffers from array of diseases. Assessment of body fat percentage helps to detect the health and risk in a population. The healthy range of body fat in relation to age and sex is studied largely. However, no studies have elaborated body fat parameters using DEXA in individual Dhatu Sarata. Hence this study is planned to assess body fat percentage in different Dhatu Sarata.

Research Question: Is there any correlation between body fat % and individual Dhatu Sarata?

Null Hypothesis: There is no correlation between body fat % and individual Dhatu Sarata.

Alternate Hypothesis: There is correlation between body fat % and individual Dhatu Sarata.

Objectives

Primary objective: Assessment of body fat % with special reference to individual Dhatu Sara

Secondary objective:

1. Assessment of body fat % by DEXA
2. Assessment of individual Dhatu Sarata characteristics developed by the department of Kriya Sharir, NIA, Jaipur
3. Correlation of body fat % in individual Dhatu Sarata

MATERIALS AND METHODS

Site of study: In and around NIA campus, Jaipur, Rajasthan, India.

Sample size: 210

Type of study: Cross-sectional study

Duration of study: 3 years

Informed Written Consent would be taken prior to data collection.

Data Collection

Data collection was done from in and around NIA Campus, Jaipur, Rajasthan, India.

The participants were screened for their Dhatu Sarata on the basis of proforma developed by the Department of Kriya Sharir, NIA, Jaipur, Rajasthan, India.

Participants were categorized in 7 groups (Rasa Sara, Rakta Sara, Mamsa Sara, Medo Sara, Asthi Sara, Majja Sara and Shukra Sara) on the basis of presence of more than 66% of particular Dhatu Sara Lakshana of particular Dhatu and body fat % was assessed by double-energy X-ray absorptiometry (DEXA).

Body fat percentage was analysed for association with the status of individual Dhatu Sarata.

Grouping

Total 487 subjects were screened for Dhatu Sarata and equal number of grouping was done on the basis of presence of more than 66% of particular Dhatu Sara Lakshana.

Group A – 30 Subjects with dominance of Rasa Dhatu Sarata

Group B – 30 Subjects with dominance of Rakta Dhatu Sarata

Group C – 30 Subjects with dominance of Mamsa Dhatu Sarata

Group D – 30 Subjects with dominance of Meda Dhatu Sarata

Group E – 30 Subjects with dominance of Asthi Dhatu Sarata

Group F – 30 Subjects with dominance of Majja Dhatu Sarata

Group G – 30 Subjects with dominance of Shukra Dhatu Sarata

Inclusion criteria

1. Apparently healthy individuals of either sex of 20 - 40 years age group.
2. Subjects willing to give informed written consent for the study.

Exclusion criteria

1. Subjects less than 20 years and more than 40 years of age.
2. The subjects who are not willing to be a part of this study.
3. Subjects suffering from any chronic disease.
4. Pregnant and lactating women.

OBSERVATION

In this study, 125 subjects (59.52%) were female and 85 subjects (40.48%) were male, 129 (61.42%) belonged to age group 21-25 years, 67 subjects (31.90%) belonged to age group 26-30 years, 08 subjects (3.81%) belonged to age group 31-35 years and whereas 06 subjects (2.86%) were belonged to age group 36-40 years. Regarding marital status 145 subjects (69.04%) were Unmarried and 65 subjects (30.95%) were married. Educational point of view 113 subjects (53.81%) was post-Graduate and 90 subjects (42.86%) were Under-Graduate. In this study, 162 subjects (77.14%) were belonging to Upper-Middle Class, 36 subjects (17.14%) were Lower-Middle Class, 08 (3.81%) subjects were belonging to Higher Class and 04 subjects (1.90%) were belonging to Poor class.

Table 1: Distribution according to Different Sarata

Different Sarata	Number
Rasa Sarata	30
Rakta Sarata	30
Mamsa Sarata	30
Meda Sarata	30
Asthi Sarata	30
Majja Sarata	30
Shukra Sarata	30
Total	210

In this study, 30 subjects (14.28%) were enrolled in each Sarata viz. Rasa Sarata, Rakta Sarata, Mamsa Sarata, Meda Sarata, Asthi Sarata, Majja Sarata and Shukra Sarata. Total 487 subjects were participated and 210 were enrolled for the study.

RESULTS

In the present study, the mean ± S.D. of Dhatu sarata and Body Fat Percentage for Rasa sarata and Body Fat % 36.157 ± 5.659, Rakta sarata and Body Fat % 33.770 ± 7.986, Mamsa sarata and Body Fat % 37.483 ± 6.126, Meda sarata and Body Fat % 35.850 ± 7.453, Asthi sarata and Body Fat % 32.443 ± 5.238, Majja Sarata and Body Fat % 34.993 ± 5.608 and Shukra Sarata and Body Fat % 36.159 ± 6.670. (Table 2)

Pearson’s correlation co-efficient (r) value observed as 0.1661 for Rasa sarata and p value was 0.3805, 0.03262 for Rakta Sarata and p value was 0.8641, 0.03374 for Mamsa Sarata and p value was 0.8595, -0.1402 for Meda Sarata and p value was 0.4599, 0.02885 for Asthi Sarata and p value was 0.8797, 0.02887 Majja Sarata and p value 0.8796 and 0.3245 Shukra Sarata and p value 0.0802. It is concluded that, p-value is > 0.05 i.e. there is a non-significant

correlation was observed between body fat % and Dhatu sarata. (Table 3)

Intergroup Comparison

Based on the results, it was observed that the variation between the groups (Between Groups) accounts for a sum of squares of 513.9 with 6 degrees of freedom, resulting in a mean square of 85.65. The F-statistic was calculated to be 2.052 with a corresponding p-value of 0.0605. Since the p-value (0.0605) was greater than the significance level ($\alpha = 0.05$), we failed to reject the null hypothesis.

This suggests that there is no significant difference between different Dhatu sarata and Body Fat %. In other words, we do not have enough evidence to conclude that there was a significant association between the nominal variable (Dhatu sarata) and the continuous variable (Body Fat %). (Table 4)

Table 2: Descriptive Statistics between different Dhatu Sarata and Body Fat Percentage

Dhatu Sarata	Number	Body fat Mean	Standard Deviation	Minimum	Maximum
Rasa Sarata	30	36.157	5.659	20.620	45.000
Rakta Sarata	30	33.770	7.986	16.100	47.000
Mamsa Sarata	30	37.483	6.126	26.800	49.600
Meda Sarata	30	35.850	7.453	24.100	46.300
Asthi Sarata	30	32.443	5.238	22.800	43.700
Majja Sarata	30	34.993	5.608	23.600	44.000
Shukra Sarata	30	36.159	6.670	20.200	50.000

Table 3: Correlation of Body Fat % with Dhatu Sarata

Dhatu Sarata	Number	Pearson Correlation (r)	P-Value	Result
Rasa Sarata	30	0.1661	0.3805	Non- Significant
Rakta Sarata	30	0.03262	0.8641	Non- Significant
Mamsa Sarata	30	0.03374	0.8595	Non- Significant
Meda Sarata	30	-0.1402	0.4599	Non- Significant
Asthi Sarata	30	0.02885	0.8797	Non- Significant
Majja Sarata	30	0.02887	0.8796	Non- Significant
Shukra Sarata	30	0.3245	0.0802	Non- Significant

Table 4: Analysis of Variance between different Dhatu sarata and Body Fat %

Dhatu Sarata and Body fat						
ANOVA	Sum of Squares	Degree of Freedom	Mean Square	F Value	P-value	Result
Between the groups	513.9	6	85.65	2.052	0.0605	Non- Significant
Within group	8475	203	41.75			
Total	8989	209				

DISCUSSION

The seven Dhatu are regarded in Ayurveda as the fundamental pillars that sustain the body throughout life. The essence of these Dhatu, known as Dhatu Sarata, represents their purest and most refined state strong, excellent, and free from impurities.⁵ In this supreme condition, Sara Dhatu functions with maximum efficiency, imparting energy, vitality, and resilience to the body.⁶

Ayurveda emphasizes that a healthy and balanced life depends on the equilibrium of Dosha, Dhatu, and Mala.⁷ When the Dhatu are properly nourished, they provide strength, immunity, and stability.⁸ Conversely, when the Dhatu are either excessive, deficient, or vitiated, they become susceptible to disease. In contrast, Dhatu in their pure and optimal state confer robustness, endurance, and vitality, which is collectively referred to as Sara Dhatu.⁹

Classical Ayurvedic texts highlight Sara examination as a key parameter for assessing an individual’s strength. Importantly, Ayurveda cautions against equating strength with outward

appearance alone. A bulky physique does not necessarily indicate strong health, nor does a lean build always signify weakness. True strength must be evaluated by examining the condition of each Dhatu individually rather than relying solely on body size.¹⁰

In the present study, the Dhatu Sarata percentage score was analyzed in relation to body fat percentage, measured using a 3-D DEXA BMD machine, thereby bridging traditional Ayurvedic concepts with modern diagnostic tools.

Body Fat Percentage

Body fat includes essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive functions. The percentage of essential fat is 3–5 % in men, and 10–16 % in women. Storage body fat consists of fat accumulation in adipose tissue, part of which protects internal organs in the chest and abdomen.¹¹ Though various empirical equations are there to calculate Body fat % by using height and weight; BMD DEXA is the most accurate, also it has been found that the person having same height and weight may have varied Body fat %.

$$\text{Body fat percentage} = [\text{Body fat Mass (Kg)} / \text{Body weight (Kg)}] \times 100$$

It can indicate several things about a person's health and fitness level:

Health Risk: Higher body fat percentages are associated with an increased risk of various health issues, such as heart disease, diabetes, and certain cancers.

Fitness Level: Body fat percentage can be an indicator of fitness level, with lower percentages often correlating with better fitness.

Body Composition: Body fat percentage can provide insight into one's body composition, showing the proportion of fat mass to lean mass (muscle, bone, organs, etc.).

Weight Management: Monitoring body fat percentage can be more useful than just tracking body weight, as it reflects changes in body composition rather than just overall weight changes.

Performance: For athletes, body fat percentage can impact performance, with some sports requiring lower body fat levels for optimal performance.

It's important to note that ideal body fat percentages vary based on age, gender, and fitness level. For example, acceptable ranges for men and women differ, as do ranges for athletes compared to the general population.

3-D DEXA BMD and Body Fat Percentage

A 3D DEXA scan, which stands for Dual-Energy X-ray Absorptiometry, is a specialized type of DEXA scan that provides a three-dimensional image of the body's bone mineral density (BMD) and body composition, including body fat percentage. Following component can be measure by using this instrument-

Bone Mineral Density (BMD): This scan is primarily used to measure BMD, which is a key indicator of bone health. It can help diagnose osteoporosis and assess the risk of fractures.

Body Composition: In addition to BMD, a 3D DEXA scan can also provide detailed information about body composition, including body fat percentage, lean mass, and visceral fat levels. This can be valuable for assessing overall health and fitness.

Accuracy: 3D DEXA scans are considered highly accurate for measuring both BMD and body composition. They can provide detailed information about the distribution of fat and lean tissue in the body.

Clinical Use: These scans are commonly used in clinical settings for diagnosing osteoporosis and monitoring changes in bone health over time. They can also be used in research and sports medicine to assess body composition.

Observation

In this study 59.52% were female and 40.48% were male. Females put on more body fat than boys during adolescence and adulthood. The percentage of essential body fat for women is greater than that for men, due to the demands of child bearing and other hormonal functions. This is perfectly normal and healthy. As the study was single centered, there were a greater number of female scholars in college campus in comparison to males.¹²

49.04% were belonged to age group 21-25 years that have more Body fat percentage than other; the reason may be there is increase in fat metabolism in adolescent is likely related to the normal transition through developmental stages. These changes include changes in regional fat distribution (truncal vs. peripheral), breast development, age of menarche, resting energy expenditure, neuroendocrine factors, and gonadal steroid hormones.¹³

69.04% were Unmarried; Most of them are College going scholars that are one of the reasons of late marriage.

53.81% were post-graduate students. It can be due to continuous physical and mental stress, faulty life style and various studies across the globe have highlighted that the students who are in

professional courses, such as medical and engineering streams are facing higher stress compared to their peers from any other courses.¹⁴ This stress induces increase in cortisol level that result in higher accumulation of Body fat percentage. Sedentary Life style and lack of physical activity were also contributory factor.

The distribution of subjects based on socio-economic status showed higher incidence i.e. 77.14% was belonging from Upper-Middle Class. This finding consists with the survey carried out by Indian National family Health Programmed called "Indigenous health and socio-economic status in India". It reviews that Upper and lower socioeconomic class accounts to over or moderately nourished and undernourished health inequality in this developing country.¹⁵

Result

Correlation of Body Fat % with Dhatu Sarata

Pearson's correlation co-efficient (r) value observed as 0.1661 for Rasa sarata and p value was 0.3805, 0.03262 for Rakta Sarata and p value was 0.8641, 0.03374 for Mamsa Sarata and p value was 0.8595, -0.1402 for Meda Sarata and p value was 0.4599, 0.02885 for Asthi Sarata and p value was 0.8797, 0.02887 Majja Sarata and p value 0.8796 and 0.3245 Shukra Sarata and p value 0.0802.

We can conclude that, p-value is >0.05 i.e. there is a non-significant correlation was observed between Body Fat % and Dhatu sarata.

Though there is non-significant correlation between body fat % and Sarata, the r value indicates weak positive correlation in Body Fat % and Rasa and Shukra Sarata while Negative correlation between remaining all dhatu sarata. The negative correlation indicates that when body fat % increases Meda sarata decreases in the given sample.

Intergroup Comparison

Based on the results, it was observed that the variation between the groups (Between Groups) accounts for a sum of squares of 513.9 with 6 degrees of freedom, resulting in a mean square of 85.65. The F-statistic was calculated to be 2.052 with a corresponding p-value of 0.0605. Since the p-value (0.0605) was greater than the significance level ($\alpha = 0.05$), we accepted the null hypothesis.

This suggests that there is no significant difference between different Dhatu sarata and Body Fat %. In other words, we do not have enough evidence to conclude that there was a significant correlation between the nominal variable (Dhatu sarata) and the continuous variable (Body Fat %).

Above result indicates that body fat percentage and Pravar (the most optimal condition of tissue health) and Madhyama (a less than optimal (sub-optimal) condition of tissue health) sarata individuals due to their perfect and near to perfect dhatu belonged to healthy range with Body fat percentage. This may be one reason for no correlation. Besides this, due to small sample size the result shows no correlation between above mentioned two variables.

Potential Shortcoming and Limitation

This research has a number of limitations. It is limited by small sample size, which reduced statistical power. Participants mainly recruited from only one Ayurveda college at National institute of Ayurveda, deemed to be University, Jaipur, which is not representative of all population. In addition, our sample had around few dropouts too.

Although, there is not verified and standardized tool freely available to measure dhatu sarata. As per the available questionnaire for the measurement of dhatu sarata, predictors are assessed in the form of YES or NO (dichotomous); the pro forma should measure the predictors as the investigator wants to measure. The available pro forma does not fulfil these criteria when a person opts for No. It is necessary to develop a feasible and standardized tool in order to analyse these factors for improved diagnosis and comprehension of the concept and to record dhatu sarata at the clinical level in lesser time.

CONCLUSION

One of the tenfold examination of patients is the sara pariksha. It helps to determine the bala (Strength) of an individual. Along with evaluating the bala praman of an individual, sara pariksha also helps to determine the disease prognosis. These studies conclude that Body fat percentage and dhatu sarata did not show any correlation i.e. p value is 0.0605 (>0.05). This could be because of inclusion of pravara sara (the most optimal condition of tissue health >66% of dhatu sarata) purusha. Further detailed observational study on larger population will be required to confirm the results obtained in the study.

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REFERENCES

1. Vaidya Jadavji Trikamji Acharya, editor, Rogbhishakjithiyam Adhyayam, 2009, Caraka Samhita with Chakrapanitika of Agnivesa, Chakrapani Teeka, Vimana Sthana, Chapter 8, Verse 102 Varanasi, Chaukhamba Surbharati Prakashan; p. 278.
1. Vaidya Jadavji Trikamji Acharya, editor, Rogbhishakjithiyam Adhyayam 2009, Caraka Samhita with Chakrapanitika of Agnivesa, Vimana Sthana, Chapter 8, Verse 102 Varanasi, Chaukhamba Surbharati Prakashan; p. 278.
2. Vaidya Jadavji Trikamji Acharya, editor, Aturupakramaniya Adhyayam, 2008, Sushruta Samhita with Dalhanatika of Sutra Sthana, Chapter 35, Verse 16, Varanasi, Chaukhamba Surbharati Prakashan; p. 152
3. Duren DL, Sherwood RJ, Czerwinski SA, Lee M, Choh AC, Siervogel RM and Cameron Chumlea W. Body composition methods: comparisons and interpretation. Journal of diabetes science and technology, 2008;2(6):1139–1146. doi: <https://doi.org/10.1177/193229680800200623>
4. Choudhary A, Singh R. An observational study on assessment of Sara in Madhumeha (Diabetes Mellitus) Patients. International Journal Ayurveda and integrative Science 2019 Sep-Oct; 4 (5): 114-22
5. Phule SP, Patil GB, Ghate US. Critical evaluation of applied aspect of Dhatusarata. Journal of Emerging Technologies and Innovative Research 2019 June; 6(6): 900-1
6. Sharayu P Phule, Ganesh B. Patil and Umesh S Ghate, An Observational study to find Correlation between Dhatu Sarata (Tissue Excellence) and Alpha Fit-Fitness Test Battery. International Journal of Life Science and Pharma Research 2023;13(1):193-201
7. Agnivesh. Vidhishonitiya Adhyay, 2018 Charak Samhita with the Ayurveda-Dipika commentary of Chakrapanidatta. In: Acharya JT. Editor Sutrasthans Chapter 28/4. New Delhi: Chaukhamba Publications; p 175
8. Agnivesh. Rogbhishakjithiyam Adhyayam 2018 Charak Samhita with the Ayurveda-Dipika commentary of Chakrapanidatta. In: Acharya JT. Editor Vimansthans Chapter 8/103-111. New Delhi: Chaukhamba Publications; p 278
9. Agnivesh. Rogbhishakjithiyam Adhyayam 2018 Charak Samhita with the Ayurveda-Dipika commentary of Chakrapanidatta. In: Acharya JT. Editor Vimansthans Chapter 8/115. New Delhi: Chaukhamba Publications; p 278
10. Swaroopa Rani N. Gupta. Body Composition Analysis Of Postgraduate Students Using Bioelectrical Impedance Analysis Method and their counseling On Diet And Lifestyle, Journal of Emerging Technologies and Innovative Research 2020 February;7(2):613-629
11. Deepika Sethi *et al.* Observational Study on Meda sarata vis-à-vis Body Adiposity index. International Ayurvedic Medical Journal. 2019;3(6):1941 -1946.
12. Vehrs PR, Fellingham GW, McAferty A, Kelsey L. Trends in BMI Percentile and Body Fat Percentage in Children 12 to 17 Years of Age. Children (Basel). 2022;9(5):744.
13. Waghachavare VB, Dhumale GB, Kadam YR Gore AD. A study of stress among students of Professional colleges from an Urban Area in India. Sultan Qaboos med J; 2013;13:429
14. Subramanian SV, Davey Smith G, Subramanyam M. Indigenous health and socioeconomic status in India. PLoS Med. 2006 Oct;3(10):e421

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