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STANDARDIZATION OF QUANTITY OF CHURNA FOR UDVARTANA BASED ON BODY SIZE

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ABSTRACT:

Lifestyle disorder is a burden to the modern age of machines and materialism. Industrialization, excessive stress, dietary habits and lack of exercise are the main faults which has led to emergence of many *Santarpanotha vikaras* alarmingly. *Udvartana* is a type of *Bahya rukshana karma* adopted most frequently in the initial stage of lifestyle disorders aiming at *Ama nirharana.* Procedure of massaging the body with *Churna* in the direction opposite to hair follicles of the body is *Udvartana*. Lack of standardization is as a major pitfall in any therapy. Aim of the present study was to quantify *Udvartana churna* based on body size. A total of 30 subjects aged between 20 to 60 years, eligible for *Udvartana karma* were included in the study. The study was conducted in a tertiary centre, located at South Karnataka, India. Body Mass Index (BMI) and Waist-Height Ratio (WHtR) readings were the assessing parameters used in this study. BMI was a more consistent parameter as compared to WHtR for assessing proper amount of *Churna* required for Udvartana.Thus, proper quantification of Churna is essential to avoid wastage which inturn influence the availability of genuine drugs and high expense of treatment.

Keywords: *Santarpanothavikara, Udvartana, Rukshana karma,* Body Mass Index, Waist-Height Ratio

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INTRODUCTION

The consequence of lifestyle disorder exists in this age of machines and materialism. The industrialization, excessive stress, dietary habits, lack of exercise are the main faults which has led to emergence of many *Santarpanotha vikaras* alarmingly. *Udvartana* is a type of *Bahya Rukshana karma* adopted most frequently in the initial stage of *Kaphamedo vikara* aiming at *Amaharana/ Srotoshodhana.* Procedure of massaging the body with *Churna* in the direction opposite to hair follicles of the body is *Udvartana.* It opens the circulatory channels, facilitates the metabolic activity and improves the complexion of the skin.[1] It is named as *Sharira parimarjana*[2] and is advised for daily usage before bath. *Udvartana* is broadly practiced now-a-days among Ayurvedic physicians and has reached a widespread acceptability as therapeutic procedure for many lifestyle disorders. Lack of standardization is a major pitfall in any therapy irrespective of drugs used and its quantity. The amount of powder needed for *Udvartana* depends on the body size of the subject. The present study aims at determining the quantity of *Udvartana churna* required for the procedure based on the body size w.s.r. to BMI and WHtR.

MATERIALS AND METHODS

Study setting- For obtaining samples, the data were collected from individuals who attended outpatient department and inpatient department of a tertiary centre, located at South Karnataka.

Materials- *Udvartana churna*, vessel for measuring *churna*, digital weighing scale machine, stature meter, measuring tape, BMI calculator. Subjects between 20 yrs - 60 yrs age of both gender, those eligible for *Udvartana* therapy and those willing to participate were included for the study. Those subjects who were bed-ridden, physically handicapped and with amputated body parts were excluded from the study.

Drug preparation- The powder used for *Udvartana* is a combination of six drugs taken in a proportion as mentioned below-

Table 1: Drugs used for Udvartana[3]

Sl.No	Name	Botanical name	Family	Part used	Ratio
1	*Kulattha*	Dolichos biflorus Linn.	Leguminosae	Seed	4 parts
2	*Haritaki*	Terminalia chebula Retz	Combretaceae	Dried fruit	2 parts
3	*Vibhitaki*	Terminalia belericaRoxb	Combretaceae	Dried fruit	
4	*Amalaki*	Embilica officinalis Gaertn	Euphorbiaceae	Dried fruit	
5	*Yava*	Hordeum vulgare Linn.	Poaceae	Seed	2 parts
6	*Mudga*	Phaseolus radiates Linn	Fabaceae	Seed	1 part
7	*Methika*	Trigonella foenum-graecum Linn	Fabaceae	Seed	1 part
8	*Sarshapa*	Brassica campestris Linn	Brassicaceae	Seed	¼ part

Methods

Subjects of 30 sample size, satisfying the inclusion criteria were selected by adopting convenient sampling method. The interventional study was conducted in *Panchakarma* theatre for three consecutive days. Time period required to complete the study was 2 months.

Assessment criteria – Weight, Height, Body Mass Index (BMI), Waist circumference, Waist – Height Ratio (WHtR)

METHODOLOGY

Procedure of *Udvartana*

Subjects who are eligible to undergo *Udvartana* procedure irrespective of any disorder were assessed with weight, height, waist circumference measurements before commencing the *Udvartana* procedure. BMI, WHtR were calculated and recorded for each subject. Accordingly, *Udvartana churna* was measured in digital weighing machine,

prior to the conduction of *Udvartana karma* on the first day. The procedure was carried out for a duration of 30 minutes in four positions – supine, left lateral, right lateral and prone. After completion of the procedure, observations were made directly and feedback from the respective masseurs was collected regarding their opinion on sufficiency of amount of *Udvartanachurna* on the first day. The next day quantity was decided based on these opinions and was accordingly corrected (either increased or decreased) and again data from masseurs were collected. Thus a trial of three days were needed to quantify adequate amount of *Churna* needed for each subject based on their respective BMI and WHtR.

Results - The findings were recorded and results were generated by using a statistical software.

Table 2: *Udvartana churna* quantity and BMI relation

*BMI RANGE (kg/m^2)		N	**UCQ RANGE	MEAN $\pm$ SD
18.5-24	Normal	4	370-530 gm	477.50 $\pm$ 75.443
25-29.9	Over weight	11	450-550 gm	501.82 $\pm$ 33.111
30-34.9	Obese class –I	9	460-650 gm	566.67 $\pm$ 51.962
35-39.9	Obese class –II	3	580-650 gm	610.00 $\pm$ 36.056
40 & above	Obese class – III	3	650 gm	650.00 $\pm$ 0.000
Total		30		543.67 $\pm$ 69.703
*BMI – Body Mass Index ** UCQ – *UdvartanaChurna* Quantity				

Table 3 : Correlation and Regression between UCQ and BMI

CORRELATION				REGRESSION			
		UCQ	BMI	R	R square	Adjusted R square	Std error of the estimate
UCQ Pearson correlation significant (2 tailed)		1	0.803	0.803*	0.645	0.633	42.238

N	30	<0.005				
			* Predictors: (constant), BMI			

Table 4 :ANOVA test and Coefficients

ANOVA					
Model	Sum of squares	Df	Mean square	F	Significant
Regression	90942.147	1	90942.147	50.974	<0.005**
Residual	49954.519	28	1784.090		
Total	140896.667	29			

COEFFICIENTS*				
Unstandardized coefficients		Standardized coefficients	T	Significant
B	Std Error	Beta		
268.261	39.338	0.803	6.819	<0.005
9.149	1.281		7.140	<0.005
*Dependent variable: Udvartana churna quantity **Predicators : (constant) BMI				

Table 5 : UQC and WHtR relation

AGE GROUP OF SUBJECTS	WHtR RANGE***	N	UCQ RANGE	MEAN ± SD
<40 yrs	0.41 – 0.7	10	450 – 650 gm	541.00 ± 75.638
40-50 yrs	0.45 – 0.64	8	370 – 600 gm	517.50 ± 75.923
>50 yrs	0.44 – 0.74	12	480 – 600 gm	563.33 ± 59.442
Total		30		543.67 ± 69.703
***WHtR - Waist-Height Ratio				

Table 6 : Correlation and Regression between UCQ and WHtR

CORRELATIONS			REGRESSION			
	UCQ	WHtR	R	R square	Adjusted R square	Std error of the estimate
UCQ Pearson correlation significant (2 tailed)	1	0.606**	0.606*	0.368	0.345	56.411
N	30	<0.005				
** Correlation is significant at 0.01 level (2 tailed)			* Predictors: (constant), Waist-Height Ratio			
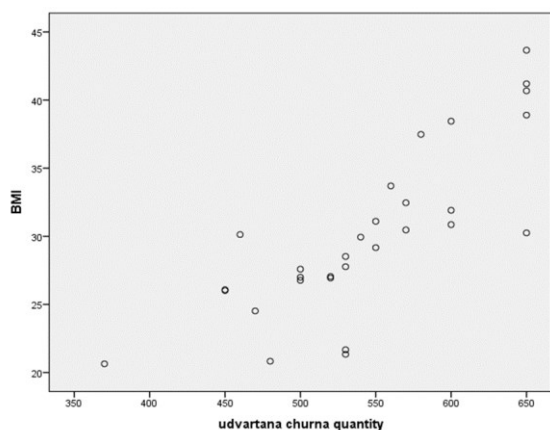
Udvartna churna quantity
with BMI
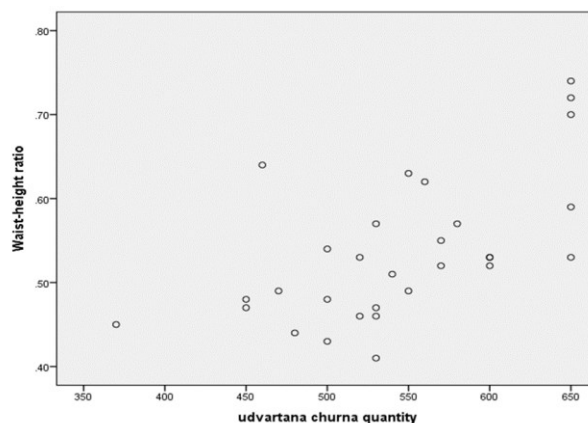
Udvartanachurna quantity
with WHtR

SCATTER PLOT – BIVARIATE

DISCUSSION

Udvartana procedure

Dusting of the herbal powder on the body followed by massage in a direction opposite to that of the hair is the procedure of the *Udvartana*,[4] a type of *Bahya rukshana karma* which is more specific to skin and fatty tissue. Herbs with *Katu, Tikta, Kashaya Rasa;Ushna, Rukshaguna* are useful in *Udvartana*. It is used mainly for weight reduction yet it has implication in many illness as well as to maintain fitness. The therapy is indicated for the patients based on the need of illness, and entirely depends on the physician to recommend the procedure if needed. Higher the BMI range, more the quantity of Churna is needed for the procedure to be carried smoothly. Results of present study shows that the amount of *Churna* with a mean value 511 gm (minimum 370 gm, maximum 650 gm) was needed to carryout *Udvartana* effectively for the body size, with BMI ranging from 18.5 to 40 kg/m^2.

Need of standardization

There is an urgent need of standardizing the classical *Panchakarma* procedure in consideration of today's need so that uniform procedure of practice may be developed in all centres.[5]For conducting *Udvartana* effectively many factors such as drug quantity, particle size, duration of procedure, amount of pressure to be applied to each body part, direction of rubbing are some of the criteria to be considered for standardization.

Quantification is an integral part of any therapy. Quantity of *Churna* depends on body size and Body Mass Index (BMI), Waist-height ratio(WHtR) are the indicators of health of an individual. BMI is a calculation of body size that takes into account of height and weight. Person with BMI ranging from 18.5 to 25.5 is considered to be apparently healthy. Below 18.5 is considered lean and above 25.5 -2.5 is overweight, 30 and above is obese. Waist-height ratio(WHtR) is calculated by dividing the waist circumference by height has recently gained attention as an anthropometric index for Central adiposity. The October 2022 NICE guidelines have suggested boundary values for

WHtR ranging from 0.4 to 0.4 as healthy central adiposity, indicating no increased health risks. WHtR range from 0.5 to 0.59 have increased central adiposity, indicating increased health risks[6]. It is an easy to use and less age-dependent index to identify individuals with increased cardiometabolic risk.

Thus, proper quantification of churna is essential to avoid wastage of drugs and also which in turn influence the availability of genuine drugs and high expense of treatment. Both BMI and WHtR have a positive correlation to quantity of *Churna* which is statistically significant. The bivariate scatter diagram of the study conducted exhibits that BMI was a more consistent parameter as compared to WHtR to assess proper amount of churna required for carrying out *Udvartana*.

Limitations –Because it was a pilot study, extrapolation is not possible for standardization of *Udvartana karma*. Study period was limited. The standardization method must possess reproducibility of results, but it may get affected due to the change in experimental conditions. The quantity used varies from each centre. As per patient's health status, quantity can be scientifically altered. Sometimes standardization may be contrary to literary textual results which may lead to confusion. Hence validation of standardization is also required.

CONCLUSION

Udvartana is an extensively recommended therapy by most physicians in today's era as people with lifestyle disorders are frequently approaching for *Ayurveda* treatments. *Udvartana* being a *Rukshana karma* will definitely be beneficial in all *Santarpanothavyadhi*. The results of present study shows that the amount of *Churna* with a mean value 511 gm (min 370 gm - max 650 gm) was needed to carryout *Udvartana* effectively for the body size, with BMI ranging from 18.5 to 40 kg/m$^{2.}$. Quantification will avoid unnecessary wastage of medicine which will be especially beneficial to those belonging to the lower economic strata, since treatment cost is high. Rather than crude method, the body size assessment with simple parameters can be adopted to measure the exact amount of *Churna* needed for the therapy. It is easy to handle and cuts down unwanted expense of both the physicians as well as the patients.

Recommendations -Further study with a larger sample size is essential for standardization on these parameters. The study was relatively inexpensive and easy, hence can be surely adopted in larger scale (multi-centre) to develop a standard parameter for quantifying *Udvartanachurna.*

Conflict of Interest - Nil

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