

Development and validation of a tool to assess *Rukshatha* in healthy individual

Research Article

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Abstract

In *Ayurveda Ruksha* (Dry) *Guna* (Property) which is one among *Gurvadi Guna* (Biological qualities) cause dryness. The property of *Ruksha Guna* (Dry property) is increase *Vata* and normalizes *Kapha* and also decreases body Strength and normal colour of body. The main objective of study is to find out tool for assessing *Ruksha guna* in healthy individual. Based on theoretical reference, FGD and IDI conducted among experts 35 items are generated in two domains (Physical and Psychological). From this 29 items are selected for final administration on selected sample for validity and reliability assessment. Each item is scored using 4 point Likert scale -no, rarely, often, every time with scoring 0, 1, 2, 3 respectively. Subjective question assessed by interrogation and objective parameter dryness of body parts are also assessed by this scoring method. Total 100 samples are selected for final administration of sample. The tool with 29 items gave a Cronbach's Alpha 0.745 (n=29) showing high construct validity and internal consistency. After the reliability and validity assessment 1 items deleted from the administered tool in the selected sample. Finally there are 28 items are included in the *Ruksha Guna* assessment tool.

Keywords: *Guna*, *Gurvadi Guna*, *Ruksha Guna*, Assessment tool, Dry property.

Introduction

In *Ayurveda*, *Gun*as (Properties or qualities) have been classified under various categories like Spiritual qualities, Biological qualities, *Paradi Guna* (Para pharmacological qualities), Specific qualities, etc. (1) For the treatment purpose, biological qualities are widely used. The *Guna* is related with *Dravya* (Substance) in an Inherent relationship. (2) Property of a substance exists till the Substance keeps its existence. Similarly substance is also related to property. The principles like *Triskandha*-Etiology, Symptomatology, Knowledge of therapeutics of *Ayurveda* can be explained by property. (3) Etiology can understand in the terms of property; the signs are the reflections in the status of properties of bodily elements, and treatment is in the form of administration of opposite property. The functional property of *Snigdha* (Unctuous) quality is oleation, softness, and malleability. (4) It will increase *Kapha* and normalises *Vata* and also increases Waste products in body. Similarly, the functional property of *Ruksha* is dryness. The property of *Ruksha Guna* (dry property) is to increase *Vata* and normalises *Kapha* and also decreases Strength of body, and normal colour. (5) In the general treatment, two principles are adopted, i.e.,

addition therapy and reduction therapy. (6) The increased elements are treated by opposite property. So if dry property is increased then it is to be managed by unctuous property and vice-versa. So diseases can be treated by applying these two properties and drugs for the required patient can be selected by applying these properties. So a tool for proper assessment of *Ruksha guna* (dry property) is very helpful in treatment and diagnosis of a disease.

Material and methods

Theoretical framework

The term *Ruksha* has more than 20 meanings in *Shabdakosha* and various Sanskrit-English dictionarie. (7) Among them according to need we collected the terms like rough, dry, not greasy, harshly, cruel, dreary, removing, destroying etc. *Acharya Charaka* has told the 6 modalities of treatment- lightening therapy, Nourishing therapy, oleation therapy, drying therapy, fomentation therapy and astringent therapy. (8) He has given equal importance to all the six. *Rukshana* (drying therapy) which is one among the six modalities of treatment and is the treatment principle based on *Guna* only. It has a wide spectrum usage according to the logic of the physician.

Etymology of *Ruksha*

It is the therapeutic application of dry property to make the individual more dry. By definition it means making thin, attenuation, or medical treatment for reducing fat or corpulence.

The term *Ruksha* has spectrum of meanings like roughness, dryness, aridity, harshness, unkindness, cruel, to make dry or emaciated etc. (9) **Definition of**

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Rukshana is that which causes dryness, roughness and non-sliminess.(10) *Acharya Chakrapani* says that *Rukshana* is achieved by the absence of unctuousness. (11) *Acharya Hemadri* opines that *Rukshana* has the Dryness capacity.

Acharya Susruta quotes the symptoms of person predominant in dry property in body are :hard and dry stool, difficulty in digestive capacity, burning sensation in chest, movement of air inside abdomen, discolouration of body, weakness.(12) *Acharya Dalhana* clearly states that these are the *signs* one must understand in a person who is fit for drinking oil/ghee after dry therapy. Signs of inadequate oleation explained by *Acharya Charaka* include hard and dry stool, derangement of *vayu*, weak digestive power, roughness and dryness of the skin.(13)

Research question

- Whether tool for assessing *Rukshatha* in healthy individual can be made
- Objectives
- To find out tool for assessing *Ruksha Guna* in healthy individual

Steps in tool development

1. Conceptualisation and operationalisation

In the first step of tool development process conceptualisation has been done, based on the theoretical references, In depth interview and FGD. In depth interview and FGD has done with *Ayurveda* college faculties and medical officers . IDI had done based on structured questionnaire. Based on these IDI, FGD and theoretical references few *signs* are selected which include psychological and physical signs

For developing tool for assessing *Rukshatha* in body references from *Charaka samhitha*, *Susrutha samhitha*, *Ashtanga hridaya* and *Ashtanga samgraha* were taken.

FGD conducted among experts opine that in signs of diminution of *Oja*, *Rukshatha* is explained, so it

can be taken as a variable.(14) Sleeplessness produce *Rukshatha* in body so sleeplessness is also taken as a variable for assessing *Rukshatha* in body. While explaining *Vata* constitution *Charaka Acharya* explain that *Ruksha* produce Underdeveloped short stature and Weak low adhered and hoarse voice.(15) By considering references explained in theoretical frame work and, FGD - IDI conducted among experts signs for assessing *Rukshatha* are divided into two domain physical and psychological. It includes points in Table1.

Table 1: Selected signs after FGD and IDI for assessing *Rukshatha*

Physical	Voice	Psychological points
Hard and dry stool Difficulty in digestive capacity, Movement of air inside abdomen Lightness of body Discoloration of	Weak low adhered and hoarse voice	Weakness Burning sensation in chest Worry Affliction of sense organ with pain,

From the table no 1 few signs are removed in table no 2. They are Discolouration of body- experts opine that it can also produce in body due to different reasons, it will be difficult to tell that it is caused due to *Ruksha guna* increase. Cheerlessness, worry and affliction of sense organ with pain, these three signs are included under *ojokshaya lakshana*. In initial tool development process FGD and IDI conducted with experts, in this some experts opinion that signs of diminution of *Oja* can also be included in the *Ruksha* assessment. But in later stage majority experts are advised to avoid it from the tool since *ojokshaya* will occur duet to several reason not only by *ruksha guna* increase in body.

2. Item generation

Items are generated based on theory and expert opinion. Generated items included in Table 2.

Table 2: Item generated for assessing different signs

Hard and dry stool	1)Whether Bowel movements were too hard without any reason 2)Feeling like you had to pass a bowel movement but you couldn't 3)Incomplete bowel movement, like you didn't finish
Difficulty in digestive capacity	4)Did you feel hungry for taking food water 5)Did you know taste of food while eating food
Movement of air inside abdomen	6)Did you feel pain in abdomen without any reason 7)Did you feel movement of air with sound in abdomen 8)Did you feel as if abdomen is filled with air 9) Did you feel burping /belching
Underdeveloped and short stature	10)Height 11)Weight 12) Body mass index
Lightness of body	13)Did you feel lightness of body
Dryness of Body Parts	14)Dryness of Fore head 15)Dryness of hair 16)Dryness and decrease secretion of eyes without any reason 17)Dryness and decrease in secretion of inside nostrils without any reason 18) Dryness and decrease in secretion of ear without any reason 19)Dryness of upper limb 20)Dryness of lower limb

Voice	21) Weak low adhered and hoarse voice
Weakness	22)Did you feel very active during work 23)Did you feel fatigue when you sit without any work
Burning sensation in chest region	25) Did you feel burning in chest region 26) Does food or acid-tasting liquid returns to your throat or mouth ? 27)Did you feel weight in chest region
Sleeplessness	28)How easy is it for you to fall asleep? 29)Are you easily awakened by sounds/noises in the night? 30)Is your sleep disturbed by frequent awakenings? 31)Can you fall back asleep if you awaken during the night? 32)Are you rested the next day after your night's sleep? 33)Do you think you are getting enough hours of sleep each night? 34)How much does the quality of your sleep affect your next day function (ie, fatigue, mood, irritability)?
Wakefulness	35)Did you feel awakening feeling in day time

Item selection

Item selection done based on the opinion of expert panel. An expert panel has ranked the domain and items. Based on this following items are deleted. Deleted items include item 10, 11, 12 in table No.2 ie Height, weight, BMI for assessing under developed and short stature, item 21 in table No.2 for assess voice – weak low adhered and hoarse voice Item 33 in table No.2 which assess sleeplessness, and item 35 in table No.2 which assess wakefulness nature. So after deletion of these items there are total 29 items in the questionnaire.

Item sequencing

Appropriate placing of items are done to ease the respondent's task in answering. Item are sequenced from physical domain to psychological domain.

Formatting the Response

4 point Likert scale is used- no, rarely, often, every time with scoring 0, 1, 2, 3 respectively

Translation & back Translation

Translation done by people fluent in both language (Malayalam and English) who Knowledgeable about the content and back Translation done by independent people

Pre-testing

In pre testing Peer review, and Respondent review has done. Translated tool has been given to peers and respondent population to check the wording and comprehensibility. After peer review by experts few variables are excluded from the tool.

Content Validity

It is judged by experts and they assessed extent to which the tool covers the various aspects of the *Ruksha* in different construct. There are 12 judges are included in the panel for assessing the content validity. The Experts include faculty members from Ayurveda colleges, government specialist medical officers from the *panchakarma* department and general practitioners who are successfully practicing *panchakarma*. They assessed the completeness of the tool. Based on the

advice from the experts necessary modification were made in the final tool. Excluded *lakshanas* based on the advice from experts include, *Durvarna* – experts opine that *durvarna* can also produce in body due to different reasons, it will be difficult to tell that it is caused due to *ruksha* guna increase. *Apachita alpa sareera* planned by assessing items height, weight, BMI also excluded due to same reason. In initial tool development process FGD and IDI conducted with experts, at that time some experts opinion that *ojokshaya* lakshana can also be included in the *ruksha* assessment. But in later stage majority experts are advised to avoid *ojokshaya* lakshana from the tool since *ojokshaya* will occur due to several reason not only by *ruksha* guna increase in body. The lakshana *jagaruka* is removed from the tool because it is decided to assess *jagaruka* by asking question Did you feel awakening feeling in day time. Experts opine that this question will cover in the item did you feel very active during work- which comes under *durbala* assessment question. Sign Wakefulness is removed from the tool because questions which included in assessment of sleeplessness is also cover the wakefulness construct. They also checked whether on the face (Face validity) of it the instrument appears to be assess the desired qualities of *Ruksha*

Final administration of tool for reliability assessment

Total 100 samples are selected for final administration of tool inclusion criteria are healthy people with age group 18-40 years, persons without any systemic illness, persons who gave informed consent. Exclusion criteria include person under any medication, pregnancy lactation, who have any systemic illness.

Ethical Approval

A detailed presentation of study was done before the ethical committee. Ethical committee analyzed different aspects of the study including aims, objectives, methodology, collection of data, ethical issues related to these aspects etc. Ethics clearance was obtained from the Institutional Ethics Committee of Ayurveda Medical College with IEC No. PNNM/A1/IEC/2019. Informed written consent was taken from the participants.

Statistical analysis

Done by using statistical software IBM SPSS version 22

Results

The initial tool was made of 29 items under two domains- physical points (Table 3) and psychological points (Table 4). The tool with 29 items gave following Cronbach's Alpha (Table 5).

Table 3: Questionnaire for final administration on selected sample for reliability and validity assessment –Physical points

A		*
Q1	Whether Bowel movements were too hard without any reason-	
Q2	Feeling like you had to pass a bowel movement but you couldn't	
Q3	Incomplete bowel movement, like you didn't finish –	
B		
Q4	Did you feel hungry for taking food and water-	
Q5	Did you know taste of food while eating food-	
Q6	Did you feel pain in abdomen without any reason-	
Q7	Did you feel movement of air with sound in abdomen-	
Q8	Did you feel as if abdomen is filled with air-	
Q9	Did you feel burping /belching-	
Q10	Did you feel lightness of body-	
Q11	Dryness of fore head	
Q12	Dryness of hair	
Q13	Did you feel dryness and decrease secretion of eyes without any reason	
Q14	Did you feel decrease in secretion and dryness of inside nostrils without any reason	
Q15	Did you feel decrease in secretion and dryness inside ear without any reason	
Q16	Dryness of upper limb	
Q17	Dryness of lower limb	
* Scoring-each item with no, rarely, often, every time with scoring 0, 1, 2, 3 respectively		

Table 4: Questionnaire for final administration on selected sample for reliability and validity assessment- Psychological points

Q18	Did you feel very active during work-	
Q19	Did you feel fatigue when you sit without any work-	
Q20	Did you feel sleepy in day without any reason	
Q21	Did you feel burning in chest region	
Q22	Does food or acid-tasting liquid returns to your throat or mouth without any reason ?	
Q23	Did you feel weight in chest region	
Q24	How easy is it for you to fall asleep?	
Q25	Are you easily awakened by sounds/noises in the night?	
Q26	Is your sleep disturbed by frequent awakenings?	
Q27	Can you fall back asleep if you awaken during the night?	
Q28	Are you rested the next day after your night's sleep?	
Q29	How much does the quality of your sleep affect your next day function?	

Question number 1(Q1) shows Cronbach's alpha 0.731, Q2 & Q28 =0.726, Q3=0.731, Q4=0.753, Q5=0.767, Q6=0.736, Q7, Q8, Q13Q14 & Q23=0.727, Q9=0.730, Q10=0.741, Q11 & Q12=0.743, Q15=0.720, Q16, Q17, Q21 & Q22=0.725, Q18=0.756, Q19=0.737, Q20=0.741, Q24=0.772, Q25=0.751, Q26=0.735, Q27=0.774, Q29=0.745.

The above given Cronbach's alpha of different questions shows high construct validity and internal consistency.

Inter item correlation

By doing inter item correlation few negative correlation and modest correlation are obtained. (Table No.5)

Table 5: Statistics of Total Items

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1	58.0400	66.524	0.409	0.731
q2	58.0200	65.535	0.506	0.726
q3	57.8200	66.048	0.401	0.731
q4	57.1100	71.109	-0.003	0.753
q5	56.1600	75.206	-0.313	0.767
q6	58.1500	67.482	0.304	0.736
q7	57.8200	65.240	0.450	0.727
q8	58.0900	65.456	0.460	0.727
q9	58.0900	66.042	0.411	0.730
q10	57.9200	67.468	0.223	0.741
q11	58.1800	67.705	0.200	0.743
q12	57.5100	67.626	0.201	0.743
q13	58.1800	64.392	0.435	0.727
q14	58.5000	66.313	0.552	0.727
q15	58.3100	64.075	0.607	0.720
q16	57.7900	64.046	0.467	0.725
q17	57.5500	63.341	0.445	0.725
q18	56.8500	72.169	-0.079	0.756
q19	57.7600	66.629	0.283	0.737
q20	57.5300	68.393	0.215	0.741
q21	58.3100	65.347	0.517	0.725
q22	58.1100	65.129	0.527	0.725
q23	58.1900	65.145	0.460	0.727
q24	56.8500	74.654	-0.226	0.772
q25	57.9100	69.881	0.062	0.751
q26	58.0500	66.614	0.322	0.735
q27	56.6300	76.316	-0.354	0.774
q28	57.9300	64.429	0.457	0.726
q29	57.6000	68.384	0.159	0.745

Table 6: KMO and Bartlett's Test

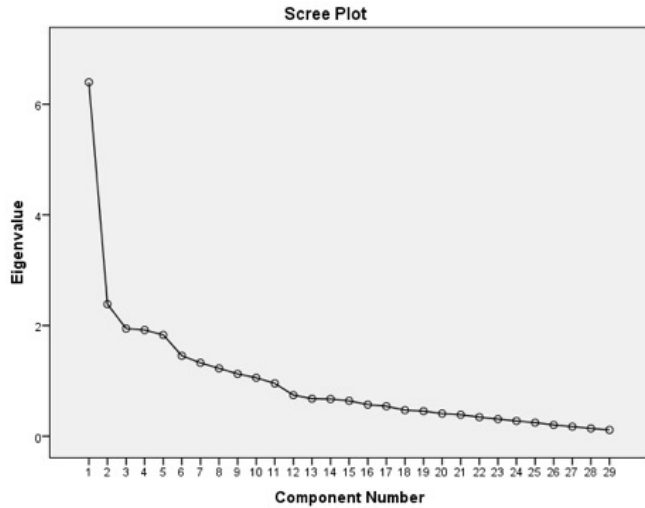
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.677
Bartlett's Test of Sphericity	Approx. Chi-Square	1136.407
	df	406
	Sig.	0.000

Factor analysis

KMO test shows sampling adequacy of 0.677 (Table No.6)

Components in the scree plot were defined only if they had Eigen value greater than 1 (Figure 1)

Figure 1: Scree Plot



Discussion and conclusion

The main objective of the study was to find out tool for assessing *Ruksha guna* in healthy individual. Based on theory and expert opinion total 35 items are generated in two domain–Physical and Psychological domain. By considering the opinion of expert panel item selection has done and 6 items are deleted. 29 items are there in the questionnaire which is finally administered in the selected sample for reliability assessment. 6 items are avoided as per opinion of various experts. Excluded signs include- Discolouration of body, experts opine that it can also produce in body due to different reasons, it will be difficult to tell that it is caused due to *Ruksha guna* increase. Under developed and short stature planned by assessing items height, weight, BMI also excluded due to same reason. In initial tool development process FGD and IDI conducted with experts, in this some experts opinion that signs of diminution of Oja can also be included in the *Ruksha* assessment. But in later stage majority experts are advised to avoid it from the tool. The sign Wakefulness is removed from the tool because questions which included in assessment of sleeplessness is also cover the wakefulness construct. By doing inter item correlation and item total correlation some items has got negative correlation and very modest correlation. Item number 21- did you feel burning in chest region, is decided to exclude since it cover in the item number 22. So after the reliability and validity assessment 1 item deleted from the administered tool in the selected sample. Finally there are 28 items in the *Ruksha guna* assessment tool.

Conflict of interest: None

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