



## Research Article

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### DEVELOPMENT OF AN ASSESSMENT TOOL FOR VATA-PRATHILOMATHA IN KOSHTA WITH SPECIAL REFERENCE TO ARSAH

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#### ABSTRACT

The body's normal physiological state is maintained by the proper association of dosas and dushyas in koshta and sakha. Abnormal sakhagati of dosas & dushyas will leads to the origin of diseases. The word anulomatha(normal state) is mentioned in Vaidyaka Sabda Sindhu as "malaadi dhatunam yadhaamargam gamanipaye". Here malaadi is dosa, dhatu and malas, marga is srotas (channels). Hence, the normal movement of malaadi dhatus in its pathway is anulomatha. The anulomana state of vata in koshta helps in proper absorption, digestion, metabolism & movements. This study is done in Arсах, as it is the most critical disorder, exhibiting vataprathiloma lakshanas & with vata anulomana as the treatment principle. Ayurveda mentions the only subjective description of vataprathilomatha without quantifying the samprapti. The main aim of this study is to develop an assessment tool for vataprathilomatha in koshta and find out the severity of the disease in Arсах patients. The study is an observational study with two parts. The first part is a conceptual study, the literal review and the second part is a clinical study conducted on 130 diagnosed Arсах patients at Govt. Ayurveda College, Kannur, Kerala. An assessment tool is developed in the form of a questionnaire based on vataprathilomatha symptoms from Ayurvedic treatises after following the steps for developing assessment criteria like Item generation, Item selection, Suitable response format, Face validity, Pilot study, Finalization of the instrument and Final administration, following appropriate statistical methods. Finally, an assessment tool for vataprathilomatha in koshta has been developed, with 100% sensitivity and 93.7% specificity.

**Keywords:** Arсах, vataprathilomatha, dosa gati, koshta, diagnostic tool

#### INTRODUCTION

Vata is the inevitable constituent of the living body whose structure is akasha and vayu and is concerned with producing those somatic and psychic processes that are predominantly rajastic or dynamic. When vata combines with tejas, it has daha but makes cold in combination with soma. Hence it is called yogavahi<sup>1</sup>. It upholds all the supporting constituents and their due circulation throughout the body. Koshta is the principal abode of dosa from which it attains upwards, downwards, and transverse movement with the help of vata. It is the abhyanthara rogamarga, also known as mahakoshta, sarira madhya, mahanimnam and ama-pakwasa. Vataprathilomatha in koshta is the primary pathology in most diseases under koshta rogamarga. Koshta rogas like gulma, arсах, anaha, udara, chardi and swasa have vataprathilomatha in koshta. Also, there are vataprathilomatha symptoms in kriyakala of Sushruta Samhita, vata vrddhi lakshanas, dushti lakshanas of all divisions of vata, vega rodha, avarana lakshanas, pakwasaya gata vata etc. Among these, Arсах is a disease with most of the vataprathilomatha lakshanas.

#### MATERIALS AND METHODS

The present study is observational and includes a sample size of 130 diagnosed Arсах patients from OPDs and IPDs of Department of Salyathantra, Government Ayurveda College, Pariyaram, Kannur, Kerala, India. All of them were provided with study proforma along with the consent form. Informed consent was obtained from all of them only after getting informed consent from the samples they were included in the study.

**Different phases of the study:** The study is done in different phases.

**Conceptual study:** In the conceptual study, the literary aspect of vataprathilomatha and Arсах were explored.

**Steps for developing assessment tool including observation and analysis**

**Item generation:** Each item is generated based on clinical experience, personal experience, expert opinion, and literature description. An extensive search and collection of such words were from ayurvedic treatises. A list of 50 articles was listed.

**Item selection:** Then, these items were presented in the department in front of our teachers and colleagues for their valuable suggestions. They had given their recommendations based on clinical experience and knowledge. Also, they put forward the difficulty in getting answers for specific items when we ask patients questions. Some words reflect similar meanings. They were discarded, and corrections were made according to their opinion. Then these items were given to three experts for prioritisation and selection of items. Thus, the lists were reduced to several 16.

**Suitable response format:** Since the study is conducted in Arсах patients, the items selected in the second step were designed in a questionnaire consisting of 16 questions with two options Yes or No.

**Face validity:** Face validity describes the transparency of individual test items. It was done by assessing whether the items in the questionnaire were valid in assessing vatapathilomatha in koshta by examining the response format by the experts. The face validity experts were the teachers in our department.

**Pilot study:** A pilot study was conducted on 20 Arsa patients and checked whether there was any item to which the patient was not responding.

There were no questions without response. Interobservers variability was also done in the pilot study to assess reliability.

**Finalisation of the instrument:** The instrument was finalised after conducting the pilot studies on Arsa patients.

**Final administration:** The required numbers of samples were selected from OPDs and IPDs of Dept. of Salyathantra. After getting consent from the concerned doctor and the patient, the patients were interrogated. The hospital case records were utilised to fill up the details regarding preliminary data, diagnosis, and investigations for each patient. Each patient's questions were asked and carried out within 10-15 minutes. Then the same questionnaire was asked to the same patients by another examiner on the same day to find out reliability. The doctor who treats the patient was given the clinical severity of each patient.

**Statistical techniques:** The data obtained from the 130 Arsa patients were entered in an excel sheet, and statistical analysis was done. The statistical methods followed are given below.

**Frequency distribution:** Frequency of each item was found in this step. Then the distribution of each item according to the clinical severity was also analysed.

**Chi-square and Odds ratio:** Then Pearson chi-square and odds ratio was calculated to determine the association of each variable to the clinical severity.

**Logistic regression:** Binary logistic regression was then done to find out the regression coefficient of each variable. These regression coefficients were used to score the variable and recode the data.

**Descriptive-Quartiles:** The recoded data was then divided into three quartiles to find out the cut-off.

**Criterion Validity:** In this phase, the following tests are done. Sensitivity and specificity Efficiency of the test and Reliability test - Cronbach's Alpha.

**Table 1: List of Items selected, and Questionnaire prepared and the Variables for statistical analysis**

Items	Questionnaire	Variables	Frequency (%)			
			yes		No	
			Number	%	Number	%
Sakrt Krcra nirgachan <sup>2</sup>	Do you feel much difficulty in passing stool?	Var1	removed-	-	removed-	-
Gadavit <sup>3</sup>	Do you have hard stools?	Var2	44	33.8		
Aruchi <sup>4</sup>	Do you have a feeling of tastelessness?	Var3	41	31.5		
Kshunnam <sup>5</sup>	Do you have a loss of appetite?	Var4	27.058	9438.232	.000	7
Parikartika <sup>6</sup> (proctalgia)	Is there pain in the anal region at the time of passing stools?	Var5	14.049	9677.923	.000	3
Koshtatodam <sup>7</sup>	Do you have any kind of pain in your abdomen?	Var6	9.600	7555.467	.000	2
Anthrakujanam <sup>8</sup>	Is there any kind of increased bowel sounds in your abdomen?	Var7	17.740	9295.587	.000	4
Admanam <sup>9</sup> (distension)	Do you feel the fullness of the abdomen?	Var8	18.312	6863.526	.000	4
Jeerne jeeryati cha admanam bukthe swasthyam <sup>10</sup>	Does your feeling of distension of the abdomen get reduced after food intake?	Var9	10	7.7	120	92.3
Lakhwalpa bhojanerapi tatata <sup>11</sup>	Do you feel distension even with the lesser quantity or with light food?	Var10	41	31.5	89	68.5
Chardih <sup>12</sup> (vomiting)	Do you have a tendency for vomiting?	Var11	14	10.8	116	89.2
Udgarabahulyam <sup>13</sup>	Do you suffer from excessive belching?	Var12	53	40.8	77	59.2
Svasah <sup>14</sup> (dyspnoea)	Do you have breathing difficulties?	Var13	18	13.8	112	86.2
Siroruk <sup>15</sup> (headache)	Do you suffer from headaches?	Var14	21	16.2	109	83.8
Utashabramsam <sup>16</sup>	Do you feel tired?	Var15	59	45.4	71	54.6
Pindikodweshtanam <sup>17</sup>	Are there cramps in calf muscles?	Var16	63	48.5	67	51.5

**Table 2: Logistic regression and score of each variable (Descriptive statistics of the recoded tool after giving weightage) and internal consistency reliability of 14 items in the tool**

Variable	B (regression coefficient)	S.E	Wald	Score	Cronbach's Alpha
Var2	21.132	11577.963	.000	5	0.7563
Var3	4.058	18530.526	.000	1	0.7174
Var4	27.058	9438.232	.000	7	0.7517
Var5	14.049	9677.923	.000	3	0.7711
Var6	9.600	7555.467	.000	2	0.7469
Var7	17.740	9295.587	.000	4	0.7437
Var8	18.312	6863.526	.000	4	0.7547
Var10	14.787	7979.124	.000	4	0.7581
Var11	12.103	14434.088	.000	3	0.757
Var12	15.168	4095.027	.000	4	0.7388
Var13	17.511	9530.677	.000	4	0.7585
Var14	18.413	12095.317	.000	4	0.746
Var15	23.775	14083.193	.000	6	0.7275
Var16	28.727	6785.886	.000	7	0.747

**Table 3: An assessment tool for vatapraphilomatha in koshta with particular reference to Arsah**

Serial No		Score
1	Do you have hard stools?	5
2	Do you have a feeling of tastelessness?	1
3	Do you have a loss of appetite?	7
4	Is there pain in the anal region at the time of passing stools?	3
5	Do you have any kind of pain in your abdomen?	2
6	Is there any kind of increased bowel sounds in your abdomen?	4
7	Do you feel the fullness of the abdomen?	4
8	Do you feel distension even with the lesser quantity or with light food?	4
9	Do you have a tendency for vomiting?	3
10	Do you suffer from excessive belching?	4
11	Do you have breathing difficulties?	4
12	Do you suffer from headaches?	4
13	Do you feel tired?	6
14	Are there cramps in calf muscles?	7

## DISCUSSION

Various statistical analyses were done for the development of the assessment tool. Each questionnaire was denoted as a variable. In the initial stage of the study itself, it was found that item 1, Krichra sakrt nirgachan was less significant. So, it was removed from the list.

**Frequency distribution:** The frequency of each item was found in this step. Most of the cases were not responding to item 9 (jeerne jeeryathi cha admanam bukthe swasthyam), irrespective of mild, moderate, and severe divisions. So, there is not much variability in the case of this item. Then the distribution of each item according to the clinical severity was also analysed. The clinical severity was dichotomised into mild and severe for further analysis like the Odds ratio. For this, mild and moderate divisions are clubbed together as mild. After this, among 130 cases, 73.1% of cases were mild, and 26.9% of cases were severe.

**Chi-square and Odds ratio:** Then Pearson chi-square and odds ratio were done to find out the association of each variable to the clinical severity. In this step, item 9 was found to be less significant. Thus, it was discarded from the tool. All the variables showed significant association with the clinical severity, except 9. Variable 9 had a P value of 0.942, which is not substantial. Therefore, that variable was removed from the tool.

**Logistic regression:** Binary logistic regression was then done to find out the regression coefficient of each variable except 1 and 9. These regression coefficients were used to score the variable and recode the data.

**Descriptive-Quartiles:** The recorded data was then divided into three quartiles to determine the cut-off. Those values between 0-15 were denoted as mild, between 15-27 were moderate, and above 27 were included in severe divisions. 36.2% were mild, 32.3% were moderate, and 31.5% were severe.

**Criterion Validity:** As per the clinical severity, 35 were the severe cases recorded. The test tool also includes 35 severe cases. 95 were the mild cases according to clinical severity. But according to the test tool, 89 were recorded correctly as mild. The rest of the 6 cases were included in severe. In this phase, the following tests are done. Sensitivity and specificity -Sensitivity was found to be 100%, and specificity was 93.7% Efficiency of the test – The efficiency of the test was 95.4%. Reliability test -Cronbach's Alpha

The study showed an excellent intraclass correlation. The internal consistency of items Cronbach's Alpha was .7625. The tool was started with 16 items. All the things were statistically significant

except item 1 and item 9. Therefore, those items were discarded from the device. The inter rate reliability of the tool was 0.8821. So, the tool showed good intraclass correlation.

The internal consistency of all the items, Cronbach's Alpha was more than 0.7. It was acceptable. Thus, the psychometric properties of the tool were at an adequate level.

## CONCLUSION

The assessment tool for vatapraphilomatha in koshta has been developed with 14 variables and 95.4% efficiency. A score of 1-15 is considered mild, 15-27 is moderate, and above 27 is severe. The range is 50. It is observed that the assessment of diseases based on specific criteria or tools will help the early and easy evaluation of the severity and timely administration of treatment. This work can serve as a foundation for further research studies on developing assessment tools.

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