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## A CROSS-SECTIONAL STUDY FOR DEVELOPMENT OF SCALE FOR THE ASSESSMENT OF *AMA* IN *AMAVATA*

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### ABSTRACT

**Background-** Ayurveda perceives disease as disruption in functioning of key bodily elements: *Dosha, Dhātu, Mala* and *Agni*. Scrupulous examination of these elements aids right diagnosis and treatment. Diseases wherein *Ama* plays pathogenic-role, like *Amavata*, identifying *Ama*-association (*Saama*) or dissociation (*Nirama*) from *Dosha* before planning treatment is needed as they require different approaches. Subjectivity in interpreting symptoms by practitioners necessitates a standardized assessment-scale. Therefore, systematic development of a scale to assess *Ama* in *Amavata* was planned for unanimous diagnosis. **Objectives-** To develop a scale for assessing *Ama* in *Amavata*. **Methods-** Pertinent data regarding *Ama* and its indicators were collected from reliable sources and analyzed to delineate boundaries of domains and facilitate item-generation. Content-validity was assessed by 6-experts by evaluating its accuracy in measuring various aspects of the construct. Revised questionnaire was pre-tested on 30-*Amavata* patients from SDM-College of Ayurveda & Hospital, Hassan and then administered to 60 patients

for validation. Data after each assessment underwent testing for internal-consistency. Each domain was treated as independent-scale and evaluated using Cronbach's-Coefficient-Alpha. Principal Component Analysis was employed for dimension-reduction. Rotated-component matrix and Scree-plot were used to categorize domains into Major and Minor-criteria, guiding construction of scale. **Results-** 137-items were framed following literary search,126-items retained after expert-review were administered in 1<sup>st</sup>-set of assessment. On checking internal consistency,120-items were used in 2<sup>nd</sup>-set of assessment. Following test for reliability and dimension-reduction,114-items remained. Domains were divided into 6-major criteria(46-items) and 4-minor criteria(37-items) using Rotated-component matrix and Scree-plot. **Conclusion-** This developed questionnaire can be utilized to assess *Ama*-Lakshana in *Amavata*.

**Keywords:** *Ayurveda, Ama, Amavata, Scale development*

## INTRODUCTION

The majority of human ailments are often attributed to disturbances in *Agni*. While the root causes of disease manifestation are typically threefold, stemming from the predominance of *Tridosha*, the mechanism of how diseases manifest can be categorized into two: *Sa-Ama* (*Dosha* associated with *Ama*) or *Nirama* (*Dosha* not associated with *Ama*) [1]. *Mandagni*, plays a significant role in *Ama* formation, alongside *Aharaja*(dietary), *Viharaja*(lifestyle), and *Manasika*(mental) factors. *Ama*, viewed from different perspectives — as *Apakwa Ahara Rasa* (undigested food residue), *Mala-Sanchaya* (excess *Dosha* accumulation), or *Prathama Dosha-Dushti* (initial *Dushta-Dosha*) regardless contribute to further dysfunction in *Dosha* and *Dushya*, leading to diseases caused by *Ama* [2].

*Saama Dosha*, a condition characterized by *Dosha* imbalances in association with *Ama*, exhibits unique symptoms distinct from regular *Dosha* imbalances. These symptoms include *Srotorodha* (obstruction in *Srotas*), *Balabramsha* (decreased strength), *Gaurava* (heaviness in body), *Anila- Mudhata* (improper movement of *Vata*), *Alasya* (lethargy), *Apakti* (*Apaka* of *Ahara*), *Nisthiva* (*Mukha-Srava* i.e., excessive salivation), *Malasanga* (obstruction to *Mutra*, *Purisha*), *Aruchi* (lack of desire towards food) and *Klama* (exhaustion) [3]. *Saama Dosha* is notably responsible for *Amavata*, a prevalent disorder marked by joint pain and inflammation.

The simultaneous entry of *Ama*-associated *Vata* and *Kapha* into the body joints, particularly the *Trika-Sandhi* (neck or sacral

joint), results in *Amavata*. This condition manifests symptoms of both *Ama* and *Vata-Dosha* imbalances, such as *Angamarda* (body ache), *Alasya* (laziness), *Apaaka* (indigestion), *Aruchi* (anorexia), *Gaurava* (heaviness), *Shunata* (swelling of joints), *Trushna* (thirst) [4]. The recognition of involvement of *Ama* in *Amavata* aids in determining appropriate treatment approaches. This article aims to outline methods for developing a diagnostic scale to assess *Ama* symptoms in *Amavata* through a cross-sectional survey study, facilitating a better understanding of the disease stage. Scale development involves creating a reliable and valid measure of a construct to assess the attribute of interest.

## MATERIALS AND METHODS

The cross-sectional survey study was conducted, and by following the standard criteria for questionnaire development and validation, the scale was meticulously constructed in a stepwise manner as outlined below:

Data for this study was sourced from two primary avenues: literary data and a survey study. Literary research involved an exhaustive review of texts of *Ayurveda* and other credible sources, to understand *Ama* and *Amavata* comprehensively. The survey study, on the other hand, involved the selection of

subjects from both the Outpatient Department (OPD) and Inpatient Department (IPD) of Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka. Subjects were carefully chosen based on predefined inclusion criteria to ensure the relevance of the study population. These criteria included individuals exhibiting *Lakshana* of *Amavata*, of both genders, and willing to provide informed consent, within the age group of 18 to 60 years. Diagnostic criteria for *Amavata*, comprising both *Samanya* and *Pratyatma Lakshana*, were employed to identify and categorize the condition accurately. *Samanya Lakshana*, such as *Angamarda* (body ache), *Aruchi* (lack of appetite), *Trushna* (thirst), *Gourava* (heaviness), *Alasya* (lethargy), *Angashunata* (swelling), *Jwara* (fever), and *Apakti* (indigestion), served as general indicators of *Amavata*. Conversely, *Pratyatma Lakshana*, including *Sandhishotha* (swelling in multiple joints), *Sandhishoola* (pain in the joints), and *Gatrastabdhatata* (stiffness in the body), provided additional diagnostic clarity, distinguishing *Amavata* from other similar conditions [5]. The exclusion criteria ensured the integrity of the study by omitting individuals with joint pain unrelated to *Amavata* or systemic illnesses, as well as

those displaying *Ama* symptoms without joint pain.

### Step 1: Identification of domain and item generation-

#### ❖ Identification of domain and sub-domains-

Outlining any construct of interest require defining the factors that sets boundaries and connects the construct to a set of observable traits or behaviours. Thus, the principal factors called domains representative to the construct and subdivisions of the domains wherever required, called sub-domains were framed.

Each of the *Lakshana* mentioned above as *Saama Dosha Lakshana* were taken as individual domains. The two domains, *Srotorodha* and *Anilamudata*, had broad implications, necessitating the creation of subdomains.

#### ❖ Defining the domains and sub-domains-

The domains and subdomains were defined through an exhaustive review of the existing literature, specifically focusing on references that defined these domains within various contexts. These definitions were then meticulously analyzed to ascertain

their relevance to the current study. Only those references that were deemed pertinent were accepted, and their meanings were elucidated using the Standard Sanskrit dictionary [6] before being translated into English.

The assessment of *Srotorodha* and *Anilamudhata*, which required the identification of sub-domains, was similarly carried out. This process involved a thorough examination of the literature and sought input from experts in the field. The assessment criteria were established by concentrating on the *Rasavaha Srotas Dushti Lakshana* for *Srotorodha* and the symptoms of *Apana Vata Dushti* for *Anilamudhata*.

#### ❖ Questionnaire Framing-

The questions were carefully designed to make sure they were clear and relevant, aiming to get accurate responses. It included both positive and negative closed-ended questions to cover different perspectives. The questions were constructed under two headings namely, nominal data and ordinal data. Each question was assessed using either a Yes/No scale for nominal data or a five-point Likert scale for ordinal data.

**Step 2: Content Validity-**

## ❖ Expert Review-

Experts evaluated the questionnaire to ensure coherence and relevance. They assessed:

1. Appropriateness of term understanding.
2. Suitability of the grading scale.
3. Alignment of questions with the intended concept.

## ❖ Reframing of the Questionnaire-

Based on the inputs from subject experts, necessary modifications or deletions were made to the questions.

**Step 3: Pre-testing of Questionnaire-**

A pilot study was conducted to evaluate the relevance of questionnaire to the target population, ensuring its meaningfulness and minimizing potential misunderstandings and measurement errors. Collected data underwent analysis for internal consistency, assessed using Cronbach's alpha.

**Step 4: Survey Administration and Sampling-**

After internal consistency testing, the finalized questionnaire was administered to the sample population to ensure consistency.

**Step 5: Item Reduction-**

This step ensured that only internally consistent items were retained.

**Step 6: Extraction of Factors-**

Factor extraction aimed to reduce data dimensionality by identifying a minimal number of factors explaining the maximum variance. Principal Component Analysis was used to transform a larger set of variables into a smaller set of artificial variables known as principal components.

**Step 7: Scale Construction-**

Scale construction involved utilizing the rotated component matrix and scree plot to refine the factor structure, determine the appropriate number of factors to retain, enhance scale validity and reliability, and improve interpretability and clarity.

**RESULTS AND DISCUSSION****Item generation-**

The initial goal of the study was to identify domains relevant to assessing *Ama* in *Amavata*. Despite an exhaustive literature search, no existing scales were found. This prompted further exploration into texts of *Ayurveda*, leading to the extraction of domains such as *Srotorodha*, *Balabhramsha*, *Gaurava*, *Anilamudhata*, *Alasya*, *Apakti*, *Nishthiva*, *Malasanga*, *Aruchi*, and *Klama*. Sub-domains were then delineated through a combination of literature review and input from five subject experts. For *Srotorodha*, focus was placed on *Rasavaha Sroto-Dushti Lakshana*, with redundant ones omitted, viz.- *Ashraddha*, *Asyavairasya*, *Arasajnatha*, *Hrullasa*, *Tandra*,

Angamardha, Jwara, Tama, Panduta, Klaibya, Saada, Krushangata, Nasho Agni, Ayatha Kalam Valaya, and Ayatha Kalam Palitani. Symptoms related to *Apana Vata Dushti* were incorporated for *Anilamudhata-Kukshi Kathinata, Antra Kujana, Anaha, Vibandha*. This process resulted in the final selection of 10 domains and 15 subdomains for *Srotorodha*, and 4 subdomains for *Anilamudhata*.

Questions were formulated based on a comprehensive analysis of collected references, focusing on defining the domain and selecting those most pertinent to the context. Additionally, expert opinions were considered to ensure the questions were appropriately framed. Framed items were allotted in two types of scales-The responses those required just the categorization without

specific order or comparison were assigned a nominal scale of measurement wherein Yes/No type of questions were framed, following to which scoring was given accordingly. The responses that required comparison and gradings were assigned an ordinal scale of measurement wherein Likert-5-point scale questions were framed and scoring done.

The questions were further classified to facilitate proper scoring system according to the responses intended-

Positive questions were assigned scoring in increasing order of the agreement to the point of interest. Negative questions were assigned scoring in decreasing order of the agreement to the point of interest. Following is the representation of the scoring system.

Likert-scale scoring for ordinal data-

	Strongly disagree	Disagree	Uncertain or unsure	Agree	Strongly agree
Positive Q	1	2	3	4	5
Negative Q	5	4	3	2	1

Scoring for Nominal data-

Yes	1
No	2

### Expert validation-

The Google Forms containing questionnaire with 137 items was given to six experts outside the institution for opinion or validation regarding the approach of the questions, positive and negative aspects of the prepared questionnaire. Appropriate information regarding the work, grade and

space for their comments in each question were provided. Response options for each item were provided as "better," "good," "poor," or "very poor."

After reviewing the feedback by experts, 12 questions out of the initial 137 were deleted due to repetition and inability to generate relevant responses. Additionally, some

questions underwent modifications and grammatical corrections. Furthermore, one question from the *Srotorodha* subdomain (with Q2) was relocated to *Angamarda*, while another (with Q4) was moved to *Jwara*. Additionally, a question from the *Srotorodha* subdomain (with Q2) was added to *Krushangata*. Moreover, three questions from the *Anilamudata* subdomain (with Q9, Q10, Q11) were added to *Vibandha*. As a result, a total of 126 items were retained for further analysis and processing.

#### **Sample size estimation-**

Based on demographic data, the percentage of adults aged between 18 to 70 years is 0.75, denoted as  $P = 0.75$ . The sample size was calculated using the formula  $-Z^2 P (1-P) / C^2$ , where  $Z$  represents a confidence level of 95%,  $P$  is the prevalence rate (0.75), and  $C$  is the confidence interval (0.05). This calculation yielded a sample size of 60 subjects.

#### **Pilot study-**

The 126-item questionnaire was administered to 30 *Amavata* patients at SDM College of Ayurveda and Hospital Hassan, using interview method for the first assessment. Subsequently, the data underwent analysis using SPSS version 23 to evaluate internal consistency.

#### **Test for internal consistency-**

The study employed different methods to test internal consistency, depending on the type of data. For nominal data, frequency distribution tables were utilized, while for ordinal data, Cronbach's alpha was employed. Each domain, treated as an independent scale, underwent reliability assessment using Cronbach's Coefficient Alpha. The criteria set by George and Mallery (2003) were followed, where an alpha value above 0.7 was considered acceptable, while a value of 0.8 indicated good reliability, serving as a reasonable benchmark for the study. Throughout the analysis, careful scrutiny was given to each item. If an alpha value of any exceeded the threshold, it would be removed from consideration. This process ensured that the scales were finalized using the most reliable and consistent data.

In the nominal data domain *Anilamudata*, 2 items related to the subdomain *Kukshi Katinata* received low percentages (16.7% and 36.7%) and were deleted. Similarly, in the *Malasangha* domain, a question received a low percentage (36.7%) and was also removed. Other nominal items were retained. In the ordinal data domain *Alasya*, 3 questions were removed. Initially, with 22 questions, Cronbach's alpha was 0.671. After removing 3 questions, the alpha increased to 0.756 with 19 questions.

### Administration of questionnaire to samples-

The questionnaire after the 1st step of assessment was administered with 120 items to 60 samples. The obtained data was checked for internal consistency and principal component analysis.

Principle Component Analysis (PCA) and Factor Extraction –

Principal Component Analysis (PCA) was conducted to reduce a larger set of variables into a smaller set of artificial variables known as principal components. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were used to assess the adequacy of the data for PCA.

For KMO, values above 0.9 are considered marvellous, 0.8 to 0.9 are meritorious, 0.7 to 0.8 are middling, 0.6 to 0.7 are mediocre, and below 0.5 are considered unacceptable.

Regarding Bartlett's test, a "sig" value of .000 indicates that the p-value is less than .005, which is statistically significant.

In the domain *Anilamudata*, for the subdomain *Vibandha*, only 18.3% of respondents reported experiencing this symptom, and for *Jwara*, 45% reported having it along with other symptoms. Due to the low response rate, these nominal items were deleted, while other nominal items were retained. In the ordinal data domain *Alasya*,

some questions were removed to improve reliability. Initially, with 19 questions, the Cronbach's alpha value was 0.754 and the KMO value was 0.517. After removing 3 questions, the alpha increased to 0.823 and the KMO value increased to 0.593 with 16 questions. Similarly, in the domain *Klama*, initially, with 11 questions, the Cronbach's alpha value was 0.728 and the KMO value was 0.757. After removing 1 question, the alpha increased to 0.803 and the KMO value increased to 0.779 with 10 questions. After the second assessment, a total of 114 items remained in the analysis.

### Rotated component matrix and Scree plot for scale construction-

The rotated components matrix provides insight into the reproducibility of questionnaire. It shows how items are correlated or associated within the questionnaire, reflecting the responses by respondents. Based on this matrix, domains that are scattered are considered minor criteria, while those forming a cluster in the centre are considered major criteria for assessing *Ama* in *Amavata*. Major criteria include *Balabramsha*, *Gaurava*, *Anilamudata*, *Alasya*, *Apakti*, and *Aruchi*. Minor criteria include *Srotorodha*, *Nistiva*, *Malasangha*, and *Klama*. This analysis helps in understanding the structure of the

questionnaire and how different domains relate to each other, providing valuable insights into the assessment of *Ama* in *Amavata*.

A Scree Plot is a graphical tool used in factor analysis to determine the number of factors or components to retain in a scale construction. It plots the eigenvalues of factors or components against their respective factor numbers in descending order. The point where the plot levels off (the "elbow" of the curve)

indicates the optimal number of factors to retain. Factors before this point are considered significant, while those after it are considered less important.

Here, the Scree Plot indicated an inflection point at the twenty-first component, suggesting the retention of twenty components. There are twenty components which are showing the eigenvalue greater than one.

**Table 1: Final Validated Questionnaire - 114 Items-  
Major Criteria 1. *Balabramsha*-**

Sl. No.	Items	Scale
1.	Do you feel lack of energy in your body parts?	Yes No
2.	How often do you feel difficulty in carrying weights?	Never, rarely, sometimes, frequently, always
3.	Do you feel lethargy while walking across the room?	Yes No
4.	How often you find difficulty while walking across the rooms?	Never, rarely, sometimes, frequently, always
5.	How often you find it difficult to climb the ten stairs?	Never, rarely, sometimes, frequently, always
6.	When compared to others of your age, do you think your physical activity during leisure hours has been decreased?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
7.	Do you find it difficult to do the physical activities?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
8.	Do you feel exhausted than before even doing little work?	Never, rarely, sometimes, frequently, always

**2. *Gaurava*-**

Sl. No.	Items	Scale
1.	Do you feel heaviness of your body?	Yes No
2.	If yes, do you feel stiffness to do the bodily movements than before?	Same as before, slightly more than usual, more than usual, worse than usual, much worse than usual.

**3. *Anilamudata*-**

Sl. No.	Items	Scale
1.	Do you feel abdominal discomfort?	Yes No
2.	Do you feel any gurgling sounds in your abdomen?	Yes No
3.	Whenever you feel your stomach is upset at that time do you feel gurgling sound in stomach?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
4.	Do you suffer from distention of abdomen, as if filled with air?	Yes No

5.	Do you feel fullness commencing during or shortly after a meal?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
6.	I feel lower abdominal pain, cramping and/or spasms?	Yes No
7.	Do you feel that you do not completely evacuate (not empty your rectum) when you have a bowel movement while passing bowel?	Yes No
8.	If yes do you have difficulty while passing the stools?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
9.	Do you strain to evacuate the bowels?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
10.	Do you feel difficulty to pass flatus?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
11.	Do you feel that there is delay in starting urinary stream?	Never, rarely, sometimes, frequently, always
12.	Do you feel that you pass more quantity of urine as compared to earlier?	Yes No
13.	Do you feel the frequency of passing the urine is more now than before illness?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
14.	How often do you urinate in the daytime?	1-3 times 4-6 times 7-9 times 10-12 times More than 12 times
15.	How many bowel movements you have per day?	1 time 2 times 3 times 4 times More than 4 times

## 4. Alasya-

Sl. No.	Items	Scale
1.	Did you spend your holiday/weekend by sleeping only?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
2.	Do you secretly love it when plans get cancelled so that you can stay at home doing nothing?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
3.	Do you always fall asleep because of boredom?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
4.	Have you ever not washed your hair over the weekend?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
5.	On a sunny day will you stay at home and watch TV rather than going for a walk?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
6.	Have you ever worn the same clothes 2 days in a row?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
7.	Do you prefer talking on the phone, because texting takes too much energy?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
8.	Do you feel like yawning thought out the day?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
9.	Do you feel sluggishness, while doing daily activities?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
10.	Do you feel lack of interest towards the work?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
11.	Do you enjoy the positions like sitting, sleeping, without doing any work?	Never, rarely, sometimes, frequently, always

12.	Do you feel lack of energy in spite of your capabilities?	Never, rarely, sometimes, frequently, always
13.	Do you feel that even after proper sleep you feel no freshness while waking up?	Never, rarely, sometimes, frequently, always
14.	Do you feel tired all day?	Not at all, to a small extent, to a moderate extent, to a great extent, to a very great extent.
15.	Do you find reasons/ excuses to postpone or not to do work assigned to you?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
16.	How you define your work status?	1.No laziness (doing satisfactory work with proper vigour and in time) 2.Doing satisfactory work /late initiation likes to stand instead of walking. 3. Doing unsatisfactory work/late initiation, likes to sit instead of standing 4. Doing little work very slow, likes to lie down instead of sitting 5. Don't want to do work /no initiation, likes to sleep instead of lying down

## 5.Apakti-

Sl. No.	Items	Scale
1.	Are you suffering from indigestion?	Yes No
2.	Do you feel difficulty in breathing even after eating little amount of food?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
3.	Whether your ability to digest food varies as compared to before even after regular food?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
4.	Do you suffer with indigestion even when you eat a little?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
5.	Do you get lots of belching?	Yes No
6.	Do you have retro sternal burning sensation?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
7.	Do you feel heaviness of abdomen even if you eat less food?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
8.	Do you suffer with indigestion even when you eat regular food?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree

## 6.Aruchi-

Sl. No.	Items	Scale
1.	Do you feel aversion to consume food?	Yes No
2.	Do you feel that now your capacity to consume the food is reduced, even in the presence of your favourite food than before?	Never, rarely, sometimes, frequently, always
3.	Do you feel bad taste in mouth?	Never, rarely, sometimes, frequently, always

## Minor Criteria 1. Srotorodha-

Sl. No.	Items	Scale
1.	Do you relish the food?	Yes No
2.	Do you feel no desire for the consumption for food?	Always, frequently, sometimes, rarely, never
3.	Do you feel tastelessness?	Yes

		No
4.	Do you feel altered taste in the mouth?	Never, rarely, sometimes, frequently, always
5.	How easily can you detect the following tastes? Saltiness in chips or salted nuts? Sourness in vinegar or lemons? Sweetness in chocolates or icecream? Bitterness in coffee or beer?	Never, rarely, sometimes, frequently, always
6.	Do you feel any discomfort in the chest region?	Yes No
7.	How often do you have nausea?	Never, rarely, sometimes, frequently, always
8.	Do you feel sleepy after waking up in the morning?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
9.	Even after adequate sleep whether you feel drowsy throughout the day?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
10.	Do you feel lazy throughout the day?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
11.	Do you feel it difficult to concentrate on your work due to laziness?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
12.	Do you feel heaviness in the body after waking up in the morning?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
13.	Do you feel fresh after waking up in the morning?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
14.	Do you feel enthusiastic throughout the day?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
15.	Do you have pain in the body parts?	Yes No
16.	How do you describe your pain right now?	No pain, mild, moderate, severe, very severe
17.	Do you have fever?	Yes No
18.	Do you feel increase in the body temperature?	Yes No
19.	Do you have fever associated with joint pain and inability to move joints?	Never, rarely, sometimes, frequently, always
20.	Do you feel darkness in front of eyes?	Yes No
21.	Do you feel your skin is pale when compared with others?	Yes No
22.	Do you feel any decrease in sexual desires?	Yes No
23.	Do you feel satisfied with your overall sex life?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
24.	Do you feel tired with simple work?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
25.	Do you feel no desire to do any work?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
26.	Do you have enough energy for your daily routine work?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
27.	Do you finish your work that has been assigned to you within the proper schedule?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
28.	Do you feel that you have lost weight in during the course of illness?	Yes No
29.	Whether you have frequently heard a comment that “you have reduced weight than before”?	Yes No
30.	Do you have very good appetite?	Yes

		No
31.	Do you have reduced digestive ability?	Yes No
32.	Whether the food you consume get digested in proper time?	Strongly agree, agree, uncertain or unsure, disagree, strongly disagree
33.	Do you take long time for digesting regular food?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
34.	Have you observed any wrinkles in your body?	Yes No
35.	Do you have grey hairs?	Yes No

**2.Nistiva-**

Sl. No.	Items	Scale
1.	Do you feel excessive salivation?	Yes No
2.	Does your dry mouth stop you from doing everyday activities, e.g., going out, travelling and talking on the phone?	Strongly agree, agree, uncertain or unsure, disagree, strongly disagree
3.	Whether your lips feel dry?	No Yes
4.	Do you have dry mouth?	No Yes
5.	Do you have dry throat?	No Yes
6.	Do you have dry tongue?	No Yes
7.	Do you feel thirsty always?	No Yes
8.	Do you “make yourself” drink fluid even if you are not thirsty?	Strongly agree, agree, uncertain or unsure, disagree, strongly disagree
9.	Does your dry mouth stop you from eating the food you like?	Strongly agree, agree, uncertain or unsure, disagree, strongly disagree
10.	Do you feel embarrassed because of your dry mouth?	No Yes
11.	Drooling severity	Never drools Occasionally drools Frequently drools Constantly drools

**3.Malasangha-**

Sl. No.	Items	Scale
1.	Do you feel incomplete evacuation of bowels like “I didn’t finish”?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
2.	Do you feel rectal burning during and after passing bowel?	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
3.	Feeling like you had to pass a bowel movement but you could not (false alarm)	Strongly disagree, disagree, uncertain or unsure, agree, strongly agree
4.	Do you feel that you pass more quantity of urine as compared to earlier?	Yes No
5.	Need to strain to keep urinary system?	Never, rarely, sometimes, frequently, always

**4.Klama-**

Sl. No.	Items	Scale
1.	Do you feel no interest in doing any work or daily regimens?	Never, rarely, sometimes, frequently, always
2.	Do you feel no interest in doing work which you used to feel happy doing earlier?	Never, rarely, sometimes, frequently, always

3.	Do you get bothered by your fatigue?	Never, rarely, sometimes, frequently, always
4.	Do you have enough energy for everyday life?	Never, rarely, sometimes, frequently, always
5.	Do you have problem in starting things?	Never, rarely, sometimes, frequently, always
6.	Do you have problem in thinking clearly?	Never, rarely, sometimes, frequently, always
7.	Do you feel mentally exhausted?	Never, rarely, sometimes, frequently, always
8.	Do you get tired quickly?	Never, rarely, sometimes, frequently, always
9.	Physically, you feel exhausted?	Never, rarely, sometimes, frequently, always
10.	Do you feel no desire to do anything?	Never, rarely, sometimes, frequently, always

## CONCLUSION

Development of a standardized scale for assessing *Ama* in *Amavata* is a significant step in diagnostic accuracy and thereby successful treatment. This scale, developed through a thorough process involving data collection, expert validation, and rigorous testing, consists of 114 items across six major criteria and four minor criteria. It provides practitioners with a reliable tool to assess *Saama Dosha*, allowing for opting treatment strategies those treat *Ama*. The parameters of the developed scale enhance diagnostic consistency and treatment effectiveness, benefitting patient care in practice of *Ayurveda*.

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