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Development and validation of a Refined *Grahani* Assessment Scale based on constitutional features for evaluating *Grahani Roga*

Roopali R. Shindhe[1], Naveen V[2], Seema Pradeep[3]

[1]Post Graduate Scholar, Department of PG studies in Dravyaguna, Sri Sri College of Ayurvedic Science and Research, Kanakapura Rd, Bengaluru, Karnataka, India.

[2]Associate professor, Department of PG studies in Dravyaguna, Sri Sri College of Ayurvedic Science and Research, Kanakapura Rd, Bengaluru, Karnataka, India.

[3]Professor and HOD Department, Department of PG studies in Dravyaguna, Sri Sri College of Ayurvedic Science and Research, Kanakapura Rd, Bengaluru, Karnataka, India.

A B S T R A C T

Introduction: *Grahani* is regarded as the seat of *Agni*, and their interdependent relationship underscores the need to preserve their integrity. *Grahani Roga* manifests with symptoms such as *Muhur Badham* and *Muhur Dravam Mala*. Earlier *Grahani* assessment scales are predominantly based on consistency of *Mala* rather than comprehensive *Lakshanas* of *Grahani Roga* and neither these scales were validated. Hence, development and validation of Refined *Grahani* Assessment Scale (RGAS) based on the *Lakshanas* of *Grahani Roga* is essential. **Methodology:** A thorough literature review and expert consultations were carried out to identify the most relevant signs and symptoms of *Grahani* disorders. Following this, the content was validated, questions were refined, and the questionnaire underwent pilot testing and validation. The finalized questionnaire was then prepared as a Google Form. The study results were used to assess the reliability of the questionnaire. **Results:** 235 participants participated in the survey, among whom 103 individuals were diagnosed with *Grahani Roga* according to specific criteria and the responses revealed validation and reliability of Refined *Grahani* Assessment Scale (RGAS). **Conclusion:** Currently, investigations into *Grahani Roga* focus on specific symptoms. To address this, the Refined *Grahani* Assessment Scale (RGAS) was developed. The creation and validation of RGAS represent a significant advancement in evaluating this condition. Applying this scale in research can enhance our understanding *Lakshanas* of *Grahani Roga* based on *Agni, Kosta, Nidra, Manas* and other systematic symptoms. Furthermore, its application in research can enhance understanding of *Grahani Roga*, leading to further progress in the field.

Key words: *Refined Grahani Assessment Scale, Grahani, Ayurveda, Validation study*

INTRODUCTION

Grahani, is considered the seat of *Agni*, the reciprocal relationship between *Grahani* and *Agni* highlights the importance of maintaining the integrity of both as it

Address for correspondence:

Dr. Roopali R. Shindhe
Post Graduate Scholar, Department of PG studies in Dravyaguna, Sri Sri College of Ayurvedic Science and Research, Kanakapura Rd, Bengaluru, Karnataka, India.
E-mail: roopalishindhe1@gmail.com

having *Adhara Adheya Sambandhana*.[1] It is also mentioned in *Sushruta Samhita* that *Grahanya Balam Agnirhi* which means the strength of *Grahani* is *Agni*.[2] The same action is altered when the *Agni* becomes *Durbala* or *Dushta*.[3] Therefore, assessing *Agni* becomes crucial for predicting the future course of an illness like *Grahani Roga*. *Grahani Roga* is mainly caused by *Agnidushti*. It is caused due to the dietary habits like irregular eating habits (*Vishamasana*), overeating (*Atibhojana*), indigestion (*Ajeerna*), intake of overly cold substances (*Atisheeta*), dry or rough food (*Rooksha*), unsuitable diet (*Asatmya Bhojana*), and lifestyle like staying awake late at night (*Ratri Jagarana*), suppression of natural urges (*Vega Vidharana*) due to which it causes *Agni Dushi*. *Dustagni* further will not digest the food properly, causing *Apachita Anna* which leads to *Visha Roopatha*.[4] The

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partially digested (*Pakwa*) and partially undigested food (*Apakwa*) moves downwards leading to *Muhurbadha*, *Muhurdhrava Mala*, and other *Lakshanas* such as *Ajeerna, Alasya, Aruchi, Udgara, Kasa, Pinasa, Karnaswana* etc. and this condition is called *Grahani Gada*.[5,6] *Grahani* assessment scales developed previously are predominantly based on symptoms related to consistency of stool and have not considered other factors. Hence, there is a need for development and validation of *Grahani* Assessment Scale for the diagnosis of the *Grahani Roga* based on cumulative signs and symptoms. A Refined *Grahani* Assessment Scale (RGAS), is developed and validated for its content validation and reliability in the present study.

MATERIALS AND METHODS

Study setting

This study was conducted at the PG Department of *Dravyaguna*, Sri Sri College of Ayurveda Science and Research, where the RGAS was developed and first validated. Face and content validity were ensured through the involvement of domain experts from the institution.

Time frame of the study

Development of the RGAS commenced in October 2023 and concluded in April 2024. Following the initial validation of the instrument, clinical testing of the RGAS took place from December 2023 to April 2024 on 235 participants. The collected data was then subjected to statistical analysis in May 2024.

Conduction of the study

The study comprised two sequential phases. Firstly, it focused on framing the Refined *Grahani* Assessment Scale (RGAS) for evaluating *Grahani Roga* based on existing classical literature. This phase encompassed several stages, starting from literature review to the refinement of tool components post-pilot testing. The subsequent phase involved validating the developed RGAS and establishing correlations between RGAS observations and *Lakshanas* of *Grahani Roga*. The methodology used in this research to develop and validate the new tool was verified through relevant studies in *Ayurveda*, ensuring its reliability.

LITERATURE REVIEW

To initiate the development of *RGAS*, classical *Ayurvedic* texts like *Charaka Samhita*,[7] *Sushruta Samhita*,[8] *Ashtanga Sangraha*,[9] *Madhava Nidana*,[10] *Yogaratnakara*,[11] *Bhavaprakasha*,[12] *Haritha Samhitha*,[13] and *Gananatha Sen*[14] were referred for characteristics related to *Grahani Roga*. Following a thorough review, signs and symptoms relevant to *Grahani* pathology were identified. These indicators were then collated to identify commonalities across all texts consulted upon which 35 features consistently described in similar or slightly varied language were identified. Those features which couldn't be assessed by the questionnaire were excluded. Finally, 28 features relevant to the systemic presentation of *Grahani Roga* were identified, incorporated into a questionnaire, and used for further study.

Identifying Standard *Ayurvedic* Terms (SAT) and Corresponding English Equivalents for Selected Items

The 28 chosen items were matched with their respective Standard Ayurvedic Terminologies (SAT) and morbidity categories using the National *Ayurveda* Morbidity Code and Standard Terminology Portal (NAMSTP) application, developed by the Ministry of Ayush, Government of India.

Content validity of the selected items

After initially selecting items that reflect the clinical presentation of *Grahani Roga*, these items were further evaluated by five clinical experts in Ayurveda. The experts were chosen based on their extensive experience in treating *Grahani Roga*.

Each expert received a detailed item sheet containing all 35 selected items and was asked to assess the relevance of each item to the disease activity status of *Grahani Roga* using a scale ranging from 1 to 10, where 1 indicated minimum relevance and 10 indicated maximum relevance. This assessment was conducted by providing 35selected item list to the experts.

Responses from all five experts were collected within the specified timeframe. Based on the aggregated responses, items scoring on an average of four or higher were chosen to frame the final index tool.

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Overall, 28 items were unanimously recognized by all experts as highly relevant to systemic clinical features.

Refining questions for practical use of RGAS and establishing scoring criteria

Once approved through consensus by a panel of experts, the selected items were transformed into questions to ensure clarity for individuals who might participate in the study. The questionnaire included demographic data of the participants, followed by a list of 28 items in the form of both open-ended and closed-ended questions. A scaling system of 0 to 3 was applied where ever necessary.

Selected Clinical Features for Assessing *Lakshanas* in *Grahani Roga* based on NAMASTP portal (https://namstp.org.)

SN	*Grahani Lakshana*	English Terminologies
1.	चिरात पाक / *Annam Pachyate Dukham*	Delayed digestion
2.	अरोचक	Tastelessness
3.	उद्गारः	Belches/reflux
4.	सदन/*Dourbalya*	Fatigue
5.	मन सदन	Mental fatigue/stressed
6.	आलसय	Lazy
7.	जिर्ने जिर्यते च अध्मना	Bloating after digestion
8.	पुनापुना सुजेत् वर्चस्	Repeated defaecation
9.	पिनास	Cold
10.	कासा	Cough
11.	आस्य उपदेह मधुर्या	Sweetness in mouth mouth/stickiness
12.	छर्दि	Vomiting
13.	कर्णस्वना	Tinnitus
14.	गुद्धिसर्वरसः	Desire for food including all kind of taste
15.	रोगनिपिडिता	Suffering from any disease
16.	तिमिरा	Blurring of vision
17.	अजीर्ण	Indigestion of food
18.	तृष्णा	Thirst
19.	पार्श्व,उरु,ग्रीव रुजहा	Flank, thigh, neck pain
20.	कार्श्य	Emaciated

Validity testing of the formatted prototype questionnaire

Throughout the development of the RGAS, the prototype questionnaire was rigorously evaluated to validate its content and structure. The main focus was to ensure that the items could predict *Agni Bala* and *Mala Pravruth*i in *Grahani Roga* patients according to predefined criteria. Construct validity was confirmed by ensuring each item matched the concept, ensuring accurate assessment of the targeted information.

Pilot testing of the prototype questionnaire

The initial evaluation of the prototype RGAS included conducting pilot testing on 10 patients diagnosed with *Grahani Roga*, meeting predefined inclusion and exclusion criteria for clinical validation of the instrument. These participants were recruited from the outpatient clinic of Sri Sri Ayurveda Hospital during regular outpatient days.

During the pilot testing phase, RGAS was converted to Google forms and was administered to the participants to gather their responses and identify any potential issues with interpretation under personal supervision. During the evaluation, one item and its question were found to be ambiguous. To fix these, modifications were made to clarify and expand upon this question aiming to enhance clarity, and further two additional

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questions were added to the final version of the questionnaire for the same.
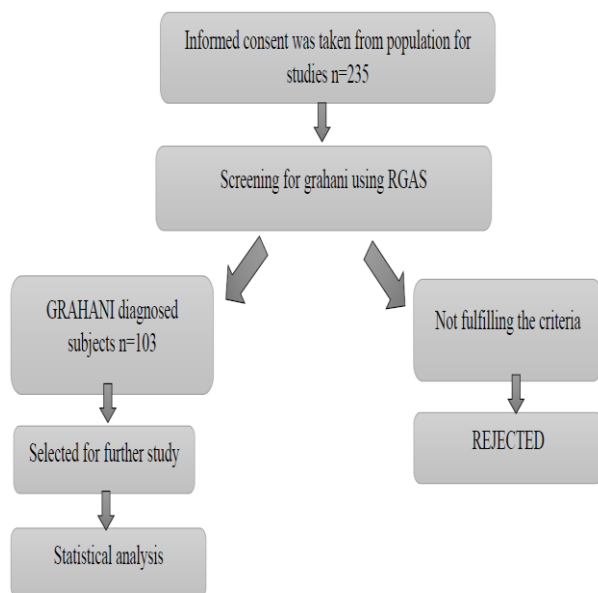
After implementing these adjustments, the revised questionnaire, validated following the pilot testing phase, formed the foundation for subsequent validation studies of the instrument.

This ensured that the RGAS was rigorously evaluated and improved, resulting in its complete validation and use in clinical settings.

Inclusion Criteria:

1. Subjects who were willing to participate in the survey and willing to give consent will be selected for the study.

2. Subjects of age group between 21 to 60 years were included irrespective of their gender.

Methodology Flowchart

This is the final questionnaire prepared and used for the study. You can access it through the link below.

https://jaims.in/jaims/article/view/3597/5341

RESULTS

235 participants participated in the survey, among whom 103 individuals were diagnosed with *Grahani Roga* according to specific criteria, while those who did not meet these criteria were excluded from further

study. The reliability of the questionnaire was evaluated using Cronbach's Alpha, which resulted in a value of 0.674 for 20 items.

DISCUSSION

The selection process reduced the items from 35 to 28, as many *Lakshanas* (symptoms) were repetitive, and some could not be assessed by a single question. The identification of *Grahani Roga* in 103 out of 235 participants indicates a significant prevalence within the surveyed group. The results provide initial demographic data of the patients and their lifestyle, incorporating both closed-ended questions for structured responses and open-ended questions for individual insights. Through content validation, 28 items were unanimously recognized by experts as highly relevant to systemic clinical features. Then, Construct validity was confirmed by ensuring each item accurately represented the concept, enabling precise assessment of the targeted information. Pilot testing allowed for modifications that clarified and expanded the questions, enhancing their clarity. Finally, the preparation of the questionnaire emphasized the necessity of precise diagnostic criteria, ensuring that the scale is both reliable and consistent, making it a valuable resource for clinicians and researchers.

CONCLUSION

Currently, investigations pertaining to *Grahani Roga* are limited to assessing *Vyadhi* through specific *Lakshanas* such as *Chirat Paka, Muhurbadham-Muhurdravam, Punaha Punaha Srujet*. This disease has many other causes, signs and symptoms, including food, stress, and sleep, which are crucial to include in diagnostic assessments. Therefore, the development and validation of the Refined *Grahani* Assessment Scale represent its significance in evaluating *Grahani Roga*. The validation process of Refined *Grahani* Assessment Scale ensures the scale's validity and reliability making it a valuable tool. Furthermore, its application in research can enhance understanding of *Grahani Roga*, leading to further progress in the field. Further studies with a larger sample size can be conducted for a more comprehensive analysis.

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