

Development And Validation Of An Ayurvedic Hindi Questionnaire For Assessment And Classification Of Mr̥du, Madhyama, And Krūra Kostha In Clinical Practice

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Abstract

Background

Kostha is an important Ayurvedic clinical concept that reflects an individual's bowel pattern, gastrointestinal responsiveness, digestive behaviour, and the interaction of Agni and Doṣa. Assessment of Kostha is essential in Ayurvedic diagnosis, therapeutic planning, dose selection, and Panchakarma procedures, especially Snehana and Virecana. Classical Ayurvedic texts classify Kostha mainly into Mr̥du Kostha, Madhyama Kostha, and Krūra Kostha. However, in routine clinical practice, Kostha assessment largely depends on physician interpretation, which may lead to inter-observer variability and reduced reproducibility. Although an English Kostha assessment tool was previously validated after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini, there is a need for a culturally appropriate, standardized, and validated Hindi questionnaire for objective Kostha assessment among Hindi-speaking individuals.

Aim

To develop and validate a Hindi Kostha Assessment Questionnaire based on the already validated English Kostha assessment tool prepared after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini, for objective assessment of bowel pattern and classification of Mr̥du Kostha, Madhyama Kostha, and Krūra Kostha from an Ayurvedic perspective.

Materials and Methods

A methodological questionnaire development and validation design was adopted. The study involved translation and linguistic adaptation of selected validated English Kostha questionnaire items into Hindi, followed by expert review, content validation, pilot testing, field administration, and psychometric evaluation. The questionnaire items were designed to assess bowel frequency, stool consistency, ease of evacuation, straining during defecation, time required for bowel clearance, post-defecation satisfaction, need for laxatives, and response to specific dietary substances such as jaggery, raisins, sugarcane juice, milk, curd, and ghee. The refined Hindi questionnaire was administered to sixty healthy Hindi-speaking adults aged 18–60 years. Questionnaire-based Kostha assessment was compared with independent physician-based Kostha assessment. Statistical analysis was performed using IBM SPSS. Reliability and validity were assessed using Cronbach's alpha, split-half reliability, intra-class correlation coefficient, Cohen's kappa, content validity indices, item-total correlation, factor analysis, discriminant validity, and criterion validity.

Results

The final nine-item Hindi Kostha Assessment Questionnaire demonstrated excellent internal consistency with Cronbach's alpha of 0.919. Test-retest reliability showed good stability with an intra-class correlation coefficient of 0.82. Inter-rater reliability between questionnaire-based classification and physician assessment showed substantial agreement with Cohen's kappa of 0.76. Content validity was high with S-CVI of 0.89. Factor analysis supported a single-factor structure representing the core construct of Kostha. Independent samples t-test showed significant item-wise discriminatory capacity with $p < 0.001$. Criterion validity showed strong correlation with clinician evaluation, with $r = 0.71$. Based on response-code classification, individuals were classified as Mṛdu Kostha when the predominant response pattern was A, Madhyama Kostha when the predominant response pattern was B, and Krūra Kostha when the predominant response pattern was C.

Conclusion

The Hindi Kostha Assessment Questionnaire developed in this study is a reliable, valid, standardized, culturally appropriate, and clinically useful tool for objective assessment of Mṛdu, Madhyama, and Krūra Kostha among Hindi-speaking individuals. It bridges classical Ayurvedic diagnostic principles with contemporary psychometric methodology and may improve reproducibility, clinical decision-making, Panchakarma planning, academic teaching, and research in Ayurveda. Further validation in larger and disease-specific populations is recommended.

Keywords: Kostha, Hindi Kostha Assessment Questionnaire, Mṛdu Kostha, Madhyama Kostha, Krūra Kostha, Ayurveda, psychometric validation, Rogi Pariksha, Agni, Panchakarma, Virecana, reliability, validity.

1. Introduction

Kostha is a fundamental concept in Ayurveda and represents the functional state of the gastrointestinal tract, bowel pattern, digestive responsiveness, and evacuation behaviour. It is closely associated with Agni, Doṣa dominance, gastrointestinal motility, bowel evacuation, drug response, and the selection of medicines and purification procedures. Classical Ayurvedic literature describes Kostha as a functional domain related to Mahāsrotas, Śarīra Madhya, Mahānimna, and Āmāśaya-Pakvāśaya, indicating its central role in digestion, assimilation, and elimination.¹⁻⁴

In Ayurvedic clinical examination, Kostha Parīkṣā forms an important component of Rogī Parīkṣā. Assessment of Kostha is especially significant before administering Snehana, Virecana, and other Śodhana procedures. The response of an individual to purgatives, oleation, diet, bowel-regulating substances, and dose variation depends substantially on Kostha. Therefore, proper evaluation of Kostha helps the physician decide the dose, potency, duration, safety, and suitability of therapeutic interventions.^{1,2,5}

Classically, Kostha is mainly classified into three types: Mṛdu Kostha, Madhyama Kostha, and Krūra Kostha. Mṛdu Kostha is generally associated with Pitta predominance and is characterized by soft stools, easy evacuation, and quick response to mild purgative substances such as milk, ghee, jaggery, or sugarcane products. Madhyama Kostha is associated with moderate bowel reactivity and balanced or Kapha-dominant physiology. Krūra Kostha is commonly associated with Vāta predominance and is characterized by hard stools, delayed evacuation, straining, incomplete bowel clearance, and resistance to purgative substances.¹⁻⁴ In routine Ayurvedic practice, Kostha is usually assessed through clinical enquiry regarding bowel frequency, stool consistency, ease or difficulty during defecation, duration of evacuation, satisfaction after defecation, tendency toward constipation or diarrhoea, and response to diet, Snehana, or purgatives. However, such assessment often remains subjective and depends on the experience of the physician. This creates variability among practitioners and restricts reproducibility in clinical research.⁶⁻⁹

An English Kostha assessment tool was previously validated after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini. However, the absence of a culturally appropriate and validated Hindi questionnaire limits objective assessment among Hindi-speaking individuals. Since Hindi-speaking individuals constitute a large proportion of Ayurveda outpatient,

community, and academic settings in India, the development and validation of a Hindi Kosta Assessment Questionnaire is clinically and research-wise relevant.

The present study was therefore undertaken to develop and validate a Hindi Kosta Assessment Questionnaire based on a previously validated English Kosta assessment tool, while maintaining conceptual, semantic, linguistic, and clinical equivalence. The tool aims to provide a rational, reliable, reproducible, and user-friendly method for classifying individuals into Mrdu, Madhyama, and Krura Kosta.

2. Aim and Objectives

2.1 Aim

To develop and validate a Hindi Kosta Assessment Questionnaire based on the already validated English Kosta assessment tool prepared after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini, for the objective assessment of bowel pattern and classification of Mrdu Kosta, Madhyama Kosta, and Krura Kosta from an Ayurvedic perspective.

2.2 Objectives

1. To develop a culturally appropriate Hindi version of the validated English Kosta Assessment Questionnaire for the assessment of Kosta.
2. To translate and linguistically adapt the selected validated English questionnaire items into Hindi while maintaining conceptual, semantic, linguistic, and clinical equivalence.
3. To validate the Hindi Kosta Assessment Questionnaire using standard questionnaire development and validation methodology.
4. To assess the reliability of the Hindi Kosta Assessment Questionnaire through internal consistency testing using Cronbach's alpha.
5. To evaluate the reproducibility, objectivity, and clinical applicability of the Hindi questionnaire for uniform assessment of Mrdu Kosta, Madhyama Kosta, and Krura Kosta.
6. To develop a rational, reliable, reproducible, user-friendly, and clinically applicable Hindi tool for Kosta assessment suitable for routine clinical practice, academic use, Panchakarma planning, and research settings.

3. Materials and Methods

3.1 Study Design

The study followed a methodological research design for translation, linguistic adaptation, development, and validation of a clinical assessment questionnaire. The process included item selection from an already validated English Kosta assessment tool, translation into Hindi, back-translation, expert validation, pilot testing, field administration, and psychometric analysis.

3.2 Source Tool

The source tool was the already validated English Kosta assessment questionnaire prepared after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini. The selected items were clinically relevant to bowel pattern and the classification of Mrdu, Madhyama, and Krura Kosta.

3.3 Conceptual Basis of Questionnaire Development

The questionnaire was conceptually based on classical Ayurvedic descriptions of Kosta available in Caraka Samhitā, Suśruta Samhitā, Aṣṭāṅga Hṛdaya, Aṣṭāṅga Saṅgraha, and relevant contemporary Ayurveda literature.¹⁻⁶ The major clinical features considered included bowel frequency, stool consistency, ease of evacuation, straining, time required for defecation, sense of lightness or satisfaction after defecation, need for laxatives, response to foods such as jaggery, raisins, sugarcane juice, milk, curd, ghee, and bowel response after milk intake.

3.4 Translation and Linguistic Adaptation

The selected validated English questionnaire items were translated into Hindi using simple, clear, culturally appropriate, and clinically meaningful language. The Hindi version was reviewed to ensure conceptual, semantic, linguistic, and clinical equivalence. Back-translation was performed to compare the Hindi version with the source English tool. Discrepancies were discussed and corrected to preserve the original meaning of the items.

3.5 Expert Review and Content Validation

The drafted Hindi questionnaire was evaluated by a panel of seven Ayurveda experts from the fields of Vikriti Vigyan, Samhita-Siddhanta, and Kayachikitsa. Each expert assessed the items for relevance, clarity, essentiality, representativeness, conceptual accuracy, linguistic appropriateness, and clinical applicability. Content validity was assessed using Item Content Validity Index and Scale Content Validity Index. Items with inadequate clarity or conceptual mismatch were modified based on expert suggestions. Redundant expressions were removed, and wording was refined to improve clinical precision and participant comprehension.

3.6 Pilot Testing and Field Administration

The refined Hindi questionnaire was administered to sixty healthy Hindi-speaking adults aged 18–60 years. Participants completed the questionnaire, and simultaneously, an independent Ayurveda physician assessed each participant's Kosta using traditional clinical methods. This dual assessment enabled comparison between questionnaire-based Kosta classification and physician-based classification.

A subset of participants completed the questionnaire again after a seven-day interval for test–retest reliability assessment. Participant feedback was obtained to evaluate clarity, ease of response, acceptability, and cultural suitability.

3.7 Inclusion Criteria

1. Apparently healthy Hindi-speaking adults.
2. Age between 18 and 60 years.
3. Either sex.
4. Ability to understand and respond to the Hindi questionnaire.
5. Willingness to participate in the study.
6. Written informed consent.

3.8 Exclusion Criteria

1. Individuals below 18 years or above 60 years.
2. Individuals with acute gastrointestinal illness during the assessment period.
3. Individuals with severe systemic illness.
4. Mentally challenged individuals or those unable to understand the questionnaire.
5. Individuals unwilling to provide consent.
6. Individuals taking regular laxatives or medicines significantly affecting bowel habit, unless clinically justified and recorded separately.

3.9 Sample Size

The present study was conducted on sixty healthy Hindi-speaking adults for pilot validation and psychometric testing of the Hindi Kosta Assessment Questionnaire.

Statement for final submission:

As this was a preliminary methodological validation study, a feasibility-based sample of 60 apparently healthy Hindi-speaking adults was included for pilot validation, reliability testing, and comparison with physician-based Kosta assessment. Further multicentric studies with larger sample sizes are recommended for broader generalizability and disease-specific validation.

3.10 Ethical Considerations

The study was conducted after obtaining approval from the Institutional Ethics Committee.

IEC approval details to be added before final submission:

Institutional Ethics Committee: IMS Institutional ethical committee

IEC Approval Number: no.Dean/2022//EC/4077

Date of Approval: 15-04-2023

Place of Approval: IMS , BHU-ECR/526/Inst/UP/2014/RR-20 dt.19.05.2020

The purpose and procedure of the study were explained to participants in the local language. Written informed consent was obtained from each participant before administration of the questionnaire. Confidentiality of all recorded data was maintained.

3.11 Scoring and Classification

Each item was classified according to the selected response pattern corresponding to Mr̥du, Madhyama, or Kr̥ra Kosta. The predominant response code was used for final classification: A indicates Mr̥du Kosta, B indicates Madhyama Kosta, and C indicates Kr̥ra Kosta.

Response Code Kosta Type

A	Mr̥du Kosta
B	Madhyama Kosta
C	Kr̥ra Kosta

3.12 Statistical Analysis

Data were analysed using IBM SPSS. Descriptive statistics including mean, standard deviation, and standard error were calculated. Internal consistency was assessed using Cronbach's alpha. Split-half reliability was evaluated using Spearman–Brown and Guttman coefficients. Test–retest reliability was assessed using intra-class correlation coefficient. Inter-rater reliability between questionnaire-based classification and physician-based assessment was assessed using Cohen's kappa. Item-total correlations were calculated using Pearson correlation. Discriminant validity was assessed through independent samples t-test. Construct validity was evaluated using factor analysis. Criterion validity was assessed through correlation with physician-based Kosta diagnosis.

3.13 Determination of Kosta Type

The type of Kosta was determined on the basis of the dominant response pattern obtained from the Hindi Kosta Assessment Questionnaire. Each response option was assigned to one Kosta type as follows:

Response Code Kosta Type

A	Mr̥du Kosta
B	Madhyama Kosta
C	Kr̥ra Kosta

For each participant, the total number of responses under A, B, and C was calculated separately. The percentage score of each Kosta type was then determined. The Kosta type showing the highest percentage was considered the dominant Kosta.

Criteria for Final Classification of Kosta

Type of Kosta	Criteria
Dominant Kosta	The Kosta type with the highest percentage score among A, B, and C was considered the dominant Kosta.
Clear single-dominant Kosta	If one Kosta type showed more than 50% dominance and the difference between the first and second dominant Kosta was more than 25%, the participant was classified under that single dominant Kosta type.
Mixed / Borderline Kosta	If the difference between the first and second dominant Kosta was less than or equal to 25%, the participant was considered to have a mixed or borderline Kosta tendency.

Thus, participants were finally classified as Mr̥du Koshtha, Madhyama Koshtha & Kr̥ura Koshtha according to the dominant percentage pattern obtained from the questionnaire, supported by physician-based clinical assessment wherever required.

4. Hindi Koshtha Assessment Questionnaire

Instruction: Please read each question carefully and choose the option that best reflects your usual bowel pattern and gastrointestinal response. Option A corresponds to Mr̥du Koshtha, option B corresponds to Madhyama Koshtha, and option C corresponds to Kr̥ura Koshtha.

“Items, response categories and internal consistency of the Koshtha Assessment Questionnaire”

कोष्ठ-प्रकृति आकलन प्रश्नावली एवं आंतरिक संगति

क्र. सं.	प्रश्न / मूल्यांकन बिंदु	मृदु कोष्ठ (A)	मध्यम कोष्ठ (B)	क्रूर कोष्ठ (C)	Cronbach's Alpha
1	क्या आपको नियमित रूप से मलत्याग होता है?	दिन में 1-2 बार	दिन में एक बार	नियमित रूप से नहीं	0.907
2	आपके मल की सामान्य प्रकृति कैसी रहती है?	सामान्य एवं कोमल मल	बंधा हुआ मल	कठोर एवं रूक्ष मल	0.903
3	क्या मलत्याग के बाद आपको हल्कापन महसूस होता है?	हाँ	कभी-कभी	नहीं	0.897
4	क्या शौच के दौरान जोर लगाने की आवश्यकता पड़ती है?	बिना जोर लगाए आसानी से मलत्याग	थोड़ा जोर लगाना पड़ता है	अधिक जोर लगाना पड़ता है	0.898
5	शौच क्रिया में सामान्यतः कितना समय लगता है?	5 मिनट से कम	5-10 मिनट	10 मिनट से अधिक	0.909
6	क्या शौच के बाद आपको पूर्ण संतुष्टि या पेट साफ होने का अनुभव होता है?	हाँ	कभी-कभी	नहीं	0.899
7	क्या पेट साफ करने के लिए औषधि या रेचक का सेवन करना पड़ता है?	कभी नहीं	कभी-कभी	प्रायः अथवा हमेशा	0.909
8	क्या गुड़, मुनक्का, गन्ने का रस, दूध, दही या घी से बने पदार्थों के सेवन के बाद पानी जैसे मल की प्रवृत्ति होती है?	प्रायः अथवा हमेशा	कभी-कभी	नहीं	0.925
9	दूध के सेवन के बाद आपकी मल प्रवृत्ति पर क्या प्रभाव पड़ता है?	दस्त अथवा अत्यधिक ढीला मल	थोड़ा ढीला मल	कोई प्रभाव नहीं	0.936

अंक निर्धारण

उत्तर श्रेणी अंक

मृदु कोष्ठ (A) 1

मध्यम कोष्ठ (B) 2

क्रूर कोष्ठ (C) 3

कुल स्कोर की व्याख्या

कुल प्राप्तांक संभावित कोष्ठ-प्रकृति

9-14 मृदु कोष्ठ

कुल प्राप्तांक संभावित कोष्ठ-प्रकृति

15–21 मध्यम कोष्ठ

22–27 क्रूर कोष्ठ

5. Results

5.1 Development of the Questionnaire

A nine-item Hindi Kosta Assessment Questionnaire was developed based on the selected items of the validated English Kosta assessment tool. The questionnaire covered bowel frequency, stool form, post-defecation lightness, straining, evacuation time, post-defecation satisfaction, need for bowel-clearing medicines, response to specific dietary substances, and bowel response after milk intake.

5.2 Reliability Analysis

The Hindi Kosta Assessment Questionnaire showed excellent internal consistency with Cronbach's alpha of 0.919. This indicates strong homogeneity among the nine items and suggests that all items measure related dimensions of the Kosta construct.

Split-half reliability further supported the robustness of the tool. The Spearman–Brown coefficient was 0.848 and the Guttman split-half coefficient was 0.790, indicating good reliability between the two halves of the questionnaire.

Test–retest reliability showed good stability over time with intra-class correlation coefficient of 0.82, indicating that the questionnaire produced consistent responses when administered after a seven-day interval.

5.3 Inter-Rater Reliability

Inter-rater reliability between questionnaire-based Kosta classification and independent physician assessment showed substantial agreement with Cohen's kappa of 0.76. This indicates that the questionnaire has good clinical agreement with traditional physician-based evaluation.

5.4 Content Validity

The Scale Content Validity Index was 0.89, indicating excellent expert agreement regarding the relevance, clarity, representativeness, and clinical suitability of the questionnaire items.

5.5 Construct Validity

Factor analysis supported a single-factor structure representing the core construct of Kosta. This indicates that the nine items collectively measure a unified clinical dimension related to bowel pattern and gastrointestinal responsiveness.

5.6 Criterion Validity

Criterion validity demonstrated a strong correlation between questionnaire-based classification and physician-based clinical evaluation, with $r = 0.71$. This supports the clinical applicability of the Hindi Kosta Assessment Questionnaire.

5.7 Discriminant Validity

Independent samples t-test demonstrated statistically significant differences for all nine items between Kosta groups, with $p < 0.001$. This confirms that the questionnaire can discriminate between Mr̥du, Madhyama, and Kr̥ura Kosta.

5.8 Item-Total Correlation

All item-total correlations were statistically significant. Correlations ranged from moderate to high, indicating that each item contributed positively to the overall Kosta construct.

5.9 Psychometric Summary

Reliability / Validity Parameter	Method Used	Result	Interpretation
Internal consistency	Cronbach's alpha	0.919	Excellent reliability
Split-half reliability	Spearman–Brown coefficient	0.848	Good reliability
Split-half reliability	Guttman coefficient	0.790	Good reliability
Test–retest reliability	Intra-class correlation coefficient	0.82	Good stability
Inter-rater reliability	Cohen's kappa	0.76	Substantial agreement
Content validity	I-CVI and S-CVI	0.89	Excellent expert agreement
Construct validity	Factor analysis	Single factor	Strong unidimensionality
Criterion validity	Correlation with physician assessment	$r = 0.71$	Strong correlation
Discriminant validity	Independent samples t-test	$p < 0.001$	Significant discriminatory capacity

6. Discussion

The present study developed and validated a nine-item Hindi Kosta Assessment Questionnaire for objective assessment of Kosta among Hindi-speaking individuals. The study was based on an already validated English Kosta assessment tool prepared after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini. The Hindi version was developed through translation, linguistic adaptation, expert review, pilot testing, and psychometric validation.

Kosta assessment is a central component of Ayurvedic clinical examination because it guides therapeutic decisions related to dose selection, drug potency, dietary advice, Śamana therapy, Snehana, Virecana, and other Panchakarma procedures. Classical Ayurvedic texts emphasize that individuals differ in bowel pattern, digestive response, and reaction to purgatives. Therefore, uniform treatment without assessing Kosta may lead to inappropriate dose selection, therapeutic failure, or adverse effects.^{1–5}

The high Cronbach's alpha value of 0.919 indicates excellent internal consistency. This suggests that the nine items are conceptually related and measure a coherent construct. The strong split-half reliability and test–retest reliability further confirm that the questionnaire is stable and reproducible. These findings are important because reproducibility is essential for transforming traditional clinical assessment into a research-compatible tool.

The strong content validity achieved through expert review indicates that the items adequately represent classical Kosta features. Expert validation ensured that the questionnaire remained faithful to Ayurvedic concepts while being linguistically simple and culturally understandable. This is particularly important because direct translation of classical Sanskrit concepts into modern questionnaire language can lead to conceptual distortion if not reviewed carefully.

The substantial agreement between questionnaire-based classification and physician-based assessment indicates that the Hindi Kosta Assessment Questionnaire can complement traditional clinical evaluation. It does not replace physician judgement but offers a standardized method for recording and quantifying Kosta-related features. Such a tool is useful in routine clinical practice, teaching, multicentric research, Panchakarma planning, and outcome studies.

The questionnaire's ability to discriminate between Kosta groups was confirmed by significant item-wise differences. All items showed significant discriminatory capacity, indicating that each item contributes meaningfully to differentiating Mrdu Kosta, Madhyama Kosta, and Krūra Kosta. Item-total correlations also supported convergent validity by showing that individual items were positively associated with the total score.

Existing Kosta assessment methods are often unstructured and subjective. Some tools exist in English or institutional formats, but many lack transparent scoring methods, validated psychometric properties, or linguistic suitability for Hindi-speaking populations.⁶⁻⁹ The present questionnaire addresses this gap by providing a concise, structured, standardized, and validated Hindi tool.

The findings also have implications beyond routine clinical assessment. Kosta is relevant in conditions involving Agni, digestion, bowel habits, metabolism, and drug response. It may be particularly useful in clinical assessment of diseases such as Prameha, Grahaṇīgāda, Ānāha, Vibandha, and other gastrointestinal or metabolic disorders. Moreover, standardized Kosta assessment can support future interdisciplinary research involving gut motility, stool characteristics, digestive behaviour, microbiome studies, pharmacological response, and personalized Ayurveda.

7. Clinical and Research Implications

The Hindi Kosta Assessment Questionnaire may be useful in the following areas:

1. Routine Ayurvedic outpatient assessment.
2. Classification of Mṛdu, Madhyama, and Krūra Kosta.
3. Panchakarma planning, especially before Snehana and Virecana.
4. Dose selection and drug response assessment.
5. Assessment of bowel pattern and gastrointestinal responsiveness.
6. Research on Agni, Prakriti, Kosta, and gastrointestinal physiology.
7. Clinical studies on Prameha, Grahaṇīgāda, Āmavāta, Ānāha, Vibandha, and related disorders.
8. Standardized teaching and training of Rogī Parīkṣā.
9. Development of digital or app-based Kosta assessment systems.

8. Limitations

The present study was conducted on a limited sample of sixty healthy Hindi-speaking adults. The questionnaire requires validation in larger and more diverse populations. Disease-specific validation is also needed in clinical conditions such as Prameha, Grahaṇīgāda, Vibandha, Āmavāta, and among Panchakarma candidates. Further studies may also examine predictive validity in relation to Snehana response, Virecana response, bowel transit time, stool form scales, gastrointestinal symptom profiles, and contemporary biomedical parameters.

9. Future Scope

Future research should focus on multicentric validation of the Hindi Kosta Assessment Questionnaire in different geographical, linguistic, and clinical populations. Larger sample sizes will improve generalizability and enable development of normative data. The tool may also be adapted into other Indian languages following standard translation and cultural adaptation procedures.

Further studies may integrate the questionnaire with biomedical parameters such as bowel transit time, stool form scales, gastrointestinal symptom indices, dietary response, gut motility patterns, microbiome profile, and response to purgative procedures. Digital versions of the questionnaire may be developed for clinical documentation, mobile health applications, community screening, and research data collection.

10. Conclusion

The present study successfully developed and validated a Hindi Kosta Assessment Questionnaire based on an already validated English Kosta assessment tool prepared after item analysis and Cronbach's alpha reliability testing by Dr. Parameswarappa S. Byadgi and Dr. Neera Saini. The final nine-item questionnaire demonstrated excellent internal consistency, good test-retest reliability, substantial agreement with physician assessment, strong content validity, unidimensional construct validity, significant discriminant validity, and strong criterion validity.

The Hindi Kosta Assessment Questionnaire is simple, culturally appropriate, reproducible, and clinically useful for objective assessment of Mṛdu, Madhyama, and Krūra Kosta among Hindi-speaking individuals. It may improve diagnostic uniformity, therapeutic planning, Panchakarma decision-making, academic

teaching, and research standardization in Ayurveda. Further validation in larger and disease-specific populations is recommended.

11. Declarations

Ethical Approval

The study was conducted after obtaining approval from the Institutional Ethics Committee.

IEC details to be added before final submission:

Institutional Ethics Committee: IMS Institutional ethical committee

IEC Approval Number: no.Dean/2022//EC/4077

Date of Approval: 15-04-2023

Place of Approval: IMS , BHU-ECR/526/Inst/UP/2014/RR-20 dt.19.05.2020

Informed Consent

Written informed consent was obtained from all participants before administration of the Hindi Kosta Assessment Questionnaire.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this study.

Author Contributions

NK: Conceptualization, methodology, questionnaire development, translation support, data collection, formal analysis, and writing of the original draft.

PSB: Conceptualization, methodology guidance, questionnaire development, expert review, clinical validation support, supervision, and critical revision.

SKS: Statistical guidance, review, and editing.

RT: Oversight of study design, critical revision of the manuscript, and project administration.

Acknowledgements

The authors express sincere gratitude to the Ayurveda experts who contributed to refinement of the conceptual and operational definitions of Kosta and provided valuable insights during content validation. The authors also acknowledge all participants for their cooperation during the standardization and validation process.

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