

Research Paper

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

Anjali Kumari¹, Harikesh Kumar Yadav^{2*}

ABSTRACT

This study aimed to develop and validate a rumination assessment scale specifically designed for individuals diagnosed with Type-2 diabetes. Rumination is defined as repetitive and negative thinking that is closely associated with psychological distress and poor disease self-management in chronic conditions. However, existing rumination scales do not capture the unique content and themes relevant to the experience of living with Type-2 diabetes. Using a mixed-method design, the study involved item generation based on literature review and qualitative interviews, followed by expert validation and a psychometric evaluation on a sample of 200 Type-2 diabetes patients. Exploratory factor analysis revealed a five-factor structure comprising Health-focused Rumination, Self-blame and Regret, Future-oriented Worry, Social Comparison and Isolation, and Emotional Distress, capturing the multidimensional nature of rumination in Type-2 diabetes. The scale showed good internal consistency (Cronbach's $\alpha > 0.85$), good test-retest reliability ($r = 0.924$, $p < .001$), and significant correlations with existing measures of rumination, supporting convergent validity ($r = .725$, $p < .001$). The findings suggest that the Rumination Assessment Scale for Type-2 Diabetes (RAS-T2D) is a reliable and valid tool for assessing cognitive-emotional patterns relevant to diabetes-related psychological distress. Its multidimensional framework allows for comprehensive assessment, making it useful for clinical, research, and community-based health settings.

Keywords: Rumination, Type-2 Diabetes, Scale Development, Psychological Distress, Factor Analysis

Type-2 diabetes mellitus (T2DM) is a chronic lifestyle-related condition that has become a growing public health concern in India and globally. Apart from the physiological burden of managing blood glucose levels, dietary restrictions, and complications, individuals living with T2DM often experience heightened psychological stress. Cognitive patterns like rumination, characterized by persistent and repetitive negative thoughts about health, behavior, or the future, are especially prevalent among individuals with T2DM. Rumination has been linked to poor self-care, depression, anxiety, and lower quality of life in individuals with T2DM. Yet, most existing rumination measures are

¹Research Scholar, Department of Psychology, J.P University, Chapra, BR

²Assistant Professor, Department of Psychology, B.P.S College, Bhore, Gopalganj, BR

*Corresponding Author

Received: May 17, 2025; Revision Received: June 01, 2025; Accepted: June 04, 2025

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

general in nature and do not consider disease-specific content, such as self-blame for dietary lapses, worry about complications, or comparisons with healthier peers.

For individuals with chronic illnesses like Type-2 diabetes, rumination can significantly interfere with emotional regulation, disease management, and overall well-being. This maladaptive process disrupts problem-solving and amplifies negative affect, often resulting in greater emotional and physical distress. Among Type-2 diabetes patients, rumination often centers around fears of health deterioration, self-blame over lifestyle choices, worry about future complications, and comparison with healthier individuals. These rumination patterns are embedded in both cognitive and cultural contexts, especially in collectivist societies like India where health is closely linked with social roles and familial responsibilities. For instance, concerns, such as health anxiety within joint families, guilt over unmet social duties, and status-based comparisons are culturally salient forms of rumination. Western conceptualizations often emphasize individual distress, whereas Eastern and collectivist cultures, such as those found in India, frequently experience distress in relational and somatic forms. For example, rumination in Indian contexts often includes themes of social failure, family dishonor, karma, and health-related fear, which are less emphasized in Western measures.

Initially viewed as a singular construct, rumination is now recognized as a multifaceted phenomenon, with contemporary research illuminating its diverse dimensions. Treynor, Gonzalez, and Nolen-Hoeksema (2003) distinguished between brooding, a maladaptive form, and reflection, which may hold adaptive potential. Similarly, Ehring and Watkins (2008) developed the Perseverative Thinking Questionnaire (PTQ), a transdiagnostic measure that captures the core characteristics of rumination and worry independent of specific disorders. Further dimensions include health-focused rumination, prevalent in chronic illness (Kraaij & Garnefski, 2012); self-blame and regret, common in depression and trauma-related experiences; future-oriented worry, which overlaps with but is distinct from generalized anxiety, social comparison, and isolation, particularly relevant in collectivistic cultures; and emotional distress rumination, marked by a persistent focus on internal suffering. These insights underscore the need for multidimensional assessment tools to capture and differentiate these components precisely.

Existing rumination scales such as the Ruminative Responses Scale (Nolen-Hoeksema & Morrow, 1991) or the Ruminative Thought Style Questionnaire (Brinker & Dozois, 2009) were developed in Western contexts and may not adequately reflect culturally grounded expressions of distress among Indian Type-2 diabetes patients. Furthermore, these tools typically treat rumination as a unitary construct, neglecting critical dimensions such as health-focused rumination and future-oriented worry that are especially relevant in chronic disease populations. Hence, there is a critical need for a culturally sensitive, linguistically appropriate, and multidimensional assessment tool tailored for Hindi-speaking Type-2 diabetes patients. The current study addresses this need through the development and validation of the Rumination Assessment Scale for Type-2 Diabetes (RAS-T2D) in Hindi. This tool is intended to help researchers and clinicians identify maladaptive cognitive patterns that interfere with effective diabetes management and psychological well-being.

Objectives of the Study

The present study was undertaken with the following objectives.

- To develop a Hindi-language Rumination Assessment Scale that captures multiple dimensions of rumination relevant to Indian Type-2 diabetes patients.

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

- To evaluate the psychometric properties of the scale, including its factorial structure, internal consistency, and test-retest reliability.
- To assess the scale's construct validity by examining its correlations with established psychological measures of rumination.

METHODOLOGY

Research Design

This study adopted a mixed-method sequential design involving scale construction, pilot testing, and psychometric validation through quantitative analyses. The research was conducted in three distinct phases including item generation, scale development, and psychometric validation among Type-2 diabetes patients.

Qualitative Interviews

Semi-structured interviews were conducted with 20 Hindi-speaking adults diagnosed with Type-2 diabetes to explore culturally specific and illness-related manifestations of rumination. Their responses informed the thematic basis for item development.

Item Generation

Items were generated to capture ruminative thoughts commonly reported by Type-2 diabetes patients, including objective behaviors (e.g., frequently checking blood sugar levels or medical reports), subjective thought patterns (e.g., guilt over past dietary habits), and emotionally charged activities (e.g., avoidance due to health anxiety). Observable behaviors associated with rumination include repeatedly revisiting old messages or medical records, searching online for health-related symptoms, or physically isolating oneself during episodes of distress. Subjective behaviors refer to internal actions or cognitive patterns that may not be directly observable but are self-reported by individuals, such as intentionally consuming media that reinforces personal distress (e.g., “actively sought out content that I morally or ethically disagreed with”) or mentally replaying past conversations through a self-critical lens. Emotionally driven activities involve affect-laden behaviors linked to emotional states such as guilt, shame, or anxiety. Examples include avoiding social interaction due to perceived inadequacy, compulsively comparing one's life to that of others, or dwelling on hypothetical future catastrophes in a way that amplifies helplessness or fear. These insights led to the identification of five domains including Health-focused Rumination, Self-blame and Regret, Future-oriented Worry, Social Comparison and Isolation, and Emotional Distress.

Each of these domains reflects distinct, yet interrelated, patterns of rumination. The items developed under each category were informed not only by existing theoretical models, but also by qualitative reports and culturally grounded expressions of rumination observed in clinical and non-clinical populations.

Expert Review

A panel comprising of clinical psychologist, diabetes care professional, and psychometrician reviewed the items for clarity, cultural relevance, and appropriateness for Type-2 diabetes patients. Items were refined and finalized accordingly. Redundant, vague, or overlapping items were removed or revised.

Pilot Testing

The first draft of the RAS-T2D was pilot-tested with a sample of 30 participants to check for item clarity, readability, and cultural fit. Participants were asked to report or underline the

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

difficult words encountered, if any. Some words were reported to be difficult by some participants, though majority of the subjects found no difficulty in comprehending the language of the items. The wording and format were refined for certain items based on feedback from the participants.

Scale Validation

Sample

A purposive sample of 200 Hindi-speaking Type-2 diabetes patients (age 32–60 years) was recruited from diabetes outpatient clinics and community health centers in the Saran and Siwan districts of Bihar. Participants had a minimum education level of 12th grade and no reported psychiatric illness. Inclusion criteria included confirmed diagnosis of Type-2 diabetes, native Hindi speaker, and voluntary informed consent. Sociodemographic details of the sample are given in Table 1.

Table 1. Demographic and clinical characteristics of the sample (N=200)

Variable	Category	n	%
Gender	Male	95	47.5%
	Female	105	52.5%
Age Group	18–30 years	34	17.0%
	31–45 years	81	40.5%
	46–60 years	85	42.5%
Education Level	12th Grade	70	35.0%
	Undergraduate	90	45.0%
	Postgraduate	40	20.0%
Residence	Rural	105	52.5%
	Urban	95	47.5%
Duration of Diabetes	Less than 1 year	30	15.0%
	1–3 years	60	30.0%
	4–6 years	58	29.0%
	More than 6 years	52	26.0%
Medication Adherence	Regular	146	73.0%
	Irregular	54	27.0%
Family History of Diabetes	Yes	102	51.0%
	No	98	49.0%

Measures

- **Rumination Assessment Scale (RAS-T2D):** The scale comprises 40 items distributed across five dimensions of rumination. To control for response bias and enhance interpretive clarity, both positively and negatively worded items were included. Specifically, Items 2, 4, 11, 21, 32, and 34 were negatively worded and subsequently reverse-scored during data analysis to ensure that higher total scores consistently reflected greater levels of rumination. Against each item a seven-point rating scale is given. The participants were required to mark one of the seven points that they considered the most appropriate (in terms of its degree of rumination) for the given items.
- **Ruminative thought Style Questionnaire in Hindi (RTSQ-H):** Alongside the RAS, the RTSQ was administered for concurrent validity analysis. It measures positive, negative, and neutral thoughts, as well as past- and future-oriented thoughts of the subject. The RTSQ scoring system is a unidirectional scoring system, in which a higher score indicates higher rumination.

Procedure

Participants were approached through healthcare professionals and screened for eligibility. The RAS-T2D Scale and RTSQ were administered individually. Data collection took approximately 20–30 minutes per participant. Ethical protocols, including informed consent and anonymity, were strictly followed. Only complete responses were included in the final analysis.

RESULTS

Sampling Adequacy, Sphericity and Model Fit

The overall Measures Sampling Adequacy (MSA) value was 0.898, indicating excellent sampling adequacy. Most individual item MSAs exceeded 0.85, suggesting strong inter-item correlations and suitability for factor analysis. However, five items showed low MSAs (< 0.50), suggesting weak shared variance with other items. These items were reviewed and subsequently removed during scale refinement process.

Bartlett’s Test of Sphericity was significant ($\chi^2 = 6932.188, df = 780, p < .001$), indicating that the correlation matrix significantly differed from an identity matrix. This supports the assumption that the items are interrelated and suitable for factor analysis.

The chi-squared test of model fit produced a non-significant result ($\chi^2 = 484.793, df = 521, p = .870$), indicating that the proposed factor model fits the observed data well. This result supports the overall model adequacy and provides evidence for the construct validity of the RAS-T2D.

Factor Extraction and Loadings

An Exploratory Factor Analysis (EFA) using Principal Axis Factoring with Oblimin rotation was conducted on the 40-item RAS-T2D. The initial analysis suggested a seven-factor solution, but only five factors displayed interpretable and high-loading structures.

A loading threshold of ≥ 0.40 was used to identify significant item-factor relationships. Most items surpassed this criterion. Five items were excluded due to low factor loadings and high Eigenvalues.

Table 2. Eigenvalues and Percentages of Variance Explained by Five Factor Solution Obtained through Principal Axis Factoring (N=200)

Factors	Eigenvalues	% of Variance	Cumulative%
Factor 1	7.062	13.7%	13.7%
Factor 2	6.081	13.5%,	27.2%
Factor 3	5.466	13.4%,	40.6%
Factor 4	4.745	13.4%,	54%
Factor 5	4.538	12.6%.	66.6%

Factor Structure and Explained Variance

The Factor Characteristics Table summarizes the eigenvalues, explained variance, and cumulative variance for each extracted factor under both the unrotated and rotated (oblimin) solutions. In the unrotated solution, the first five factors had eigenvalues greater than one, meeting the Kaiser criterion for factor retention. These five factors accounted for approximately 66.7% of the total variance in the data, indicating a strong overall explanatory power of the scale.

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

In the rotated solution, Factor 1 explained 13.7% of variance, Factor 2 explained 13.5%, Factor 3 explained 13.4%, Factor 4 explained 13.4%, and Factor 5 explained 12.6%. The last two factors (Factors 6 and 7) explain the minimal variance (approximately 2% each). Together, the first five rotated factors explained 66.6% of the total variance, reflecting a well-balanced and multidimensional factor structure suitable for psychological scale construction.

Table 3. Factor Loadings, Item-Total Correlation Coefficients, Mean, and Standard Deviation Values for 35 items of RAS-T2D (N = 200)

Factors	Item No.	Factor Loading	R	M	SD
Factor 1	RAS1	0.896	0.43	3.88	1.36
	RAS3	0.892	0.41	3.69	1.09
	RAS7	0.878	0.46	4.11	1.34
	RAS19	0.877	0.48	3.90	1.26
	RAS18	0.874	0.48	4.25	1.27
	RAS24	0.865	0.49	3.52	1.10
	RAS29	0.861	0.45	3.79	1.22
Factor 2	RAS8	0.900	0.32	3.58	1.09
	RAS4	-0.880	0.35	3.34	1.14
	RAS14	0.879	0.31	3.62	1.03
	RAS13	0.874	0.37	3.96	1.07
	RAS17	0.863	0.30	3.77	1.15
	RAS27	0.855	0.35	3.85	1.12
	RAS31	0.853	0.33	4.01	1.23
Factor 3	RAS2	-0.891	0.43	4.02	1.09
	RAS9	0.886	0.38	4.07	1.15
	RAS25	0.884	0.41	4.19	1.09
	RAS15	0.881	0.34	4.40	1.07
	RAS20	0.861	0.41	4.20	1.09
	RAS11	-0.846	0.47	4.30	1.06
	RAS33	0.845	0.46	4.17	1.09
Factor 4	RAS34	-0.912	0.37	3.90	1.26
	RAS6	0.876	0.34	3.79	1.17
	RAS12	0.874	0.33	3.81	1.26
	RAS22	0.874	0.39	4.16	1.32
	RAS23	0.863	0.36	4.29	1.17
	RAS28	0.848	0.35	3.95	1.21
	RAS30	0.844	0.37	4.09	1.11
Factor 5	RAS10	0.881	0.39	4.23	1.23
	RAS16	0.860	0.39	4.19	1.12
	RAS35	0.852	0.34	3.98	1.16
	RAS32	-0.842	0.37	3.36	.98
	RAS26	0.837	0.29	3.25	1.04
	RAS5	0.827	0.28	4.34	1.00
	RAS21	-0.802	0.39	4.14	.96

The five extracted factors demonstrated strong loadings (0.802–0.912) and low uniqueness, indicating robust factorial validity and confirms item performance. Factor 1 (RAS1, RAS3, RAS7, RAS18, RAS19, RAS24, RAS29) and Factor 2 (RAS4 reverse-coded, RAS8, RAS13, RAS14, RAS17, RAS27, RAS31) showed excellent internal consistency. Factor 3

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

(RAS2 reverse-coded, RAS9, RAS11 reverse-coded, RAS15, RAS20, RAS25, RAS33) and Factor 4 (RAS6, RAS12, RAS22, RAS23, RAS28, RAS30, RAS34 reverse-coded) also reflected strong structural integrity. Factor 5 (RAS5, RAS10, RAS16, RAS21 reverse-coded, RAS26, RAS32 reverse-coded, RAS35) representing a complementary dimension of rumination.

Table 4. Factor Correlation Matrix

	F1	F2	F3	F4	F5
F1	1.00	0.104	0.180	0.069	0.115
F2		1.00	0.090	-0.005	0.071
F3			1.00	0.052	0.092
F4				1.00	0.099
F5					1.00

The factor correlation matrix presents the interrelationships between the five extracted factors. This is particularly relevant because oblimin rotation allows factors to correlate rather than assume independence. Factor correlations ranged from -0.005 to 0.180, indicating that the five retained factors were relatively distinct and moderately related. This supports the conceptualization of rumination as a multidimensional construct with partially overlapping components. The highest observed correlation was between factors 1 and 3 ($r = 0.180$), suggesting a mild association. Several correlations were near zero or even slightly negative (e.g., Factor 2 and Factor 4, $r = -0.005$), reinforcing the distinctiveness of each factor. This low inter-factor correlation pattern supports the construct validity of the scale, demonstrating that each factor captures a unique aspect of rumination rather than excessively overlapping with others.

Scree Plot

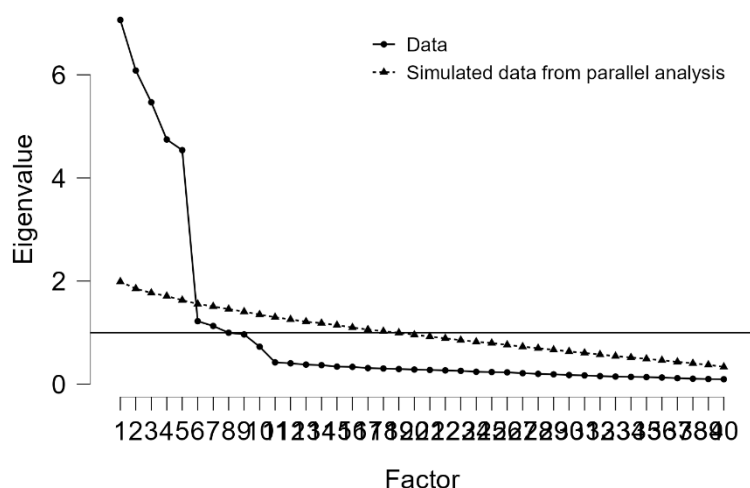


Figure 1. Scree plot showing the Eigen values for each extracted factor

The scree plot (Figure 1) supported a five-factor solution, with a clear inflection point after the fifth factor. Parallel analysis confirmed that the eigenvalues of the first five factors exceeded those from randomly generated datasets. Together, these results validate the five-factor structure of the RAS-T2D.

Reliability Analysis

The mean, standard deviation (*SD*), Variance, Skewness and Kurtosis of all the items are given in Table-5. The mean of the responses to the scale ranged from 3.25 to 4.34 and *SD* of the responses to the scale ranged from ± 0.96 to ± 1.36 .

Table 5. Descriptive Statistics for 35-item RAS-T2D (N = 200)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Variance</i>	<i>Skewness</i>	<i>Kurtosis</i>
RAS1	3.88	1.36	1.86	0.11	-0.59
RAS2 2	4.02	1.09	1.20	-0.20	0.05
RAS3	3.69	1.09	1.20	-0.04	-0.10
RAS4 4	3.34	1.14	1.30	0.32	-0.05
RAS5	4.34	1.00	0.99	-0.24	0.36
RAS6	3.79	1.17	1.38	0.20	-0.33
RAS7	4.11	1.34	1.80	0.05	-0.48
RAS8	3.58	1.09	1.19	-0.08	-0.06
RAS9	4.07	1.15	1.31	0.13	-0.11
RAS10	4.23	1.23	1.50	-0.02	0.09
RAS11 11	4.30	1.06	1.12	-0.34	0.09
RAS12	3.81	1.26	1.58	-0.01	-0.53
RAS13	3.96	1.07	1.14	0.13	-0.04
RAS14	3.62	1.03	1.06	0.15	-0.04
RAS15	4.40	1.07	1.14	-0.16	0.09
RAS16	4.19	1.12	1.25	-0.06	0.41
RAS17	3.77	1.15	1.32	0.12	-0.22
RAS18	4.25	1.27	1.62	0.07	-0.32
RAS19	3.90	1.26	1.58	-0.06	-0.39
RAS20	4.20	1.09	1.19	-0.31	0.09
RAS21 21	4.14	0.96	0.93	0.05	0.52
RAS22	4.16	1.32	1.73	0.17	-0.44
RAS23	4.29	1.17	1.36	0.03	0.02
RAS24	3.52	1.10	1.21	0.18	-0.29
RAS25	4.19	1.09	1.19	-0.10	-0.16
RAS26	3.25	1.04	1.08	0.10	0.31
RAS27	3.85	1.12	1.24	0.01	0.14
RAS28	3.95	1.21	1.45	0.20	-0.08
RAS29	3.79	1.22	1.49	0.23	-0.19
RAS30	4.09	1.11	1.24	0.03	-0.25
RAS31	4.01	1.23	1.52	0.07	-0.50
RAS32 32	3.36	0.98	0.96	0.17	0.54
RAS33	4.17	1.09	1.19	0.02	0.04
RAS34 34	3.90	1.26	1.59	-0.05	-0.37
RAS35	3.98	1.16	1.35	-0.16	-0.17

Descriptive statistical analysis revealed that most items exhibited approximately normal distribution characteristics. The values for skewness and kurtosis across the majority of the items fell within the acceptable range (± 1), indicating no significant deviations from normality.

Internal Consistency

Table 6. Internal Consistency for 35-item RAS-T2D (N = 200)

<i>Item No.</i>	<i>Scale Mean if Item Deleted</i>	<i>Scale Variance if Item Deleted</i>	<i>Corrected Item-Total Correlation</i>	<i>Squared Multiple Correlation</i>	<i>Cronbach's Alpha if Item Deleted</i>
RAS1	134.23	287.42	.43	0.779	0.871
RAS2 2	134.09	291.72	.43	0.816	0.871
RAS3	134.41	292.46	.41	0.808	0.872
RAS4 4	134.78	294.13	.35	0.776	0.873
RAS5	133.76	298.34	.28	0.682	0.874
RAS6	134.32	293.90	.34	0.787	0.873
RAS7	134.00	286.47	.46	0.786	0.870
RAS8	134.53	295.82	.32	0.811	0.873
RAS9	134.04	292.93	.38	0.77	0.872
RAS10	133.88	291.32	.39	0.779	0.872
RAS11 11	133.81	290.78	.47	0.752	0.870
RAS12	134.29	293.36	.33	0.781	0.873
RAS13	134.15	294.21	.37	0.796	0.872
RAS14	134.49	296.93	.31	0.775	0.873
RAS15	133.71	295.51	.34	0.762	0.873
RAS16	133.92	292.88	.39	0.743	0.872
RAS17	134.34	295.64	.30	0.742	0.874
RAS18	133.86	286.74	.48	0.776	0.870
RAS19	134.22	287.16	.48	0.769	0.870
RAS20	133.91	292.59	.41	0.74	0.872
RAS21 21	133.96	295.25	.39	0.684	0.872
RAS22	133.95	289.59	.39	0.768	0.872
RAS23	133.82	293.17	.36	0.739	0.873
RAS24	134.60	289.33	.49	0.767	0.870
RAS25	133.92	292.43	.41	0.787	0.872
RAS26	134.86	297.43	.29	0.703	0.874
RAS27	134.26	294.35	.35	0.731	0.873
RAS28	134.16	293.07	.35	0.732	0.873
RAS29	134.32	288.90	.45	0.769	0.871
RAS30	134.01	293.81	.37	0.707	0.872
RAS31	134.09	293.56	.33	0.733	0.873
RAS32 32	134.75	295.53	.37	0.703	0.872
RAS33	133.94	290.70	.46	0.738	0.871
RAS34 34	134.21	291.65	.37	0.82	0.873
RAS35	134.13	294.26	.34	0.735	0.873

To ascertain the psychometric adequacy of the items, they were analyzed using item total correlation. The item-total correlation ranged from 0.29 to 0.57, and all items were statistically significant (Table-6). Internal consistency of the RAS-T2D scale was assessed by computing Cronbach’s alpha coefficients. The alpha correlation coefficient was found to be 0.88 and the average inter-item correlation was 0.22, which is significant at 0.01 level.

Table 7. Correlation Coefficient Cronbach's α of Subscales of RAS-T2D

Subscale	Cronbach's α
Health-focused Rumination	0.96
Self-blame & Regret	0.96
Future-oriented Worry	0.92
Social Comparison & Isolation	0.96
Emotional Distress	0.88
Total Scale	0.88

Internal consistency was assessed using Cronbach's alpha and test-retest reliability over a 2-week interval using Pearson's Correlation Coefficient. The internal consistency of each subscale and the overall RAS was assessed using Cronbach's alpha. These values indicate high internal consistency across all the dimensions.

Test-Retest Reliability

A subsample of 96 participants completed the RAS-T2D twice with a two-week interval. The test-retest reliability, measured using Pearson's correlation coefficient, was found to be 0.924, indicating strong temporal stability.

Validity

Table 8: Item Discrimination Index for RAS-T2D

Test Value = 0					99% Confidence Interval of the Difference	
Item No.	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
RAS1	5.86	106	.000	1.39	.92	1.86
RAS2 2	7.48	106	.000	1.35	.99	1.71
RAS3	4.00	106	.000	0.61	.31	.91
RAS4 4	7.89	106	.000	1.26	.94	1.58
RAS5	5.12	106	.000	1.15	.59	1.29
RAS6	6.16	106	.000	1.07	.72	1.42
RAS7	4.39	106	.000	0.81	.45	1.18
RAS8	3.20	106	.002	0.65	.25	1.04
RAS9	5.82	106	.000	1.15	.76	1.54
RAS10	5.35	106	.000	0.94	0.59	1.29
RAS11 11	7.22	106	.000	1.24	0.90	1.58
RAS12	7.67	106	.000	1.67	1.24	2.10
RAS13	3.03	106	.003	0.61	0.21	1.01
RAS14	3.49	106	.001	0.76	0.33	1.19
RAS15	2.92	106	.004	0.70	0.23	1.18
RAS16	3.43	106	.001	0.81	0.34	1.29
RAS17	5.28	106	.000	1.26	0.79	1.73
RAS18	3.68	106	.000	0.85	0.39	1.31
RAS19	2.92	106	.004	0.65	0.21	1.09
RAS20	5.96	106	.000	1.24	0.83	1.65
RAS21 21	2.55	106	.012	0.56	0.12	0.99
RAS22	4.33	106	.000	0.94	0.51	1.38
RAS23	3.53	106	.001	0.76	0.33	1.19
RAS24	3.73	106	.000	0.76	0.36	1.16
RAS25	3.45	106	.001	0.81	0.35	1.28
RAS26	2	106	.048	0.41	00	0.81

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

<i>Test Value = 0</i>					<i>99% Confidence Interval of the Difference</i>	
Item No.	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
RAS27	2.71	106	.008	0.61	0.16	1.06
RAS28	2.70	106	.008	0.61	0.16	1.06
RAS29	2.34	106	.021	0.50	0.08	0.92
RAS30	3.58	106	.001	0.76	0.34	1.18
RAS31	4.13	106	.000	0.85	0.44	1.26
RAS32 32	4.36	106	.000	1.00	0.54	1.46
RAS33	3.36	106	.001	0.69	0.28	1.09
RAS34 34	3.10	106	.002	0.61	0.22	1.00
RAS35	3.43	106	.001	0.72	0.30	1.14

To assess the validity of items, an item discrimination index was obtained by computing statistical difference (t-value) for each item between high (Q-3) and low (Q-1) ruminative Type 2 Diabetes patients. This index was used in concert with the item difficulty index and coefficient alpha to determine which items to drop. The discrimination index for each item has been presented in Table- 8. The indices were found significant for all the items.

Convergent Validity

For the convergent validity of scale, the 20 item Ruminative Thought Style Questionnaire (RTSQ) has been selected because of its comprehensiveness and psychometric superiority over other rumination scale. RTSQ is a psychometrically sound measure that assesses an individual's general tendency to ruminate in various situations. RAS-T2D scores were significantly and positively correlated with RTSQ ($r = .725, p < .001$). This supports convergent validity, confirming RAS-T2D's alignment with established measures of rumination.

DISCUSSION

The present study developed and validated a multidimensional scale to assess rumination tendencies in Hindi-speaking Type 2 Diabetes Patients. The psychometric evaluation of the RAS-T2D supports a robust five-factor model with high internal consistency, strong factor loadings, and discriminant validity. We did not assess criterion validity of the RAS-T2D. However, further work needs to be done to work out criterion validity.

REFERENCES

- Alwani, A.A., Kaur, R., Bairwa, M., Misra, P., & Nongkynrih, B. (2024). Diabetes distress and associated factors among adults with diabetes in an urban colony in Delhi. *Clinical Diabetes and Endocrinology*, 10(1), Article 21. <https://clindiabetesendo.biomedcentral.com/articles/10.1186/s40842-024-00203-7>
- Brinker, J. K., & Dozois, D. J. A. (2009). Ruminative thought style and depressed mood. *Journal of Clinical Psychology*, 65(1), 1–19. <https://doi.org/10.1002/jclp.20542>
- Ehring, T., & Watkins, E. R. (2008). Repetitive negative thinking as a transdiagnostic process. *International Journal of Cognitive Therapy*, 1(3), 192–205. <https://doi.org/10.1521/ijct.2008.1.3.192>
- Homayoun Rad, S., Hasani Adeliyan, F., Raesi, F., Sehat, S. A., Seyed Jafari, J., & Mousavi, S. (2021). Evaluation of the effectiveness of positive psychology training on rumination and depression in women with type 2 diabetes. *Iranian Journal of Diabetes and Obesity*, 13(3), 131–137. <http://ijdo.ssu.ac.ir/article-1-643-en.html>

Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients

- Kalra, S., Jena, B.N., & Yeravdekar, R. (2018). Emotional and psychological needs of people with diabetes. *Indian Journal of Endocrinology and Metabolism*, 22(5), 696–704. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6166557/>
- Kraaij, V., & Garnefski, N. (2012). Rumination and psychological well-being: The role of coping in people with chronic illness. *Clinical Psychology & Psychotherapy*, 19(5), 372–378. <https://doi.org/10.1002/cpp.756>
- Larsen, R. J., Diener, E., & Cropanzano, R. S. (1987). Cognitive operations associated with individual differences in affect intensity. *Journal of Personality and Social Psychology*, 53(4), 767–774. <https://doi.org/10.1037/0022-3514.53.4.767>
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, 100(4), 569–582. <https://doi.org/10.1037/0021-843X.100.4.569>
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology*, 61(1), 115–121. <https://doi.org/10.1037/0022-3514.61.1.115>
- Suchday, S., Friedberg, J. P., & Almeida, M. (2006). Forgiveness and rumination: A cross-cultural perspective comparing India and the US. *Stress and Health*, 22(2), 81–89. <https://doi.org/10.1002/smi.1082>
- Tap Health. (2024). Rumination syndrome and diabetes: Understanding the interplay. <https://tap.health/rumination-syndrome-diabetes/>
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27, 247–259. <https://doi.org/10.1023/A:1023910315561>

Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Kumari, A. & Yadav, H.K. (2025). Development and Validation of the Rumination Assessment Scale for Type-2 Diabetes Patients. *International Journal of Indian Psychology*, 13(2), 2898-2910. DIP:18.01.256.20251302, DOI:10.25215/1302.256

APPENDIX

• Rumination Assessment Scale for Type 2 Diabetes (RAS-T2D)

निर्देश: कृपया प्रत्येक कथन को ध्यानपूर्वक पढ़ें और यह तय करें कि वह आपके अनुभव पर कितना लागू होता है। प्रत्येक कथन के लिए 1 से 7 तक एक अंक दें, जहाँ:

1 = बिल्कुल सहमत नहीं 2 = बहुत कम सहमत 3 = कुछ हद तक असहमत

4 = न तो सहमत, न ही असहमत 5 = कुछ हद तक सहमत 6 = काफी हद तक सहमत

7 = पूरी तरह सहमत

1. मुझे यह सोचकर डर लगता है कि कहीं मैं अकेला न पड़ जाऊँ।
2. बीमारी पर बार-बार सोचने से मुझे कोई फायदा नहीं लगता। (R)

3. मुझे चिंता रहती है कि मैं भविष्य में अपने परिवार की जिम्मेदारियाँ कैसे निभाऊँगा/निभाऊँगी।
4. मुझे अपने अतीत को स्वीकार करने में कठिनाई नहीं होती। (R)
5. मैं बार-बार यही सोचता/सोचती हूँ कि मेरी उदासी की वजह क्या है।
6. मेरी बीमारी की वजह से मैं अपने दोस्तों से दूर होता/होती जा रहा/रही हूँ।
7. मुझे डर है कि यह बीमारी आगे और बिगड़ सकती है।
8. मुझे लगता है कि मेरी बीमारी मेरे पुराने गलत फैसलों का परिणाम है।
9. बीमारी के बारे में लगातार सोचने से मेरी रोजमर्रा की ज़िंदगी प्रभावित होती है।
10. मैं सोचता/सोचती हूँ कि मेरी भावनाएँ मेरे नियंत्रण से बाहर हैं।
11. जब लक्षण नहीं होते, तो मैं बीमारी के बारे में नहीं सोचता/सोचती। (R)
12. मुझे लगता है कि लोग मेरी बीमारी को ठीक से नहीं समझते।
13. मुझे अफ़सोस है कि मैंने समय रहते अपने स्वास्थ्य का ध्यान नहीं रखा।
14. मुझे लगता है कि मेरी बीमारी ने मेरे परिवार को बहुत तकलीफ़ दी है।
15. मुझे लगता है कि मैं इस बीमारी से कभी पूरी तरह ठीक नहीं हो पाऊँगा/पाऊँगी।
16. मेरी भावनाएँ मुझे मानसिक रूप से थका देती हैं।
17. मुझे लगता है कि मैंने अपनी बीमारी खुद बुला ली।
18. मुझे कई बार एक साथ गुस्सा और निराशा महसूस होती है।
19. मुझे अपने करियर को लेकर असमंजस और चिंता होती है।
20. मैं बार-बार अपनी स्वास्थ्य रिपोर्ट (जैसे ब्लड शुगर) के बारे में सोचता/सोचती हूँ।
21. बीमारी होने के बावजूद मैं भविष्य के बारे में आशावान रहता/रहती हूँ। (R)
22. जब मैं दूसरों को देखता/देखती हूँ, तो खुद को कमजोर महसूस करता/करती हूँ।
23. मुझे ऐसा महसूस होता है कि मैं समाज से कट-सा गया/गई हूँ।
24. मुझे लगता है कि मेरी बीमारी मेरे भविष्य को अनिश्चित और कठिन बना रही है।
25. कुछ भी खाते समय मुझे अपनी बीमारी की याद आने लगती है।
26. मैं अपनी भावनाओं से जूझता/जूझती हूँ।
27. मैं बार-बार सोचता/सोचती हूँ कि मेरी गलती कहाँ हुई।
28. मुझे लगता है कि लोग मेरी बीमारी की वजह से मुझसे दूरी बना लेते हैं।
29. मैं अपने जीवन के आने वाले वर्षों को लेकर चिंतित रहता/रहती हूँ।
30. मैं अक्सर अपनी बीमारी को दूसरों से छुपाने की कोशिश करता/करती हूँ।
31. काश मैंने समय रहते ध्यान दिया होता, तो शायद मैं आज बीमार न होता/होती।
32. बीमारी के बावजूद मैं अंदर से खुद को मजबूत महसूस करता/करती हूँ। (R)
33. रात में बीमारी के विचारों के कारण मेरी नींद टूट जाती है।
34. मैं लोगों के साथ अपनी बातें खुलकर कह सकता/सकती हूँ। (R)
35. मैं लगातार तनाव में रहता/रहती हूँ।