

Validation of Sinhala Version of Brief COPE Scale in Patients with Cancer in Sri Lanka

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Abstract

Background

Coping strategies are essential in the cancer management/recovery process and show an integral part in patients with cancer globally. In Sri Lanka, validated scales to measure coping are scarce. This study was examined the Sinhalese version of the Brief COPE for its psychometric properties.

Methods

This scale is self-administered (28 items) and consists of adaptive and maladaptive coping strategies; divided into 14 subscales. Cancer patients were registered 'first come - first serve' basis using their appointment register at the Radiotherapy Unit, Oncology ward, Teaching Hospital, Karapitiya, Galle, Sri Lanka. They were requested to complete the Sinhalese version of the Brief COPE and demographic details. Test-retest reliability was checked using the same subjects two weeks later. Factorial validity was performed using exploratory factor and principal component analysis. Results were regarded as statistically significant if $p < 0.05$.

Results

The mean (\pm SD) age of the sample was 61(\pm 12) years. The mean adaptive coping (\pm SD) and maladaptive coping were 37.50 (\pm 8.14) and 17.10 (\pm 2.44) respectively. The internal consistency of the overall scale was good (Cronbach's alpha - 0.819). Adaptive and maladaptive coping showed a high Cronbach's alpha (0.861 and 0.396). The test-retest reliability was found to be 0.66. The Sinhala version of BC was found to have a negative correlation with the CES-D scale but was positively correlated with the WHOQOL-BREF questionnaire. Seven factors were extracted.

Conclusion

The Sinhala version of the Brief COPE is a valid and reliable tool to assess coping strategies among patients with cancer. The findings of this study would let the health authorities get an understanding of coping strategies among patients with cancer; and the impact on cancer victims and family members to relieve their suffering.

Background

Cancer is the second leading cause of death in the world and similar trends have been reported in Sri Lanka too [1, 2]. Individuals diagnosed with incurable cancer face a life-threatening stressor; may react to the stressful, unexpected circumstances such as diagnosis of cancer differently, elicits various coping responses [3]. 'Coping' is the process by which people manage stress or attempt to manage stressful

demands (external or internal) [4, 5]. Distress, depression, anxiety, hopelessness, fear, and aggression have a great impact on cancer as in the past literature [6, 7].

Cancer patients and family members should pay more attention to the psychological and social aspects of the patient to enable them to cope with the disease and its treatment [8]. It was found that more personal and social resources were needed for the psychological and physical adjustment of breast cancer during that time for coping [6, 9, 10]. Studies have focused on different coping strategies among patients with several types of cancer; also, a variety of self-report tools have been used to assess coping strategies worldwide. Limited research was done to measure coping strategies in cancer patients and validated scales to measure coping were scarce in Sri Lanka compared to the western countries [11]. Carver et al. established the full COPE comprises 60 items, to minimize the time taken to complete the scale, developed Brief COPE scale (BC) [10].

Assessing coping strategies in patients with cancer facilitates the healthcare providers to get an insight into the impact of coping on cancer patients. Such an understanding is vital in making decisions about future care, different treatment, and managing complications faced by cancer patients and their family members, formal/informal caregivers, etc. Further, a culturally adopted scale would be more important to any population group in Sri Lanka to assess their coping strategies and find out more favorable/healthy coping methods as well as minimize ineffective coping mechanisms like substance use, etc.

The purpose of this study was to examine the psychometric properties of the BC scale for patients with cancer treated at a tertiary care hospital in Southern Sri Lanka.

Methods

Cross-cultural adaptation guidelines were followed as the instructions of Beaten et al. [12] and the World Health Organization (WHO) [13]; forward translation of the original version, expert panel discussion (e.g., oncologists, clinical psychologists, clinician, professor in behavioral sciences, senior lecture in nursing), back-translation, pre-testing, and cognitive interviewing. A preliminary version was developed after reviewing both forward and backward translation by the expert committee. Finally, a modified version of the BC was understood easily; the panel of content experts has ensured the content validity of the scale. Final Sinhalese version of Brief COPE (S-BC) scale [See additional file 1] was developed.

This BC scale has 28- items; contains 14 subscales with only two items on each scale, graded by the four-point Likert scale. The responses to the items were 1= 'I have not been doing this at all', 2= 'I have been doing this a little bit, 3= 'I have been doing this a medium amount' and 4= 'I have been doing this a lot. The higher score of the subscale exhibits more likely the coping methods were used by the respondents. Cronbach's alpha of original BC was higher than 0.6 for 11 of the 14 subscales. The first eight subscales (16 items) were titled 'adaptive coping strategies, and the other six subscales (12 items) were named 'maladaptive coping strategies'[10]. A higher score indicates a higher adaptive (score ranges from 0-48) and maladaptive coping (score ranges from 0-36). In terms of usage, Carver's scale has been widely used in different countries and has been shown good psychometric properties [14 - 16].

Internal consistency/reliability of the S-BC was examined using Cronbach's alpha coefficient for an overall score of the S-BC and subscales considering the accepted standard cut-off for internal consistency as 0.60 or above [17]; considered as satisfactory internal consistency.

The test-retest reliability was examined using intra-class correlation coefficient (ICC) using the scores of scales in the first time and second time administrations (administered the same questionnaire after two weeks of first administration among the same 40 cancer patients). Pearson's correlation coefficient was added to examine test-retest reliability.

Further, Pearson's correlation coefficient was applied to check the concurrent validity of the S-BC scale and other standards scales (using correlations between the subscales themselves and the total score of the S-BC scale and standards scales). Convergent validity was assessed by item-subscale correlation considering a higher correlation of each item with their respective subscale. In addition, both WHOQOL-BREF and CES-D scales were used to examine convergent and discriminant/divergent validity assumed that participants who have higher coping used to have higher QoL and lower depressive symptoms; all applications were able to confirm the criterion validity of the scale.

Factorial validity of the S-BC was assessed using exploratory factor analysis (EFA). Factor analysis (FA) was performed using principal component analysis (PCA) with Varimax rotation (Kaiser normalization/Kaiser-Meyer – Olkin (KMO)). Bartlett's Test of Sphericity should reach statistical significance ($p < 0.001$) and Commonalities Coefficients should be high (> 0.6) [18].

The number of extracted components was determined by the Scree plot, percentage of variance explained by each component, number of Eigenvalues over one (Kaiser-Guttman rule), and consideration of prior psychometric Brief COPE analysis. Items were considered representative of a component if their item loading was ≥ 0.40 and in the cross-loading items, the factor, which had a higher loading value, was taken the respective factor [19].

A total of 40 cancer patients at the Radiotherapy unit, Oncology ward, Teaching Hospital, Karapitiya (THK) in Southern Sri Lanka were enrolled. Informed written consent was obtained from the patient before the data collection and participation in the study was voluntary. The sample size was considered supposing the correlational coefficient is about 0.45 for the Brief COPE using the subsequent formula $N = [(Z\alpha + Z\beta)/C]^2 + 3$. The calculated sample size was 36 and adding 10% for the non-respondents, the final sample size was 40 [19].

Baseline characteristics of the cancer patients were obtained using an interviewer-administered questionnaire and the diagnosis cards of the patients. Centre for Epidemiological Studies – Depression scale (20 item- CES-D) [20] and the World Health Organization-Quality of Life - Brief scale (26 item- WHOQOL-BREF) [21] were administered along with the newly adopted S-BC scale among 40 cancer patients by the principal investigator. Participants were informed to complete tools; the S-BC, CES-D, and WHOQOL-BREF which were previously validated in the Sri Lankan context.

The CES-D is a 20-item, short and self-report scale, which was originally developed to assess depressive symptomatology in the general population worldwide [20] during the 'past week'. Each question has 04 responses from 0 (rarely or none of the time) to 3 (most or all of the time). The total score of the CES-D scale ranges from 0 (no depressive symptoms) to 60 (high level of depressive symptoms), where higher scores indicate the presence of more depressive symptomatology. This scale was validated and freely used in Sri Lanka [22].

The WHOQOL-BREF is a 26-item scale comprised of 04 domains; physical, psychological, social, and environmental, and originally developed to measure the QoL [21]. The higher values indicated a higher level of QoL. The scale WHOQOL-BREF has been validated in the Sri Lankan setting and used freely available in many studies [23].

Data analysis was done using SPSS 25.0 (IBM statistics, Inc., Chicago). The level of significance was accepted at $p < 0.05$. Descriptive statistics were used to present baseline characteristics of cancer patients. Correlation coefficient values between 0.10 and 0.29 were considered low, between 0.30 and 0.49 were considered medium, and between 0.50 and 1.00 were considered high and as very strong correlation [19].

Ethical approval was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Ruhuna and permission to recruit patients by healthcare setting. For the scale validation process, permission was obtained from the original authors of Brief COPE.

Results

Among 40 cancer patients, 53.0% ($n=21$) were males, 88.0% was married and 75.0% was employed (Table 1). The mean (\pm SD) age of the sample was 61.03(\pm 11.70) years. The mean (\pm SD) score of the adaptive coping was 37.50(\pm 8.14) and maladaptive coping was 17.10(\pm 2.44) as in the below. Mean (\pm SD) S-Brief COPE scores of individual items are shown (Table 1). Of the Adaptive coping, the highest score was 6.87 \pm 1.68 for item-1 'Instrumental support'. As in the maladaptive scale, the highest score was 5.08 \pm 1.40 for item- 1 'Self-distraction'. The reliability of all subscales was checked and reliability scores of the S-BC scale ranged from 0.01 to 1.00 (Table 1). Due to the zero variance, three items were detached spontaneously from the reliability analysis (item 18-I have been making jokes about it, item 28-I have been making fun of the situation, item 3-I have been saying to myself "this is not real"). Then retained 25-items were checked for reliability/internal consistency.

Reliability of the total/overall scale (25 items) was found to be good (Cronbach's alpha= 0.819); reliability of the adaptive scale (14 items) and maladaptive scale (11 items) was 0.861 and 0.396 respectively.

In both phases, adaptive and maladaptive subscales of the S-BC had high Cronbach's alpha; it was 0.793 and 0.788 respectively. Test-retest reliability was higher for adaptive ($r = 0.657, p < 0.01$) and maladaptive scales ($r = 0.651, p < 0.01$). Test-retest reliability measured with ICC between 1st and subsequent administration of adaptive and maladaptive scores reported higher ICC; adaptive: ICC= 0.65, 95% CI=

0.43-0.80, $p < 0.001$, maladaptive: ICC = 0.65, 95% CI= 0.42-0.79, $p < 0.001$. These results suggest that the S-BC scale has acceptable reliability over time.

Adaptive coping was inversely correlated with CES-D scores (discriminant /divergent validity) whereas maladaptive coping was positively correlated with CES-D scores that exhibited the convergent validity of the S-BC (Table 2).

Adaptive coping, total QoL, and four domains of WHOQOL-BREF (theoretically related variables) were positively associated with each other indicating convergent validity of the S-BC. Maladaptive coping was significantly and negatively correlated (discriminant/divergent validity) with total QoL, physical, and social QoL domains whereas not significantly associated with psychological and environmental domains.

PCA revealed seven factors contrast to the original scale, with Eigen value exceeding 1 explaining cumulative variance of 78.68% (factor 1; 24.97%, factor 2; 42.82%, factor 3; 52.13%, factor 4; 61.37%, factor 5; 67.37%; factor 6; 73.35%, factor 7; 78.68%) (Table 3; Figure. 1).

Without three items, other all items had included in the factor structure. But as in the original taxonomy, 14 subscales were unable to fragment due to the loading patterns of each item [10]. The minimum item loading was 0.57 (8A Trying to get healed); 11th items were cross loaded on more than one factor in a significant figure (e.g., 12B, 6B, 8A, 3A, 2A, 1B, 7A, 8B, 1A, 11A and 7B).

Those cross-loaded items were included to one factor according to their higher loadings and the appropriate interpretation of the item. According to the previous studies/ conceptual scales and relevant explanations of the items, those were re-assigned/ included into respective subscales/ 7 subscales.

The 1st extracted factor was loaded by six items of five subscales of the original Brief COPE (denial, self-blame, positive reframing, substance use, and two items from the behavioral disengagement subscale). Overall, this factor can be named as the "Avoidance and Behavioral disengagement". The 2nd factor was included the six items of four subscales (acceptance, planning, positive reframing, using instrumental support, and two items from the religion); can be constructed as the "Religion and Acceptance". 3rd factor consisted of self-distraction, acceptance, using emotional support, and instrumental support; these factors can be concluded as "Seeking support" scales. 4th factor consisted of the three items of three subscales (planning, active coping, and self-distraction subscales) and was named "Planning". 5th factor corresponded to substance use and venting subscale; can be constructed "Substance use and Venting" subscales. The 6th factor contained only one item of self-blame subscale was named "Self-blame". The 7th factor consisted of venting, using emotional support, and active coping subscales; can be constructed as the "Active/positive coping". Among seven factors, only four factors had scored fair Cronbach's alpha (Table 3) and the newly adopted structure resulted in 0.57 of Cronbach's alpha (07-factor structure).

Discussion

This study validated the Sinhalese BC scale into Sri Lankan setting. Coping strategies which are used by patients with cancer were not much focused in Sri Lankan setting. Therefore, validation of the Brief COPE scale to the Sri Lankan setting was vital and imperative.

This study obtained good internal consistency and test-retest reliability of the S-BC when operationalized as two subscales. Cronbach's alpha of the overall scale was 0.819 whereas had not been shown in some studies [10, 24]. Adaptive coping had a high Cronbach's alpha of 0.861 whereas maladaptive coping had low reliability (0.396).

A high-reliability coefficient for the subscales was not much detected throughout the current study that contrasts from the results of others [10]. In our study, most of the subscales had shown lower internal consistencies whereas three subscales had scored higher internal consistency: instrumental support (0.85), emotional support (0.70), religion (0.79), and behavioral disengagement (1.00). Acceptable internal consistencies had conveyed for most of the subscales elsewhere, especially as in the original Brief COPE study [10, 24]. Nevertheless, others had reported better internal consistencies for maladaptive coping subscales [10] which is the difference from our results. Cronbach's alphas were tested for both phases; adaptive and maladaptive coping had better reliabilities ($\alpha = 0.785$). Test-retest reliability was also high due to the homogeneity and stability of the scale over two weeks period (reliability of 2 major subscales = $r = 0.650, p < 0.01$).

Correlations between S-Brief COPE, CES-D, and WHOQOL-BREF were performed to confirm the criterion validity of the scale. Correlation findings among S-BC, CES-D, and QoL were presented reverse association; evidence of measuring different constructs or concepts. As the correlation findings of the S-BC scale, similar construction among items in the subscale had a similar correlation (convergent validity). Different structures amongst different subscales or correlations of items and dissimilar subscales had lower correlation (discriminant/divergent validity). Those were significant clues for high criterion validity between different subscales in the same tool.

Even though the factor structure of the scale had been established already, plentiful studies had investigated [24]. Seven factors were extracted from the EFA in the current study and each subscale/item (25 items) was included into relevant seven factors collectively (avoidance/behavioral disengagement, religion/acceptance, seeking support, planning, substance use/venting, self-blame, active/positive coping). A similar number of factors was obtained by Hagan et al. [3] and labeled as self-blame, acceptance, denial, emotional support, positive reframing, active, and behavioral disengagement. Due to the dissimilar constructions of extracted factors in the current study; one factor was made as to the independent factor and consisted of an item of the single subscale (6th factor -self-blame comprised with item 13 of the self-blame subscales), while some factors incorporated clusters of different subscales and created broader domains (3rd factor – seeking support contained with items of self-distraction, acceptance, using emotional support and instrumental support subscales). These categories of broader dimensions and independent factors (e.g., - religion, substance use, etc.) were revealed in previous studies also [24, 25]. These two studies had established broader dimensions for some factors; the study of

Kapsou et al. [24] had broader factors for 1 (Active/positive coping), 4 (seeking support), etc. and 1 (problem-solving/acceptance), 2 (negative venting/avoidance), 4 (self-blame/denial), and 6 (humor/self-distraction) broader domains were comprised in the Su et al. [25] also in line with our results that we were able to progress broader dimensions such as 1 (avoidance/behavioral disengagement), 2 (religion /acceptance), and 5 (substance use/ venting) in this study.

Furthermore, emotional and instrumental support subscales had concluded into one factor (seeking support) as others [24, 25]. Additionally, venting was loaded into the same factor in one study [25] whereas acceptance and self-distraction items were loaded into the 'seeking support' factor in our study. Religion as an independent factor of the above two studies [24, 25] study performance as a broader factor (religion and acceptance) and comprised different subscales like religion, acceptance, planning, positive reframing, and instrumental support.

Denial and self-blame subscales were clustered into the 4th factor (self-blame/denial) [25] whereas self-blame was extracted into 1st (active/positive coping) and 8th factors (expression of negative feelings) of the study of Kapsou et al. [24] Self-blame had loaded into 1st factor as well 6th factor and denial were extracted into 1st factor in the present study. 'Substance use' had not a distinct factor in the study of Su et al. [25] but comprised into 'negative venting/avoidance' dimension. Independent factor had established for 'substance use' [25] whereas a broader dimension was established for substance use (substance use/venting) in our study.

Further, most of the adaptive and maladaptive coping subscales had mixed up in the different studies and established new factors. Yet new factors which interrelated to adaptive coping (problem-solving/ acceptance, support seeking, the reliance on spirituality, etc.) had established in previous studies [24, 25] as comparable in this study (religion/acceptance, planning, active/positive coping, seeking support, etc.). Accordingly, the new factor structure had enough support to the original arrangement of the Brief COPE.

Conclusion

The Sinhalese version of the Brief COPE scale was found to be a reliable and valid screening tool that can be used to measure coping strategies among patients with cancer in Sri Lankan clinical setting. The findings of this study would let the health authorities get an understanding of coping strategies among patients with cancer, and the impact on cancer victims and family members to relieve their suffering. Future research with higher numbers of participants and in different settings/languages will be recommended.

Abbreviations

Brief COPE

Brief Coping

SD

Standard Deviation
CES-D
Centre for Epidemiological Studies–Depression scale
WHOQOL-BREF
World Health Organization-Quality of Life-Brief scale
BC
Brief COPE
WHO
World Health Organization
S-BC
Sinhalese version of Brief COPE
ICC
Intra-class correlation coefficient
EFA
Exploratory Factor Analysis
FA
Factor analysis
PCA
Principal component analysis
KMO
Kaiser-Meyer – Olkin
THK
Teaching Hospital Karapitiya
QoL
Quality of Life
SPSS
Statistical Package for the Social Sciences
CI
Confidence Interval

Declarations

Acknowledgement

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Authors' contributions

EW conceived and designed the study as part of her MPhil thesis, under the supervision of CS, MH and BP. EW reviewed the literature and collected the data. EW performed statistical analyses and prepared the first draft of the manuscript. CS, MH and BP contributed to the design of the study and the interpretation of the findings. BP guided and supervised the data collection and statistical analysis, and supported with the preparation of subsequent drafts of the manuscript. All authors critically revised the manuscript and contributed towards the final draft. All authors have read and approved the final version of the manuscript.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

Ethical approval for the study was obtained from the Ethics Review Committee, Faculty of Medicine, and the University of Ruhuna. Permission was granted from the Director of THK, Consultants, and Sisters/In-Charges to conduct this research in the Oncology ward and informed written consent was obtained from all the participants included in the study during

the completion of the questionnaire, participants were able to ask questions. All participants read and offered signed informed consent before joining in the study.

Consent for publication

Not Applicable.

Competing interests

The authors declare that they have no competing interests.

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Tables

Table 1 Characteristics of the study participants (N=40)

Characteristics/variables	Categories	N (%)
Age	< 60 Years	20(50.0)
	≥ 60 Years	20(50.0)
Gender	Male	21(52.5)
	Female	19(47.5)
Marital status	Married	35(87.5)
	Unmarried/ single	5(12.5)
Education	No schooling	5(12.5)
	Primary education (Grade 1-5)	9(22.5)
	Secondary education (Grade 6-12)	26(65.0)
Employment	Employed	30(75.0)
	Unemployed	10(25.0)
Cancer types/locations	Head & Neck cancer	2(5.0)
	GI organs	12(30.0)
	Lungs	1(2.5)
	Bones	3(7.5)
	Breast	3(7.5)
	Prostate	1(2.5)
	Lymph node	3(7.5)
	Site unknown	15(37.5)
Time since diagnosis	< 12 months	8(20.0)
	≥ 12 months	32(80.0)
Measurements	Cronbach's alpha (α)	mean ±SD
S-Brief COPE- <i>Adaptive coping</i>	0.861	37.50±8.14
	Instrumental support (range 2-8)	0.85 6.87±1.68
	Use of emotional support	0.70 6.68± 1.73
	Planning	0.48 5.30± 1.80
	Active coping	0.55 4.75± 1.69
	Religion	0.79 4.65± 2.00
	Acceptance	0.01 4.00± 1.03
	Positive reframing	-0.07 3.25± 1.27
	Humor-	2.00± 0.00
S- Brief COPE- <i>Maladaptive coping</i>		0.396 17.10±2.44
	Self-distraction (range 2-8)	0.20 5.08± 1.40
	Venting	0.09 3.60± 1.21
	Substance use	0.52 2.20± 0.56
	Self-blame-	0.06 2.12± 0.51
	Denial-	2.05± 0.31
	Behavioral disengagement	1.00 2.05± 0.31

N (%), frequency and percentage of patients; S- BC, Sinhalese Brief COPE scale; α, Cronbach's alpha.

Table 2 Reliability and test-retest reliability of Brief COPE scale - phase 1 and 2

Brief COPE scale	Time phase 1 and phase 2	
	1-2 Adaptive	1-2 Maladaptive
Cronbach's alpha	0.793	0.788
Inter-Item correlation	0.659	0.651
Test re-test reliability	0.657**	0.651**

p<0.01**

Table 3 Correlation between Brief COPE, CES-D, and WHOQOL-BREF

		S-Brief COPE subscales			
		Adaptive coping		Maladaptive coping	
		r	p	r	p
	CES-D	-0.362*	<0.05	0.349*	<0.05
	Total QoL	0.482**	<0.01	-0.041	0.80
Domains of WHOQOL- BREF	Physical	0.506**	<0.01	-0.117	0.47
	Psychological	0.338*	<0.05	0.040	0.80
	Social	0.328*	<0.05	-0.030	0.85
	Environmental	0.415**	<0.01	0.029	0.85

r, correlation coefficient; CES-D, Centre for Epidemiological Studies- Depression scale; QoL, Quality of Life; WHOQOL-BREF, World Health Organization Quality of Life- Brief scale; p<0.05* and p<0.01**

Table 4 Factor loadings and cross-loadings emerging from EFA of the Brief COPE

Items	F1	F2	F3	F4	F5	F6	F7
BI've been refusing to believe at it has happened.	-0.992	-0.049	-0.068	-0.059	.003	-0.010	-.170
BI've been blaming myself for things that happened.	-0.992	-0.049	-0.068	-0.059	.003	-0.010	-.170
BI've been giving up the attempt to cope.	-0.992	-0.049	-0.068	-0.059	.003	-0.010	-.170
I've been looking for something good in what is happening.	-0.992	-0.049	-0.068	-0.059	.003	-0.010	-.170
AI've been giving up trying to deal with it.	-0.992	-0.049	-0.068	-0.059	.003	-0.010	-.170
BI've been using alcohol or other drugs to help me get through it.	-0.800	-0.271	-0.021	-0.134	-0.374	-0.172	-0.218
I've been trying to find comfort in my religion or spiritual beliefs.	.200	.858	.089	.390	-0.113	.095	.206
I've been learning to live with it.	.205	.832	.126	.276	.118	-0.038	.191
I've been thinking hard out what steps to take.	-.214	.741	-.150	.139	.099	.008	-.077
I've been praying or meditating.	-0.009	.662	.209	.535	-0.147	.092	.329
I've been trying to see it in a different light, to make it seem more positive.	.202	.658	.136	.592	.125	-0.081	.036
I've been getting help and advice from other people.	.332	.574	.448	.362	.050	-0.368	.516
I've been doing something to think about it less, such as going to movies, watching TV, daydreaming, sleeping, or napping.	-.101	-0.056	.843	.154	-0.096	-0.044	.163
I've been accepting the reality of the fact that it has happened.	.035	.016	-.779	-0.057	-0.019	-0.025	.048
I've been getting emotional support from others.	.443	.229	.677	.217	-0.187	.250	.550
I've been trying to get advice or help from other people about what to do.	.483	.438	.616	.308	.267	-0.174	.412
I've been concentrating my efforts on doing something about the situation I'm in.	-.024	.319	.131	.910	.044	.093	.123
I've been turning to work or other activities to take my mind off things.	.162	.206	.172	.862	.088	.150	.036
I've been trying to come up with a strategy about what to do.	-.044	.516	.105	.592	-0.317	-0.190	.213
AI've been using alcohol or other drugs to make myself feel better.	-0.009	-0.387	.165	-0.043	-0.685	-0.272	-.203

ter.								
A I've been saying things to my unpleasant feelings	.102	.026	.236	.429	.665	-.265	.199	
cape.								
A I've been criticizing myself.	.033	-.005	.046	.180	.032	.782	-.045	
B I've been expressing my negative feelings.	.006	-.294	.053	-.104	.280	-.181	.660	
I've been getting comfort and understanding from meone.	.251	.347	.248	.115	.008	.410	.637	
I've been taking action to try make the situation better.	.364	.476	.036	.480	-.120	-.125	.593	
Eigenvalues	7.25	4.68	2.31	1.56	1.46	1.29	1.08	
Variance explained	29.01%	47.77%	57.04%	63.31%	69.16%	74.33%	78.68%	
Cronbach's alpha	0.93	0.83	0.55	0.75	-0.21	None	0.31	

Extraction and Rotation Method, PCA and Oblimin with Kaiser Normalization; F1, Avoidance/ Behavioral disengagement; F2, Religion/Acceptance; F3, Seeking support; F4, Planning; F5, Substance use/Venting; F6, Self-blame; F7, Active/positive coping; Bold figures, items with mostly similar factor loadings.

Figures

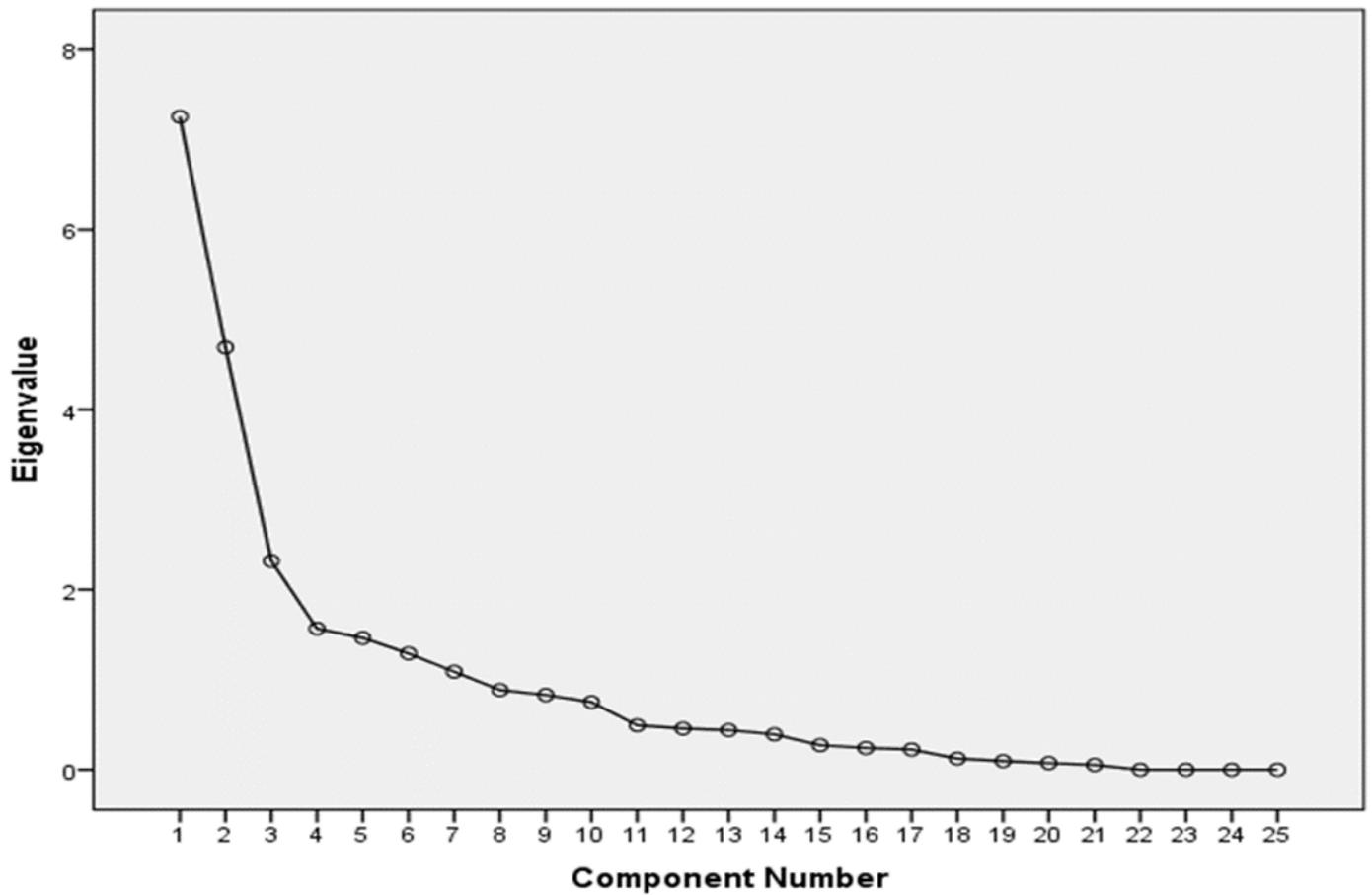


Figure 1

The scree plot – Brief COPE

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Additionalfile1SinhaleseversionofBriefCOPE.pdf](#)