Original Article

Development of Comprehensive Satisfaction Index (ComSI) and Its Association with WHOQOL-BREF

Bhupendra Singh, Nisha Mani Pandey, Betsy Mehrotra, Anamika Srivastava, Alok Kumar Chowdhury, S. C. Tiwari

ABSTRACT

Background: Comprehensive satisfaction in life may be considered as a significant contributor to health for everyone, including the aging population (individuals aged 45 years and above). For understanding the comprehensive satisfaction, an assessment measure with various psychometric properties may be useful. During a longitudinal study of aging and geriatric mental health, a 26-item tool was developed in Hindi for the assessment of satisfaction. This article aimed to analyze the items of Comprehensive Satisfaction Index (ComSI) applying Varimax rotation and to find out its association with World Health Organization Quality of Life Brief (WHOQOL-BREF). **Methods:** Data of 260 subjects were extracted from the longitudinal study to analyze the psychometric properties of the tool named as Comprehensive Satisfaction Index and its association with various domains of WHOQOL-BREF. Varimax rotation was applied after computing Kaiser–Meyer–Olkin and Bartlett's test of sphericity. Furthermore, the association between various components of ComSI and various domains of WHOQOL-BREF was explored. **Results:** Of the total 26 items of the tool, item no. 17 was excluded due to its –ve/ <0.31 value. A total of three components were generated with >1 eigenvalues; maximum items were loaded in component 1 (19) followed by components 2 (4) and 3 (2). Each of these factors has been significantly correlated with each other. Furthermore, these components also were compared with various domains of WHOQOL-BREF, and positive correlation was obtained for most of them. **Conclusion:** There is a positive association between ComSI and WHOQOL-BREF. This tool will help in identifying the satisfaction level of the aging subjects promptly and efficiently, which would further help in making strategies for interventions.

Key words: *Aging, association, comprehensive satisfaction, World Health Organization Quality of Life Brief*
Key messages: *Satisfaction is the ultimate achievement which develops contentment and makes a person happy. However, it is an imperceptible and intangible concept having many levels i.e. from physical infrastructure to recreational and spiritual facets. In view of the importance of the subject the author thought to develop an index for measuring the level of satisfaction within the lives of elderly; keeping in mind the cultural intricacies and social roles along with contextual existing notions of ageing in India.*

Department of Geriatric Mental Health (DGMH), King George's Medical University (KGMU), Lucknow, Uttar Pradesh, India

Address for correspondence: Dr. Nisha Mani Pandey
Department of Geriatric Mental Health, King George's Medical University, Lucknow - 226 003, Uttar Pradesh, India.
E-mail: nisha15pandey@yahoo.co.in

Santoshah Paramam Sukham (satisfaction with one's situation is the ultimate bliss) is one of the oldest sayings in Indian scriptures. Neugarten *et al.* call life satisfaction as "an operational definition of 'successful aging'." It is universally observed that an individual usually performs any activity which is directed to satiate his or her level of satisfaction to restore any kind of imbalance, which often causes unhappiness or discomfort.[1] Life satisfaction is characterized, in agreement with the cognitive theory, as "individual's cognitive judgment about comparisons based on the compatibility of their own living conditions with the standards."[2] If we further analyze the notion for an aging population, comprehensive satisfaction is generally associated with the fulfillment of basic necessities of life as, if that remains unfulfilled, negative emotions come out. In addition, if that remains the case for a longer time, it may impair one's well-being, generate health-related problems, and delay recovery from poor health. Hence, an index of comprehensive satisfaction is needed to assess its level in the individual. Among the aging population, for assessment of satisfaction, one's subjective well-being is frequently used.[3-6] As an irreversible degenerative process, aging is associated with changes in a variety of external and internal factors, including health, socioeconomic status, living arrangements, care, and the existence of social support groups.[7] Subjective expression of the quality of life (QoL) may be assessed by level of satisfaction, which is a forecaster of longevity, morbidity, disease, and injury as well as successful aging.[2,8,9] It is also reported that life satisfaction is a comprehensive indicator of successful aging, and proper social support, active participation in activities, and economic satisfaction are positively correlated with better self-rated health and greater satisfaction with life.[10] It may be said that comprehensive satisfaction is a positive phenomenon for assessing or managing problems of old age and improving health and well-being.

The aging population is more concerned for their satisfaction and health conditions and that is often influenced by their socioeconomic status and limited work performance.[11,12] It will be worth mentioning that changes in demographic pattern along with ever-changing psychosocial milieu and disintegration of joint families often make the elderly dissatisfied with the surroundings. This disintegration has profoundly affected the incipient aging population. In rural areas, the health of older persons is mostly predominated by poverty, lack of education (especially for women), poor nutrition, and increased risk of accidents.[13,14] An article reveals that one's subjective QoL may be defined in terms of the level of life satisfaction and subjective well-being, happiness, and morale.[15] To assess one's level of well-being, happiness, and life satisfaction,

the Comprehensive Satisfaction Index (ComSI) may be helpful.

Taking it into cognizance, during a large-scale cross-sectional study of aging titled "Lucknow Elderly Study (LES) in aging and geriatric mental health," a 26-item tool was developed for assessing level of overall satisfaction of the participants. This was further named as Comprehensive Satisfaction Index. This tool was developed in Hindi and assesses satisfaction of aging individuals on various significant aspects of life by taking their own viewpoint on a 5-point scale [Table 1]. These aspects are explained in simple statements and related to one's physical environment/infrastructure, availability of food, and its quality, psychosocial milieu, economic, spiritual, and well-being-related securities, and so on. This article aims to examine the psychometric properties of this tool and its association with World Health Organization Quality of Life Brief (WHOQOL-BREF) to ascertain its reliability.

Objectives
1. To analyze and explore items of ComSI administered on a rural aging population
2. To assess and find out the association of ComSI with various domains of WHOQOL-BREF.

METHODOLOGY

A longitudinal study was planned, developed, and proposed for studying various dimensions of aging and is being carried out on individuals age 45 years and above. In this study, data pertaining to a wide range of variables are being obtained related to subjects' demographic – socioeconomic status, physical and mental health status, lifestyle, habits, healthcare preferences, comprehensive satisfaction, routine, and QoL. For assessing these variables, some of the available tools are being applied, and for some, we have developed questionnaires in Hindi. One of these was ComSI. In developing ComSI, initially, we have identified various domains of ComSI (initially named as life satisfaction), for which the steps of tool development were followed.[16] A brief description of steps applied for tool development is as following:

To develop the tool, we had a discussion among the team to come on a consensus for identifying domains of satisfaction. After discussions with the LES team of experts (three psychiatrists and three psychologists) and with consensus, we identified six domains (namely, physical environment, psychological environment, social environment, health facilities, economic independence, and recreation). It will be worth mentioning that an individual generally feels contented and happy if his physical-psycho-social-financial-recreational needs

Table 1: Varimax rotated factor matrix for items of ComSI applied on rural participants of LES age ≥45 years (*n*=260)

Item no.	Item details	Satisfaction with		
		Living environment and IPR	Economic and self-freedom	Leisure
Item 1	Satisfaction with the environment of the place of residence where (you) live	**0.76**	0.27	-0.07
Item 2	Satisfaction with the arrangements related to light, air, water inside the household	**0.85**	0.15	0.02
Item 3	Satisfaction with the structure and construction (rooms, kitchen, washrooms, stairs, terrace, courtyard, lawn) of the house	**0.73**	0.27	-0.09
Item 4	Satisfaction with the quality and nutritional value of the food cooked in the household	**0.88**	0.09	0.06
Item 5	Satisfaction with the food that is cooked in the house, keeping your likes in mind	**0.90**	0.08	0.08
Item 6	Satisfaction with the mediums of entertainment (radio, television, internet, mobile phones) available in the household	0.03	0.15	**0.78**
Item 7	Satisfaction with the availability of mediums of daily information (newspapers, magazines etc.)	0.25	0.00	**0.67**
Item 8	Satisfaction with the traditions and practices followed during festivals at the home	**0.87**	0.18	0.12
Item 9	Satisfaction with the security measures in the house	**0.90**	0.06	0.15
Item 10	Satisfaction with the available transportation facilities near the house	**0.82**	0.02	0.13
Item 11	Satisfaction with the availability of medicines near the house	**0.86**	-0.03	0.20
Item 12	Satisfaction with the financial support and aid/care given by family members during any illness	**0.83**	0.18	0.03
Item 13	Satisfaction with the process of regular/ irregular exercises done	-0.18	**0.57**	0.29
Item 14	Satisfaction with the religious activities (puja, namaz, kirtan, meditation etc.) performed in the house	0.24	**0.48**	0.22
Item 15	Satisfaction with the rules in the house	**0.84**	0.09	0.11
Item 16	Satisfaction with the performance of activities according to self interest	**0.71**	0.17	0.16
Item 17	Satisfaction with the availability of employment opportunities (stitching, weaving, farming, cooking etc.) near the house	-0.55	0.30	0.14
Item 18	Satisfaction with the level of financial dependence on the family members	0.39	**0.65**	-0.10
Item 19	Satisfaction with financial independence of self	0.31	**0.79**	-0.08
Item 20	Satisfaction with family members and social relationships	**0.80**	0.32	0.05
Item 21	Satisfaction with the level of help/ support extended by family members	**0.83**	0.30	0.04
Item 22	Satisfaction with the duration and quality of time spent with family members	**0.83**	0.26	0.06
Item 23	Satisfaction with the opportunities to express likes and dislikes of self within the family	**0.83**	0.27	0.10
Item 24	Satisfaction with the role accorded to self with regard to decision making within the family	**0.81**	0.17	0.18
Item 25	Satisfaction with the quality of life	**0.84**	0.20	0.11
Item 26	Satisfaction with the opportunities available to express feelings/ emotions	**0.85**	0.20	0.12

Items with higher values included in the particular component are highlighted. ComSI – Comprehensive Satisfaction Index; LES – Lucknow Elderly Study; IPR – Interpersonal relationship

are fulfilled, and this makes him or her satisfied too. Keeping this in mind, on these six domains, items were generated by three independent psychologists. All items were then given to five independent experts to check the validity of contents of the items and rate the items on a 5-point scale, ranging from *not relevant at all* to *very relevant*. After the validation exercise, a 26-item tool was developed. These items were related to family infrastructure, psychosocial milieu, interpersonal relationship (IPR), available facilities, and so on, which are rated on a 5-point scale ranging from *completely satisfied* to *completely dissatisfied*. The content of the ComSI was validated by the group of experts, and

the tool was pretested on a small group (30 subjects) to ascertain its feasibility. After pretesting, the items have further been modified and shaped in its present version. The tool gives an inclusive index of satisfaction, including individuals' personal, social, and recreational activities as well as available facilities in the milieu and satisfaction with self. With consensus, we have modified the name of this questionnaire from Life Satisfaction to ComSI.

After the entire exercise, the present version is being administered on the LES population. As we have a considerable number of surveyed proforma, we set

to analyze the items of ComSI. Data of 260 rural subjects were extracted and analyzed, applying principal component analysis (PCA) and Varimax rotation. To get various statistical values, that is, Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, PCA, eigenvalues, and Varimax with Kaiser normalization, the software of Statistical Package for the Social Sciences (SPSS-20) was used.

Ethical approval for the main study was obtained from the Institutional Ethical Committee. Eligible respondents of the study were briefed about the purpose of the study. Prior to data collection, we have obtained written informed consent from all participants.

RESULTS

Data of 260 subjects were analyzed. It was a representative proportion of the study population, namely, sex (male = 42.3%; female = 57.7%), age (45–59 years = 42.3%; 60–69 years = 28.1%; 70 years and above = 13.1%), and socioeconomic status (upper = 7.3%; middle = 63.1%; lower = 29.6%) [Figure 1]. KMO and Bartlett's test were applied to see sampling adequacy, which reveals appropriateness of sample size. KMO measure of sampling adequacy was found to be very good, that is, 0.957, and Bartlett's test of sphericity (app. χ^2 = 6684.6, Df = 325, P = 0.001) shows that norms for factor analysis are met. Thus, PCA and Varimax rotation were applied. The percentages of >1 initial eigenvalues, variance, and extracted sum of square loadings were found to

be 56.43, 6.68, and 4.79 respectively, and thus, a total of three components were extracted. Through PCA, three components were identified. The items of these are related with (1) living environment and IPR; (2) freedom for economic and self-activities; and (3) satisfaction with leisure activities. On the rotated component matrix, the minimum value was 0.478, which was obtained for item no. 24 (component 2). Only one item had to be excluded, as it projected a negative value/<0.31 (item 17). The details of the analysis are provided in Table 1. Furthermore, Pearson's *r* was applied to assess the strength and magnitude of the association of factor scores with each other and with WHOQOL-BREF.

The items incorporated in various factors have been categorized as follows:
- Component 1: Family environment and IPR (19 items, i.e., item nos. 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 15, 16, 20, 21, 22, 23, 24, 25, and 26): An Indian aging adult often quotes "Care and respect in family gives strength" or "it doesn't matter if we get less food, but we need due respect." Responses on ComSI also give more weight to items related to care, respect, and opportunities to emotional expression; this all can be expressed with one word, that is, IPR/bonded relationship. These items significantly correlated with domains of WHOQOL-BREF except social relation [Table 2]
- Component 2: Satisfaction with financial and self-activities-related independence (4 items, i.e., item nos. 13, 14, 18, and 19): The items related to the second factor of the ComSI are related to subjects' satisfaction with available freedom for
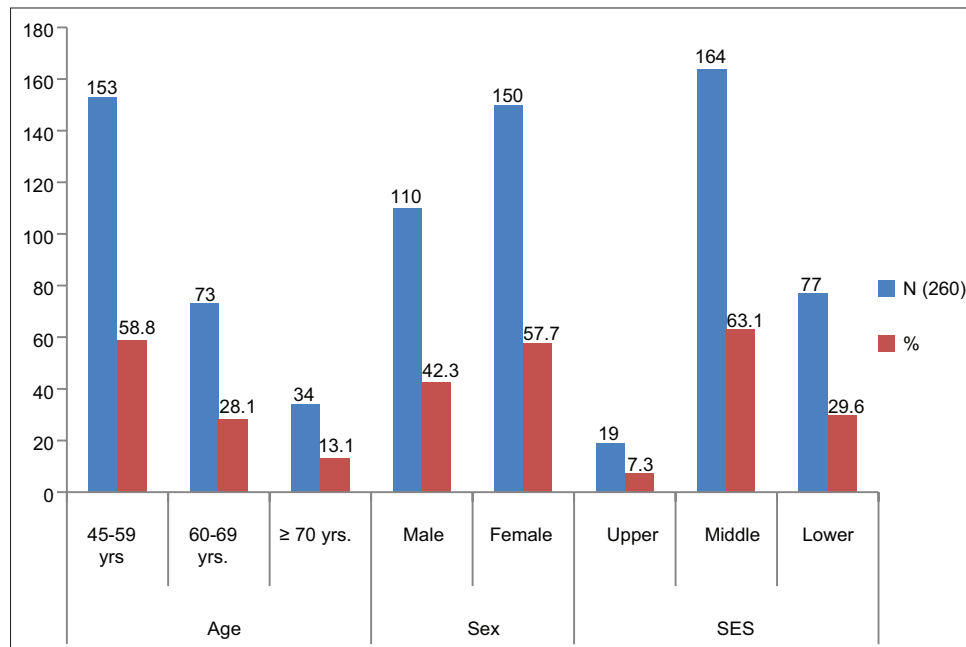

Figure 1: Socio- demographic details of the Study Participants. SES - Socioeconomic status

financial matters and self-activities. This was found to significantly correlate with social and environment domains of WHOQOL-BREF [Table 2]

- Component 3: Satisfaction with available leisure activities (2 items, i.e., item nos. 6 and 7): There are two items in this factor which are related to satisfaction with available recreational activities. Factor 3 was also found to significantly correlate with all domains of WHOQOL-BREF, excluding social relations [Table 2].

Table 3 provides the association of various factor scores with each other, applying Pearson's correlation coefficient.

Table 3 reveals that all these items are positively and significantly correlated with each other. Furthermore, the association between various domains of WHOQOL-BREF scores with various factor scores of ComSI was also computed, applying Pearson' *r* [Table 2].

Most of the factors of ComSI are positively and significantly correlated with various domains of WHOQOL-BREF.

DISCUSSION

Most tools for assessing various aspects related to life satisfaction among the aging population were developed either in western countries or were developed targeting a particular community of the society, that is, hospital-based/urban or rural. Hardly any tools have been developed in our country for assessing the

satisfaction index of any population. The present tool was aimed to assess comprehensive satisfaction in both rural and urban areas and was initially administered on the rural population. In India, a larger proportion of the aging population lives in villages; the proportion of the population age 45 years and above is 2:1 (rural = 171.4; urban = 82.3 million).[17]

PCA and Varimax rotation were applied and three components emerged. One of the items (no. 17) of ComSI was excluded due to its negative value on component 1 and lesser value on second and third components. Therefore, a total of 25 items has been finalized. Furthermore, the intercorrelation between each component of the tool was computed using Pearson's correlation. All factors of the tool were found to be positively and significantly correlated with each other. This tool provides key features regarding one's satisfaction, and therefore, with consensus of the team members, it was named as ComSI. The items loaded with different factors were further subgrouped and named as satisfaction with the family environment and IPR, satisfaction with financial and self-activities-related independence, and satisfaction with available leisure activities.

Various empirical studies provide favorable results on these themes, which strengthen ComSI. Studies report that one's level of satisfaction with family support is a significant factor for the better psychological well-being of the aging individuals;[18] social support was found to be most influential factor for overall satisfaction;[19] family solidarity improves overall satisfaction and poor family solidarity reduces the

Table 2: Correlation coefficient (Pearson's *r*) between various components of ComSI vis a vis domains of WHOQOL-BREF (*n*=260)

Description	Physical health	Psychological	Social relation	Environment
Physical health	-	0.76**	0.53**	0.40**
Psychological	-	-	0.59**	0.51**
Social relation	-	-	-	0.59**
Satisfaction with living environment and IPR	0.15**	0.14*	0.08	0.18**
Satisfaction with economic and self-freedom	0.11*	0.11*	0.27**	0.19**
Satisfaction with leisure	0.15**	0.14*	0.08	0.18**
ComSI total	0.13*	0.14*	0.12*	0.14*

ComSI – Comprehensive Satisfaction Index; WHOQOL-BREF – World Health Organization Quality of Life Brief; IPR – Interpersonal relationship; ns nonsignificant. **Correlation is significant at the 0.01 level; *Correlation is significant at the 0.05 level

Table 3: Correlation coefficient (Pearson's *r*) between various components of ComSI (*n*=260)

Description	ComSI items			ComSI total
	Living environment and IPR	Economic and self-freedom	Leisure	
Satisfaction with living environment and IPR	1.00	0.24**	1.00**	**0.42****
Satisfaction with economic and self-freedom	0.24**	1.00	0.24**	**0.55****
Satisfaction with leisure	1.00**	0.24**	1.00	**0.42****

ComSI – Comprehensive Satisfaction Index; As the correlation coefficient has been checked with ComSI total therefore, highlighted. IPR – Interpersonal relationship, **Correlation is significant at the 0.01 level

overall satisfaction.[20] Social engagements and activities were also reported as a positive indicators of satisfaction.[21] Family relations were also reported as an important indicator of satisfaction.[19] With few exceptions, economic security, functional ability, and social integration were all conditions that in the same way significantly contribute to the satisfaction of older adults.[22] In view of the analysis of ComSI items and its association with WHOQOL-BREF, it may be said that ComSI may provide an index for identifying the level of comprehensive satisfaction of an aging population, which further may help in developing better management strategies for health and well-being of this segment of the population. A recent study revealed that lower levels and steeper declines of life satisfaction were each uniquely predictive of higher mortality risks, independent of sociodemographic variables, physical health, perceived control, and social orientation.[23] The study further reveals that high level of life satisfaction improves QoL, whereas low satisfaction marks serious shortcomings.

Although satisfaction plays a major factor in one's health and well-being, with an advancement in age, comprehensive satisfaction may be treated as a key component. ComSI not only identifies, addresses, and assesses the comprehensive satisfaction of the aging population but also gives clues for intervening components. It identifies three components of comprehensive satisfaction, which were found to be positively associated with each other and WHOQOL-BREF domains.

The tool has been administered on rural subjects, and therefore, it cannot be generalized until urban data have been analyzed. Second, because of the cross-sectional design, this study has limited extrapolative value. Third, again, because it is a cross-sectional study, the results may change over time.

CONCLUSION

This tool emerged with three components, that is, satisfaction with the family environment and IPR, satisfaction with financial and self-activities-related independence, and satisfaction with available leisure activities. There is a positive relationship between the scores of various aspects of ComSI. With proper care and support, a cordial relationship may be developed, and with pleasant IPR, a majority of elderly may remain satisfied, which will further help in enhancing their health and well-being. The present tool will enable us to determine the satisfaction index of the aging subjects, which may give clues for proper intervention and management.

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