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Revision of Spiritual Personality Inventory

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The present study was conducted to revise the Spiritual Personality Inventory (SPI). The original inventory was developed by Husain, Luqman, and Jahan (2012). This was standardized via a sample size of 500 adults to revise and determine the psychometric characteristics i.e. its reliability and validity. Principal Components Factor analysis yielded six subscales. The Cronbach Alpha of this revised version of 28 items was found to be .893 which can be regarded as fairly high in content validity which was verified by some experts and academicians. The items having factor loading greater than or equal to 0.40 were selected. A total of 28 items with six dimensions emerged through Principal Component Factor Analysis explaining 52.28 of the variance, which provided the evidence of factorial validity of the scale.

Keywords: Spiritual Personality Inventory, Reliability, Validity, Factor Analysis.

Spirituality is vital because it gives us a sense of well-being. It is not independent of our body, emotions, desires, reason, moral and ethical values. It always gives us a clear answer because it is beyond mental phenomena and represents the spirit. We should see all our parts, movements, thoughts, emotions, desires through spiritual eyes and then accept only which takes us closer to the Divine.

Husain (2005) explained the concept of spiritual personality in detail in his book entitled "Spiritual Psychology". "There are three elements that enter into the building of personality, heredity, environment and personal response. On its highest level, a man's desire to escape responsibility expresses itself in ascribing all personal qualities to heredity and environment. A general thought, "building a personality," is a misnomer. A spiritual person achieves a high degree of unity within him. Spiritual personality in man, the responses to life are, in their quality, established and well-organized and one can count in him. In all, a strong character, one listens behind the scene, one hears echoes of strife and contention. The process by which personality is thus build up is inward and spiritual. No environment changes itself so much to push a spiritual personality together as to bring his satisfying wholeness within. Spiritual personalities do not hold high ideals and ambitions in their glory, and nowhere more so in the development of personality. Spiritual personality helps in the process of development. Building the spiritual personality is impossible if the individual finds himself with valuable interests in devotion to which he forgets himself. The problem is finding external interest weighs more heavily on some temperaments than on others. The introvert is more sensitive to disapproval, given to introspection and self-criticism and in general is more aware of inner than the outer world. A spiritual person constantly runs upon self-focused life and lives in misery, striving to find happiness through "self-expression". A spiritual person who has genuinely identified himself with other people has done something of first-rate importance for himself without intending it" (pp. 56 - 59).

Husain, Luqman, and Jahan (2012) define spirituality as "a process by which an individual who knows how to anchor his lifestyle around his noble attitude toward others and follow the path of moral rectitude" (p. 2). A truly spiritual personality is one who seeks spiritual knowledge as an end in itself and having attained it, he works as a Divine instrument. He provides spiritual knowledge to promote his wellbeing.

Studies based on the original version of Spiritual Personality Inventory

Jahan, Shaheen, and Shaheen (2013) examined the relationship between the scores obtained on the spiritual personality inventory (SPI) and NEO-FFI among 100 post-graduate students of Aligarh Muslim University. The results showed that a significant relationship exists between the scores obtained on SPI as well as the two dimensions i.e., noble attitude towards others and moral rectitude with Conscientiousness domain of the five-factor model of personality. Also, extraversion and conscientiousness predicted spiritual personality. Neuroticism had significant and positive, predictive relationship with noble attitude.

Anjum and Aijaz (2013) investigated the relationship between spiritual personality and Islamic religiosity among adolescents. In this study the researchers used the sample of 200 students taken from an Islamic school and AMU schools. The findings of this study revealed that a positive relationship exists between Islamic religiosity and spiritual personality among students studying in Madrasa (Islamic School) and school managed by Aligarh Muslim University.

Anas (2014) conducted a study on assessment of spiritual personality among students of social work and psychology. Students of psychology were found to be more spiritual as compared to the students of social work. The findings of the study suggest that the students involved in practicing spirituality in the forms of ritual and worship their behavior is more governed by personal values and tradition, and belief in God.

Ahmad (2015) investigated the relationship between spiritual personality and emotional empathy among medical and unani students. The sample comprised of 100 participants (50 female and 50 male) whose age range was from 24 to 28 years. Out of 100 participants, 50 students were from MBBS course and the remaining 50 students were from BUMS from Aligarh Muslim University, Aligarh. The participants were selected by simple random sampling method. Data were obtained through Spiritual Personality Inventory (SPI) developed by Husain, Luqman and Jahan (2012) and Emotional Empathy Scale (EES) developed by Mehrabian and Epstein (l972). The data were analyzed by means of Pearson Product-Moment Correlation. A significant and positive relationship was found between spiritual personality and emotional empathy in the MBBS male and female students, and BUMS male students only.

Suhhas (2015) conducted a study on "Holistic development of adolescents for social intelligence, emotional maturity and spiritual personality or nation building" among 100 adolescent students from Jodhpur district. The age range of the sample was from 16 to 20 years. Results revealed that there was a significant difference in the three groups of adolescents - higher, middle and lower groups, based on spiritual intelligence (SI), emotional maturity (EM) and spiritual personality (SP) scores and gender differences in relation to their emotional maturity, social intelligence and the spiritual personality. The regression analysis showed the contribution of SI and EM to SP, suggesting that individuals with more SI, EM, and SP can holistically contribute to national development.

Anas, Husain, and Aijaz (2015) examined the relationship between religiosity and spiritual personality among adults. The main objective of this study was to examine the relationship between religious commitment and spiritual personality among Hindu and Muslim as well as Male and Female students. Religious Commitment Inventory and Spiritual Personality Inventory were administered to 200 students of Hindu and Muslim community which were further divided among male and female. The findings of the present research showed that a significant and positive relationship exists between religiosity and spiritual personality among Hindu and Muslim as well as male and female students.

Husain, Nishat, and Jahan (2015) examined the relationship between spiritual personality and perfectionism among undergraduate students of Aligarh Muslim University. Two hundred fifty students (125 male and 125 female) were randomly chosen from the undergraduate

classes of Aligarh Muslim University, Aligarh. They were requested to complete the Spiritual Personality Inventory (SPI) developed by Husain, Luqman and Jahan (2012) and Perfectionism Inventory by Hill, Huelsmann, Furr, Kibler, Vicente, and Kennedy (2004). Pearson Product Moment correlation was used to analyze the data. Results revealed that spiritual personality was significantly and positively related to perfectionism.

Studies are being conducted in India pointing the relevance of spiritual personality in the lives of students. Basically, the above-mentioned studies have demonstrated that a positive relationship exists between spiritual personality and the Big five-factors of personality, emotional empathy, spiritual intelligence, emotional maturity, religiosity/religious commitment, and perfectionism. The findings of these researches show that the spiritual personality inventory has been used in several studies which prove that it is a useful instrument for test validation and empirical investigation of the relation of spirituality in personality, religious, and demographic variables. Both dimensions of spiritual personality inventory, namely, 'noble attitude toward others' and 'moral rectitude' appear uniquely contributing to our understanding of how spiritual personality impacts positive functioning.

Rationale of the study

Personality is an important aspect of spiritual development. There is evidence to suggest that spirituality functions as a personality trait (Johnstone et al., 2012). The original SPI measure has only two dimensions of spiritual personality, viz noble attitude towards others and moral rectitude. While the present authors' view is that adults may perceive some more dimensions of spirituality in their personality as the important aspects in their lives. Another rationale of conducting this study was to examine whether the same dimensions of SPI i.e. 'noble attitude toward others' and 'moral rectitude' exist in the adult sample. The authors postulated that there may be more dimensions of spiritual personality among adults. The main objective of this study was to revise the Spiritual Personality Inventory for adults' Indian population (Hindu and Muslim) and to evaluate psychometric characteristics, i.e. reliability and validity of the New SPI. Development of *Spiritual Personality Inventory-Revised Scale*

The Spiritual Personality Inventory developed by Husain, Luqman, and Jahan (2012) has 32 items with 5-point Likert type responses, viz., Strongly disagree, Disagree, Neutral, Agree, and Strongly agree. The SPI has two dimensions: i.e., 'noble attitude towards others' and 'moral rectitude'. The original version of SPI is based on 400 male and female undergraduate students. In the present study the original SPI was administered on 500 adults.

The principal components analysis was applied to score on 32 items, which provided six factors. Four items did not load significantly on any of the extracted factors, therefore, only 28 items were selected based on factor loading above .40. In the revised version of SPI-R we found six dimensions, they were labelled as: Spiritual Virtues, Positive outlook on life, Spiritual Discipline, Goodness, Spiritual Service, and Moral Rectitude.

Operational Definitions and its Dimension of Spiritual Personality Inventory-R

Spirituality plays a vital role in the life of a person. Spiritual personality takes a holistic view. Having a holistic perspective, it requires spiritual virtues, positive outlook on life, spiritual discipline, goodness, spiritual service, and moral rectitude. These are essential aspects which are deeply ingrained in a spiritual person. A spiritual person unites people, seeking the Self within, and seeks solace in another.

Spiritual Virtues: As it is evident from the findings of factor analysis, religious devotees possess several spiritual virtues such as fulfilling promises, trustworthiness, kindness, purity and cleanliness, truthful, and good etiquettes and manners. Virtues are simply a starting point of a spiritual person. Item Nos.: 1, 2, 12, 17, 11, 18 check spiritual virtues in a person.

Positive outlook on life: This is reflected in terms of having spiritual power, satisfaction with life, feeling of compassion, having sense of sacredness, and strives to excel in steadfastness. A spiritual person's outlook on life creates

connectedness. The item nos.: 23, 22, 21, 20, 19, 7 would bring out the level of positive outlook on life in an individual.

Spiritual Discipline: It helps in self-control, firmness and patience; maintains humbleness, and regulation to stay calm in the face of diversity. If spiritual discipline influences an individual's personality, then its impact persists over generations. Item nos.: 8, 9, 10, 26 check the spiritual discipline in an individual.

Goodness: A spiritual person cultivates goodness by doing deeds of righteousness, recognizing good things, adopting a path that is straight and enjoying what is right. Goodness is a personal endeavor of transcending the mind and heart. It is our innate essence where no boundaries exist. The item nos.: 3, 15, 16, 27 give us an idea about the level of goodness in an individual.

Spiritual Service: A spiritual person devotes his/her life in serving others. Spiritual service for others is reflected in terms of dealing justly, faithfulness, and mercy on others. A spiritual individual helps people the way they want to be treated and helping those in need. The item Nos.: 4, 5, 6, 25 enable us to find the spiritual service that an individual can give to others.

Moral Rectitude: This refers to the attitude of forbearing, sincerity, generosity, and forgiveness. Morality takes you in a direction where there is spiritual progress. Morality in the form of values keeps a person away from sin. Item nos.: 13, 14, 24, 28 check the morality in a person.

Draft of Scale and Item-Description

The revised Spiritual Personality Inventory consisted of 28 items which measures spiritual virtues, positive outlook in life, spiritual discipline, goodness, spiritual services, and moral rectitude. Out of the 28 items, six items measure Spiritual Virtues, five items measure Positive outlook, and there are four items in the following sub-scales: Spiritual discipline, Goodness, Spiritual service and Moral rectitude respectively. Respondents rated each item on a 5-point scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

Table 1: SPI-R Items

Dimensions	Items
Spiritual Virtues	I do not fail in my promise.
	I am trustworthy.
	I keep myself pure and clean.
	I am truthful.
	I am full of kindness.
	I possess good etiquettes and manners.
Positive Aspects of life	I am having a sense of sacredness.
	I have spiritual powers.
	I strive to excel in steadfastness.
	I am compassionate.
	I am satisfied.
	I possess wisdom.
Spiritual Discipline	I am firm and patient.
	I am self-controlled.
	I am Humble.
	I can stay calm in the face of adversity.
Goodness	I am on a path that is straight.
	I do deeds of righteousness.
	I am enjoying what is right.
	15. I recognize all good things.
Spiritual Services	I am faithful to others.
	I am generous.
	I am not for myself, but also for others.
	A virtuous deed.
Moral Rectitude	I am sincere.
	I am forbearing.
	I forgive people.
	I have mercy on others.

Method

Standardization of the Scale

The SPI-R was standardized on a sample of 500 adults comprising 250 males and 250 females. In respect of religion the sample comprised of 250 Hindus and 250 Muslims. The Sample was drawn from different Localities of Aligarh city. All Adults were graduate. The age of the participants ranged between 21 and 45 years with a mean of 28.89 years. The score obtained on the inventory varies from 28 to 140. Higher the score higher is the spiritual personality.

Table 2: Showing Descriptive statistics of Items Scale and Cronbach's Alpha

Descriptive statistics for item					Descriptive statistics for scale		
Item No.	Range	Mean	SD	Variance	Scale Mean if Item Deleted	*Corrected Item-Total	Cronbach's Alpha if Item Deleted
SPI-R1	4	3.87	.900	.809	102.17	.471	.889
SPI-R2	4	4.26	.757	.574	101.78	.423	.890
SPI-R3	4	3.88	.833	.693	102.16	.457	.889
SPI-R4	4	4.05	.771	.594	101.99	.413	.890
SPI-R5	4	4.26	.790	.625	101.78	.352	.891
SPI-R6	4	4.04	.764	.584	102.01	.507	.888
SPI-R7	4	3.76	.804	.646	106.04	.540	.893
SPI-R8	4	3.82	.919	.845	102.22	.494	.888
SPI-R9	4	3.76	.938	.879	102.28	.493	.888
SPI-R10	4	3.97	.751	.564	102.07	.542	.888
SPI-R11	4	3.98	.876	.767	102.06	.589	.886
SPI-R12	4	4.16	.770	.593	101.89	.441	.890
SPI-R13	4	3.80	.869	.755	102.24	.398	.891
SPI-R14	4	4.01	.771	.595	102.03	.364	.891
SPI-R15	4	3.83	.774	.600	102.21	.462	.889
SPI-R16	4	3.83	904	.817	102.21	.483	.889
SPI-R17	4	4.12	.746	.557	101.92	.507	.888
SPI-R18	4	4.06	.820	.672	101.98	.555	.887
SPI-R19	4	3.14	1.199	1.438	102.90	.424	.891
SPI-R20	4	3.73	.978	.957	102.31	.457	.889
SPI-R21	4	4.03	.790	.624	102.01	.501	.888
SPI-R22	4	3.77	.838	.703	102.28	.400	.890
SPI-R23	4	3.76	.831	.690	102.29	.457	.889
SPI-R24	4	4.15	.773	.598	101.90	.505	.888
SPI-R25	4	4.01	.830	.689	102.03	.451	.889
SPI-R26	4	3.69	.956	.913	102.36	.490	.889
SPI-R27	4	4.09	.710	.505	101.95	.460	.889
SPI-R28	4	3.97	.969	.939	102.08	.384	.891

Results

Reliability

The Cronbach alpha of the original version of Spiritual Personality Inventory was reported to be 0.86 for the sample of 400 undergraduate students, and the Cronbach alpha for the two factors, namely, noble attitude towards others and moral rectitude were found to be 0.84 and 0.74, respectively. Cronbach Alpha of the revised version of 28 items was found to be .893 which is fairly high. The internal consistency of the scale is quite high, and this gives a support that the scale has very good reliability (George & Mallery, 2003). Whereas the Cronbach alpha for the factors, namely, Spiritual Virtues, Positive outlook on life, Spiritual Discipline, Goodness, Spiritual Service, and Moral Rectitude were found to be 0.769, 0.700, 0.737, 0.675, 0.639, and 0.58 respectively.

Validity

Content validity (face and logical) of the scale was verified by ten experts. There are various methods to establish construct validity of the tool. Factor analysis with varimax rotation was used to establish the construct validity of the SPI-R Data screening and was carried out to overcome the existence of multicollinearity and singularity in the scale. For testing multicollinearity and singularity 'Determinant' of the R-matrix was estimated and it was greater than 0.00001. The KMO of the present sample was found to be 0.888 which is also significant at .001 probability level. Sampling adequacy was also carried out and found to be greater than 0.50 as required in both cases.

Inter-Factorial Validity

The inter-factorial validity of the scale was calculated to confirm whether all factors are correlated to each other and measure the same construct. The Cronbach's Alpha of each factor has also been calculated and shown in Table-3. The factorial validity of the scale is very high and clearly established.

Inter-factorial correlations indicate that all the factors are significantly correlated with each other and measuring the same construct.

Using a more structured method, Principal Components Factor Analysis was carried out and six factors emerged in the analysis. The items having factor loading greater than or equal to 0.40 were selected. The percent of variance accounted by factors varies from 4.308 to 27.299. Overall, five factors explained 52.286% of the total variance. The factor loadings, percent of variance and cumulative percent of variance for each dimension are also shown in Table-4.

Discussion

The objective of this study was to revise the Spiritual Personality Inventory and to evaluate its psychometric characteristics i.e., reliability and validity for Adults Indian population (Hindus and Muslims). The analysis of the internal consistency and item correlations demonstrated the adequate reliability of the Spiritual Personality Inventory-(Revised). Using the Principal Components Analysis, we determined the factorial/construct validity of the scale, which is highly satisfactory. The six dimensions emerged as Spiritual Virtues, Positive Outlook on life, Spiritual Discipline, Goodness, Spiritual Service, Moral Rectitude for the adult population with 28 items.

Spirituality is one of the important aspects of life. People are more spiritual than religious. In fact, religious people follow the paths and rituals of their religion, but spiritual people explore various ways of life. A spiritual personality is also one of the aspects of spirituality through which the individual knows how to anchor his lifestyle around his noble attitude toward others and follow the path of moral rectitude (Husain, Luqman, & Jahan, 2012). Spiritual personality takes a holistic view. Having a holistic perspective, it requires spiritual virtues, positive

Table 3: Showing Inter Factorial validity of Spiritual Personality Inventory-R

Dimensions	Factors					
	F1	F2	F3	F4	F5	F6
Spiritual Virtues	1					
Positive Aspects of Life	.490**	1				
Spiritual Discipline	.486**	.516**	1			
Goodness	.562**	.471**	.407**	1		
Spiritual Services	.512**	.420**	.459**	.455**	1	
Moral Rectitude	.457**	.474**	.465**	.428**	.400**	1
r = 0.10, p< 0.05; r = 13, p< 0.01; r=16, p< 0.001 (two tailed)						
**Correlation coefficient is significant at the 0.01 level (2-tailed).						
F1= Spiritual Virtues, F2= Positive Aspect of Life, F3= Spiritual Discipline, F4= Goodness, F5= Spiritual Services, F6= Moral Rectitude						

Table 4: Factor structure of the Spiritual Personality Inventory-Revised (SPI-R)

Item No.	Spiritual Personality Construct	Factor Loading					
		I	II	III	IV	V	VI
Item 1	Spiritual Virtues	.700					
Item 2		.658					
Item 12		.550					
Item 17		.538					
Item 11		.536					
Item 18		.523					
Item 22	Positive Outlook on life		.666				
Item 19			.666				
Item 23			.635				
Item 21			.593				
Item 20			.461				
Item 7			.405				
Item 9	Spiritual Discipline			.784			
Item 8				.712			
Item 10				.593			
Item 26				.513			
Item 16	Goodness				.641		
Item 3					.611		
Item 27					.611		
Item 15					.499		
Item 5	Spiritual Service					.611	
Item 6						.610	
Item 25						.582	
Item 4						.543	
Item 14	Moral Rectitude						.727
Item 13							.610
Item 28							.463
Item24							.455
Percent of Variance		27.299	6.574	5.137	4.586	4.383	4.308
Cum. Percent of Variance		27.299	33.873	39.010	43.595	47.978	52.286

outlook on life, spiritual discipline, goodness, spiritual service, and moral rectitude. These are essential aspects and are deeply ingrained in a spiritual person. A spiritual person unites people, seeking the self within, and seeks solace in another.

Conclusion

Based on the findings of the present study, the following conclusions can be drawn. First, six factors, namely, spiritual virtues, positive outlook on life, spiritual discipline, goodness, spiritual service, and moral rectitude emerged as dimensions of spiritual personality in the revised version. Adults should strive to develop their spiritual personality through spiritual exercises such as reading scriptures, Prayer, meditation etc, and following these characteristics.

Second, reliability and validity coefficients based on 500 adults confirmed that spiritual personality inventory has quite satisfactory psychometric characteristics.

Suggestions: Future research needs to explore the relationship of spiritual personality with other personality measures. This is needed to develop an evidence-based model that can be linked with spiritual practice, spiritual belief and spiritual peace, altruism, virtues, discipline or goodness which are essential aspects of spirituality. Research shows that spiritual persons are more involved in practicing spirituality in the form of rituals and worship and their behavior is more governed by personal values and tradition and belief in God.

Future research should examine the relationship of spiritual personality with various aspects of spiritual behavior and experiences. It is important to establish a relationship between SPI measure and other personality models such as The Big Five and HEXACO-60. Furthermore, obtaining more evidence of validity of the SPI will sustain its psychometric properties in different contexts.

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Cancer Specific Interpersonal Relationship Scale (CANSIRS): Construction and Preliminary Validation

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Cancer interrupts the life of the person diagnosed with the disease and their caregivers, it may also result in change in activities such as social and general stability of the life of both patients and caregivers. These changes have potential ramifications for relationship adjustment and the ways in which the patients and caregivers relate to and support one another. Therefore, our main objectives were to construct a self-report scale to measure the interpersonal relationship between patients with cancer and their caregivers and examine the different psychometric issues as well as to establish preliminary validation in the development of this scale. Two hundred and fifty dyads consisting of patient with breast cancer, head and neck cancer and their family caregivers were selected. Findings indicated that majority of the dimensions for both Form A and B of CANSIRS have high alpha coefficient. The results of factor analysis and preliminary validation were also discussed. The present study findings show that the scale developed with further factor analytic research, could become useful clinical tools.

Keywords: Interpersonal, Relationship, Scale, Cancer, Caregivers.

Cancer shows its effect not only in biological, but also in psychosocial aspects of a person's life. In addition to the patient, its effects are observed many times in the patient's family, friends, and close relations. Patients as well as their family members or caregivers must make many changes and adjustments in their lives to adapt to the new situation and its effects. Studies have shown that level of adjustment of patients with cancer tends to moderately correlate with the level of adjustment of their partners (Hodges, Humphris, & Macfarlane, 2005; Northhouse, Templin, Mood, & Oberst, 1998; Thornton, Perez, & Meyerowitz, 2004). The life of the patients and their caregivers are disrupted by cancer as it brings with it a complete alteration in their plans, priorities, identity, roles, responsibilities, needs, and day to day functioning (Padmaja, Vanlalhruaii, Rana, Tiamongla, & Kopparty, 2017). Cancer may also result in change in social activities and general stability of the patient and partner, these changes have prospective ramifications for relationship adjustment and the ways in which they relate to and support one another (Burman & Margolin, 1992; Blanchard, Albrecht, & Ruckdeschel, 1997; Mane, 1998; Oberst & Scott, 1988).

For patients suffering from cancer, the social support is an important determinant for their ability to live with illness (Bernard, Zynarska, & Adamek, 2010). The providers of this support are more often their family members who are also their primary caregivers. These primary caregivers mainly include spouse and blood relatives. When the patients are diagnosed with disease such as cancer their focus is likely to be towards pain, death and time they have left for them, and so on. On the other hand, family caregivers need to take care of the patient, plan for the treatment, need to do financial planning, worry about the patient's health status and at the same time try to maintain a positive attitude as well as and relationship towards the patients while they themselves are trying to adjust with their loved one's illness. Therefore, it is imperative to examine the crucial role played by interpersonal process and relationship in patients with cancer and their caregivers' psychological adjustment to cancer (Thornton & Perez, 2007).

We are aware that human beings have a general need of belongingness. This is explained as "a pervasive desire to form and maintain at least a minimum quantity of

lasting, positive, and significant interpersonal relationship" (Baumeister & Leary, 1995). Feelings of loneliness, anxiety, anger, and even depression manifests in those people who are deprived of the feeling of belongingness (Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Hagerty, William, Coyne, & Early, 1996). Berscheid and Ammazzalorso (2004) explain relationship as 'two people whose behavior is interdependent in that a change in behavior in one is likely to produce a change in behavior of the other'. Interpersonal relationship is the social association, connection, or affiliation between two or more people (Ejifugha, 2011). Interpersonal relation is defined by Braken (1993) as "unique and relatively stable behavioral patterns that exist or develop between two or more people as a result of individual and extra individual influences". At present, the focus is on the measurement of interpersonal relationship between patients with cancer and their family caregivers. The interpersonal relationship has been conceptualized and operationalized as an interactional process between the patients and their family caregivers focusing on their mutual communication, mutual relationship, ways in which they deal together with certain situations, availability, support and care for each other during illness. Interpersonal relationship is called a process because it involves a series of action between the patients and their family caregivers. This process is interactional in nature as both patients and their family caregivers share mutual responsibilities and influence each other.

Interpersonal relationship is affected by personal factors, proximity, and similarity (Essay, Uk, 2013). It was suggested by Berscheid and Regan (2016) that social environment (approval of social network and availability of alternative) and physical factors (proximity) are factors in the development and maintenance of interpersonal relationship. Research has shown a consistent link between perceived availability of social support with better psychological and physiological adaptation to major illness (Wimberly, Carver, & Antoni, 2008). It is also observed that the major source of their stress and interpersonal conflict is the social network (Rana & Hariharan, 2015). Communication problems are also commonly cited by the patients (Gordon, et al., 1977). Patients diagnosed with cancer and their partners may have experienced significant reduction in emotion, social, and physical functioning depending on the patient's response to their cancer (Thornton, Perez, & Meyerowitz, 2004; Mane, 1998). Interpersonal relationship between patients with cancer and their caregivers is constructed as a multidimensional and complex construct. Measures such as Interpersonal Solidarity Scale (Wheeless, 1976), Interpersonal Support Evaluation List (Cohen & Hoberman, 1983), and Fundamental Interpersonal Relation Orientation-Behavior (Schutz, 1958; Waterman, 2004) are developed to measure interpersonal relationship among general population. Scales such as The Trust in Physician Scales (Anderson & Dedrick, 1990), Psychological and Interpersonal Relationship Scale, PAIR (Swindle, Cameron, Lockhart & Rosen, 2004) and 15-item short form of PAIR (Swindle, Cameron & Rosen, 2006) for erectile dysfunction patients have been found. However, in the context of patients with cancer and their family caregivers, specific scales which measure their interpersonal relationship has not been found in literature search.

The objectives of the present study was to (i) construct a self-report scale to measure the interpersonal relationship between patients with cancer and their family caregivers from the caregiver's perspective, (ii) construct a self-report scale to measure the interpersonal relationship between patients with cancer and their family caregivers from the patient's perspective (iii) examine the different psychometric issues and (iv) establish preliminary validation of these scales.

Phases of Construction and Development

The scale was developed through three phases—item writing, content evaluation and naming and establishment of psychometric properties and preliminary validation.

Phase 1: Item Writing. Before the items were constructed, extensive review of literature on interpersonal relationship was done. Four scales on the related areas were also referred, such as Fundamental Interpersonal Relationship Orientation- Behaviour (Schutz,

1958), Interpersonal Solidarity Scale (Wheelees, 1976), Relationship Assessment Scale (Vaughn & Baier, 1999), and Dyadic Adjustment Scale (Spanier, 1976). Multiple in-depth interview sessions were also conducted with patients with cancer (diagnosed with breast cancer, head and neck cancer) and their family caregivers. Three psychologists and an oncologist having more than 10 years of experience were consulted during item writing phase. Basing on these, five major theoretical dimensions related to interpersonal relationship were identified—mutual communication, mutual relationship, attention and support, availability and providing comfort, and mutual care. Subsequently, items were written for family caregivers of patients with cancer. Initially, 50 items belonging to the five dimensions were generated. These items were revisited to increase the readability and were administered on the target group (n=20) and feedback was collected from each of the participants. Based on the feedback, some of the items were modified to improve clarity and simplicity. After modification, all 50 items were retained.

Phase 2: Content Evaluation and Naming. The scale underwent the standard process of content evaluation to find out if the scale captured the essence of interpersonal relationship. Therefore, 10 experts from the field of Psychology and Oncology were requested to read the scale. They were asked to mark each item if it was 'essential' or 'non-essential' to measure the interpersonal relationship between patients with cancer and their family caregivers. Only items that were marked essential by all the experts were retained and in this way 35 items were retained. As per the suggestion, a 5-point scale was adopted to rate each item (1= never to 5= always). The scale was named as Cancer Specific Interpersonal Relationship Scale-Caregiver and abbreviated as CANSIRS.

Phase 3: Establishment of the Psychometric Properties and Preliminary Validation

After naming, the scale was ready for pre-test to assess its initial psychometric properties and to establish preliminary validation.

Participants

Initially 290 caregivers of patients with cancer who are also their family members were contacted from regional cancer centers located in two different cities in India –Hyderabad and Aizawl. Finally, 250 dyads were selected for the study. The selected patients with cancer included patients with breast cancer (50%) and with the head and neck cancer (50%). The age of the patients with cancer ranged between 20-65 years. The patients undergoing curative treatment and having no cases of mental illness were included in the study. The 250 patients included equal number of men and women. The family caregivers included their spouses, children, or blood relations. Their inclusion criteria include age between 18-65 years and without reported history of mental illness.

Measures

In addition to the newly developed scale, two other measures—European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire-QLQ-C30, version 3.0. and Caregiver Quality of Life Index - Cancer (CQOLC)—were used for establishment of psychometric properties and preliminary validation.

Cancer specific interpersonal relationship scale (CANSIRS). This newly developed scale—CANSIRS—is a self-report psychological instrument to measure the degree and kind of interpersonal relationship between patients with cancer and their family caregivers. This scale has two parallel forms—Form A family caregivers and Form B for patients with cancer. Each form consisted of 35 items measure using a 5-point scale (1= never, 2 = rarely, 3 = sometime, 4 = often, 5 = always). Each form has five dimensions—mutual communication (e.g. I talk openly with him/her about his/her illness), mutual relationship (e.g. I am close to him/her after his/her illness), attention and support (e.g. Attending on him/her creates stress for me), availability and providing comfort (e.g. I try to make him/her forget about his/her illness), and mutual care (e.g. His/her illness does not stand in the way for his/her care towards me). The score of the items of a particular dimension are

to be added to calculate the dimensions score, whereas the scale score is to be calculated by adding the score of all the dimensions. The higher the score the better is the interpersonal relationship.

European organization for the treatment and research of cancer quality of life questionnaire-QLQ-C30, version 3.0. (EORTC QLQ-C30 v. 3.0). EORTC QLQ (Aaronson et al., 1993) was used to assess the quality of life of patients with cancer (BC and HNC). The questionnaire contains 30 items and is designed to cover a range of quality of life issues for patients with cancer. The questionnaire comprises of five functional scales (such as physical, role, emotional, cognitive and social), seven symptoms scales (such as fatigue, nausea and vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties) and global health statue /QoL. Except for global health status items, all other items were score using 4-point scale (1 = not at all, 2 = a little, 3 = quite a bit, 4 = very much), where as in global health status, items were rated in a scale of 1 to 7. EORTC QLQ- C30 includes items such as 'Have you had pain? Did you need rest?' A high score for functional scale represents a high or healthy level of functioning, a high score for the global health status/ QoL represents a high QoL. However, it should also be noted that a high score for a symptom scale represents a high level of symptomatology. Cronbach alpha coefficient of the questionnaire ranged from .54 to .86 (Aaronson et al., 1993).

Caregiver quality of life index-Cancer (CQOLC). CQOLC (Weitzner, Jacobsen, Wagner, Friedland, & Cox, 1999) was used to measure the QoL of the family caregivers of patients with cancer. The questionnaire consisted of 35 items which were scored on a 5-point scale (0=not at all to 4= very much). CQOLC includes items such as I feel nervous, I get support from my friends and neighbors, I have developed a closer relationship with my loved one. The total score was found by addition of the item scores and the higher the score the poorer was the QoL. CQOLC was divided into four dimensions such as burden, disruptiveness, positive adaptation and financial concern and support (Tamayo, Broxson, Munsell, & Cohen, 2010). The test-retest reliability was 0.95 and internal consistency coefficient was 0.91. In addition to this, the scale also has adequate validity.

Procedure

Before starting the study, approval of the Institutional Ethics Committee of the University where the authors work was obtained. In addition to this, permissions from the authorities of the three cancer specific hospitals were obtained. Basing on the inclusion and exclusion criteria, the participants (dyads consisting of patients and their family caregivers) were selected. During the process of selection, rapport was established, and informed consent was obtained from each member of the dyad. Such dyads were excluded, where informed consents were not given by either members or both dyad. After final selection of the participants, the measures were administered individually on each member of the dyad. The duration of the administration varied between 20 to 35 minutes (M = 25 minutes). During administrations, the doubts raised by the participants were clarified. At the end, the participants were debriefed.

Results

Reliability analysis. Data obtained were analyzed by means of reliability analysis with alpha model using IBM SPSS statistics for windows, version 20.0. Cronbach's Alpha for the total items for Form A (Caregiver's) i.e. was found to be .93. Those items where total correlation less than .30 were deleted which were item numbers 8, 21, 33, and 35.

Factor Analysis. Factor analysis using Principal Component Analysis and varimax rotation was run and those items with communality value less than .50 were deleted. These items were 14 (Communalities=.464), 16 (Communalities =.404), and 26 (Communalities=.422). After deletion of the above mentioned seven items, factor analysis using Principal Component Analysis and varimax rotation was run again and those items with communalities which had a value less than .50 were deleted. These items were item number 17 (Communalities= .385), and item no.32 (Communalities=.431). With the

remaining 26 items, factor analysis using the Principal Component Analysis and extraction method was done and five-factors were extracted. Item numbers 9 and 20 were deleted at this stage because in rotation component matrix their value in the five-factors was less than .50. The remaining 24 items were then retained.

Five-factors were identified from the remaining 24 items. The scale explains 63.66% of the total variance, where factor one is explaining 39.66%, factor two is explaining 8.57%, factor three is explaining 5.74%, factor four is explaining 5.50%, and factor five is explaining 4.16%. Each item loaded .50 or higher on its expected factor. The CANSIRS items, pattern and structure coefficient (factor loadings), along with reliability estimates are presented in Table 1.

After the identification of factors from the remaining 24 items, the factors were named as per their contents. Factor 1 was named as 'Mutual Communication' as all the nine items loading in this factor emphasized on perception regarding communication between the caregivers and their patients with cancer. Further, the items in this factor refer to the perception of the caregiver

Table 1: Component matrix for principal component analysis with varimax rotation of CANSIRS Caregiver's perspective

CANSIRS Items: original item number	Component				
	1	2	3	4	5
Item 6	.782				
Item 18	.780				
Item 3	.748				
Item 24	.748				
Item 15	.724				
Item 11	.704				
Item 23	.636				
Item 22	.603				
Item 12	.543				
Item 19		.824			
Item 7		.797			
Item 10		.634			
Item 13		.633			
Item 25		.557			
Item 28		.515			
Item 31			.737		
Item 29			.612		
Item 30			.567		
Item 5				.695	
Item 4				.624	
Item 27				.533	
Item 2					.695
Item 34					.618
Item 1					.558
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Coefficient Alpha	.912	.867	.624	.695	.602
Number of items	9	6	3	3	3
Mean inter-item correlation	.534	.524	.361	.437	.345
Percentage of explained variance	39.67	8.58	5.75	5.50	4.16

in openness and sharing, it is the process and extent to which patients and their caregivers exchange information, ideas, feelings, news in relation to themselves and about the illness, about several facets of life like illness, financial planning, family matter etc., during the present period i. e. after the onset of illness.

Factor 2 was labeled as 'Mutual Relationship' as all the six items loading on this factor reflected on the caregiver's perception of relationship between him/her with his/her ward. The items in this factor reflected the caregiver's perception of the way in which caregivers and patients acknowledge the mutual support they share as well as trust, bonding, respect, acceptance, shared interest and values in the present situation i.e. after the onset of illness.

Factor 3 was labeled 'Attention and Support' as all three items in these factors refers to the caregiver's perception of self and partner's stress and ways of dealing with it. Factor 4 was labeled 'Availability and Providing Comfort' as the three items in this factor reflected the caregiver's perception of being available and supportive physically and emotionally during the course of the patient's illness. Factor 5 was named 'Mutual Care' as all three items in this factor reflected on the caregiver's perception of the feelings of care they give to and receive from patient being cared for.

As the investigators were interested in the perception of patients with cancer on the interpersonal relationship with their caregivers, parallel items were generated based on the 24 items retained. This patient's perspective on interpersonal relationship with their caregivers was named CANSIRS Form B (Patient's Perspective) while the caregiver's perspective was named CANSIRS Form A (Caregiver's Perspective).

Preliminary Validation of CANSIRS (Caregiver's Perspective). Pearson correlation r was run to establish correlation between the newly developed CANSIRS Form A and quality of life of family caregivers of patients with breast cancer and head and neck cancer (Table 2). Significant and negative correlations were found between CANSIRS Form A's mutual communication and caregivers' quality of life dimensions such as burden [r (248) = -.170, p< .01], disruptiveness [r (248) = -.336, p< .01], positive adaptation and financial concern [r (248) = -.322, p< .01], and support [r (248) = -.145, p< .05]. This indicated that when the caregivers perceived increase in their mutual communication with the patient, he/she is caring for their scores in CQOLC dimension such as burden, disruptiveness, positive adaptation and financial concern, and their need of support from family and friends decreased.

CANSIRS Form A's mutual relationship was found to have significant and negative correlations with CQOLC dimensions such as disruptiveness [r (248) = -.238, p< .01], positive adaptation and financial concern [r (248) = -.383, p< .01], and support [r (248) = -.169, p< .01]. This indicated that when caregivers perceived increase in mutual relationship with the patients, their scores of disruptiveness, positive adaptation and financial concern, and their need of support from family and friends decreased.

In CANSIRS Form A, attention and support have significant and negative correlations with CQOLC dimensions such as burden [r (248) = -.221, p< .01], disruptiveness [r (248) = -.312, p< .01], positive adaptation and financial concern [r (248) = -.519, p< .01], and support [r (248) = -.322, p< .01]. This indicated with an increase in caregivers' perception of attention and support, their scores in CQOLC dimension such as burden, disruptiveness, positive adaptation and financial concern, and their need of support from family and friends decreased.

Significant and negative correlation was found between CANSIRS Form A's availability and providing comfort and CQOLC's burden [r (248) = -.145, p< .05], disruptiveness [r (248) = -.235, p< .01], and positive adaptation and financial concern [r (248) = -.201, p< .01]. This indicated that when the caregivers perceived increase in their availability and providing comfort for the patient, their scores in CQOLC dimension such as burden, disruptiveness, and positive adaptation and financial concern decreased.

In CANSIRS Form A mutual care have significant and negative correlations with

Table 2: Correlation between caregivers' perception of interpersonal relationship and their Quality of Life

Variables	Mutual Communication	Mutual Relationship	Attention and Support	Availability and providing comfort	Mutual Care
Burden	-.170**	-.101	-.221**	-.145*	-.132*
Disruptiveness	-.336**	-.238**	-.312**	-.235**	-.285**
PAFC	-.322**	-.383**	-.519**	-.201**	-.345**
Support	-.145*	-.169**-	-.322**	-121	-.190**

Note: **< .01, *< .05. PAFC-Positive Adaptation and Financial Concern

Table 3: Correlation between patients' perception of interpersonal relationship and their Quality of Life

Variables	Mutual Communication	Mutual Relationship	Attention and Support	Availability and providing comfort	Mutual Care
GHS	.063	.073	-.039	.022	.134*
Physical Functioning	.123*	.073	.059	.070	.166**
Role Functioning	.111	.072	.038	-.015	.074
Emotional Functioning	.112	.059	-.062	.027	.121
Cognitive Functioning	-.076	-.132*	-.140*	-.119	-.053
Social Functioning	.031	-.057	-.027	-.070	.140*
Fatigue	-.150*	-.134*	.054	-.060	-.132*
Nausea and Vomiting	-.045	-.036	.120	.072	-.046
Pain	-.179**	-.117	-.057	-.102	-.059
Dyspnea	-.079	.021	.163**	.013	-.028
Insomnia	-.056	-.031	-.002	.043	-.209*
Appetite Loss	-.146*	-.091	-.061	.001	-.160*
Constipation	-.083	-.080	.016	-.145*	-.041
Diarrhea	-.023	.027	-.054	-.008	.080
Financial Difficulties	-.030	.050	.067	.060	-.091

Note: **< .01, *< .05. GHS- Global Health Status

CQOLC's burden [r (248) = -.132, p< .05], disruptiveness [r (248) = -.285, p< .01], positive adaptation and financial concern [r (248) = -.345, p<.01], and support [r (248) = -.190, p< .01]. This indicated that when the caregivers perceived increase mutual care, their scores in CQOLC dimension such as burden, disruptiveness, positive adaptation and financial concern, and their need of support from family and friends decreased.

Preliminary Validation of CANSIRS (Patient's Perspective). Pearson correlation r was run to establish correlation between CANSIRS Form B and quality of life of patients with breast cancer and head and neck cancer (Table 3). CANSIRS Form B which measures patients' perception of mutual communication has positive correlation with physical functioning [r (248) = .128, p< .05]. This indicated that with the increase in patient's perception of mutual communication there is an increase in physical functioning of the patients. Mutual Communication also has significant and negative correlations with fatigue [r (248) = -.150, p< .05], pain [r (248) = -.179, p< .01] and appetite loss [r (248) = -.146, p< .05]. As per the interpretation of EORTC QLQ-C 30, when score in physical symptoms items/dimension increases it indicates more problem. So, when patients perceived an increase in mutual communication with their caregivers, their fatigue, pain and appetite loss decreased.

Patients' perspective on mutual relationship negatively correlates with cognitive functioning [r (248) = -.132, p< .05] and fatigue [r (248) = -.134, p< .05]. This indicated that when patients perceived an increase in mutual relationship, their cognitive functioning decreased. This may be because when patients perceived themselves as having good relationship with their caregivers during their illness they may depend excessively on them in terms of reasoning, planning, decision making and so on, and on issues related to their illness. As mentioned earlier, when score in physical symptoms items/dimension increases it indicates more problem. Thus, when patients perceived an increased in mutual relationship with their caregivers, their fatigue decreased.

Patients' perspective on attention and support have negative correlation with cognitive functioning [r (248) = -.140, p< .05]. When the patients perceive an increase in attention and support there is decrease in their cognitive functioning. Positive correlation was found between patients' perspective on attention and support and dyspnea [r (248) = .163, p< .01]. When the patients perceived an increase in attention and support, dyspnea i.e. difficulty in breathing increased. This may be attributed to the physical state of the patient thus result in getting more attention and support from the caregivers. Significant and negative correlation was found between patients' perspective on availability and providing comfort with their constipation [r (248) = -.145, p< .05]. As mentioned earlier, when score in physical symptoms items/ dimension increases it indicated more problem. So, when the patients perceived their caregiver as available and comfort is being provided to them the symptoms of constipation decreased.

Patient's perception of mutual care has significant and positive correlations with patient's global health status [r (248) = .134, p< .05], physical functioning [r (248) = .166, p< .05] and social functioning [r (248) = .140, p< .05]. This indicated that when the patients' perceived themselves as being loved, not being a burden and are caring towards their caregivers despite their illness their global health status, physical functioning and social functioning increased. Patient's perspective on mutual care was negatively correlated with fatigue [r (248) = -.132, p< .05], insomnia [r (248) = -.209, p< .05] and appetite loss [r (248) = -.160, p< .05]. As per the interpretation of EORTC QLQ-C 30, when score in physical symptoms, items/ dimension increases it indicates more problem. So, when the patients' perceived themselves as being loved, not being a burden and are caring towards their caregivers despite their illness they experienced less fatigue, insomnia and appetite loss.

Discussion

A study conducted by Chung and Hwang (2012) reported that patients with breast cancer and their husbands cope through mutual help, support, concern, and sharing what is important for the patient. The same study also reported that husband tries to help their wives more actively by providing care. There are studies which suggested the need to focus on patients with cancer and their caregivers' open communication (Wittenberg, Borneman, Koczywas, Del Ferraro & Ferell, 2017; Bachner & Carmel, 2009), the areas where improvement in

communication are needed (Ellington, Clayton, Reblin, Donaldson, & Latimer, 2017; Kimberlin, Brushwood, Allen, Radson, & Wilson, 2004) and exploration of mutual needs of patients and caregivers (Dobrina, Vianello, Tenze, & Palese, 2015). The present tools thus add value to these suggestions. The main objective of the present study was to construct a self-report scale to measure the interpersonal relationship between patients with cancer and their family caregivers from the caregiver's perspective. The finding of this study indicates that CANSIRS has established high internal consistency. Five-factor structure—mutual communication, mutual relationship, attention and support, availability and providing comfort and mutual care—has been identified with a substantial number of family caregivers of patients with cancer.

The constructed instruments are the first of its kind to measure the perspective of both caregivers and cancer patients. Though the scales have been developed using caregivers and patients with breast cancer and head and neck cancer dyads, the instruments can be extended to any caregivers and patients suffering from cancer and other chronic diseases and is designed for use with both men and women. The scales will clarify the relationship between patients and their caregivers, it will help the researchers and practitioners in quantifying the relationship between patient and their caregivers.

In this ongoing research work, though the scales show good preliminary psychometric properties, potential users need to be aware of the limitations. Confirmatory factor analysis or other approaches needs to be done to establish construct validity. It is also necessary to establish the norms of the scales for better interpretation and understanding of the caregiver and patient's perspective. Although the scales have few limitations, the findings in this study indicate that CANSIRS Form A and B have well defined structure and high reliabilities. As with any new self-report scale, range of psychometric properties can be established for the scale.

Conclusion

In conclusion, it may be said that a strong interpersonal relationship involving mutual communication, mutual relationship, attention and support, availability and providing comfort and mutual care between patient with cancer and their caregiver may enhance the quality of care and support provided to the patients. The present scales may be useful for assessment of interpersonal relationship of patients with cancer and their family caregivers. Based on the results of this assessment if areas which need to be strengthened in their interpersonal relationship are identified, appropriate psychological interventions may be planned. This strengthening may in turn have a positive influence on several other facets of their lives.

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