

Supportive Care Needs Survey Short Form-34(SCNS-SF-34) Nepali Version: Psychometric Assessment Among Cervical Cancer Patients in Nepal

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Research

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Abstract

Purpose

Psychometrically valid and reliable supportive care need survey(SCNS) instrument explores perceived supportive care needs of cervical cancer patients in comprehensively. No Nepali validated version so we decided to test the psychometric properties of the translated Nepali version of SCNS-SF 34-N(Nepali) among cervical cancer patients.

Methods

334 participants were recruited purposively from 5 cancers specific hospital. Factor structure was assessed by using Exploratory factor analysis (EFA). Structure validity, Internal consistency convergent validity, and discriminant validity of the resulting factor structure were calculated and confirmed.

Results

Using EFA a five-factor structure was developed considering higher loading factor for multiple loaded items which was similar with the dimensions of the original version of the SCNS-SF34 (psychological, health system and information, physical and daily living, patient care and support, and sexuality), accounting for 65.48% of the total variance. Internal consistency was achieved at an acceptable level, with Cronbach's alpha coefficients ranging from 0.789 to 0.929 for all five domains and 0.887 for the whole scale. Convergent validity was confirmed by significant inter item correlations with all corresponding items. Independent 't' test between known subgroups on age, marital status, stage of disease and treatment modalities confirmed discriminant validity.

Conclusions

It was confirmed that the SCNS-SF 34 N(Nepali) is a valid and reliable instrument for the assessment of the supportive care needs of cervical cancer patients in Nepal

Background

Worldwide Cervical Cancer is one of the most common cancer disease in women[1, 2] and 1.4 million women are living with Cervical cancer[2]. The new cases of cervical cancer are approximately 570 000 and the death cases are 311 000 from this disease and it is the fourth most common cancer in women standing after breast cancer (2.1 million cases), colorectal cancer (0.8 million) and lung cancer (0.7 million) [3]. In the South East Asia region, cervical cancer is the second most common type of cancer in women and it is the main cause of cancer related death in low and middle- income countries (LMICs) like Nepal [4]. The most frequent common cancer among women in Nepal is cervical cancer. The new cases of this disease are 2,332 and death cases are 1,367 every year. It positions as the first common malignancy among women and it commonly occurs between 15 and 44 years of age [5].

Healthcare providers can identify the patients' desire for actual services or resources in satisfying physical and daily living, psychological, sexual, patient care as well as health system and information needs through the assessment of Supportive care needs of cancer patients. When the patient recognizes a deficiency of support or care, unmet supportive care needs always occurs according to the patient's perception[6,7].

Need assessment is a critical step to provide excellent care and achieve cancer patients' and family expectation by the health care provider. Inadequate understanding of patient and family needs may result in increased unnecessary suffering and health care costs[1].

Numerous cancer patients get the experience of compromised quality of life during the disease course it may be either due to disease itself or treatment-related side effects. The main objective of cancer care is to maintain or improve quality of life. Maintenance or improvement of quality of life is identified as the main objective of cancer care[8, 9].

Cervical cancer patients encountered with many physical, psychological, social distress, spiritual suffering fatigue, irritability, memory loss, decreased energy level, recurring pain and they have been faced with worse emotional distress and quality of Life in Comparison with other gynaecological cancers. Supportive care helps the patient and family to handle the problems of the illness in all phase of the disease in line with holistic health care management[10, 11].

Psychometrically strong instruments are essential for the assessment of supportive care needs of cancer patient holistically in the area of clinical and research[9, 12, 13].

For the identification of valid and reliable instrument, psychometrically valid and reliable culture based instrument is crucial, which helps in the exact assessment of perceived supportive care needs of cancer patients [12, 14, 13, 9].

Many kinds of need assessment instruments are largely developed and validated in English speaking countries for the assessment of supportive care needs of cancer patients. The Supportive Care Needs Survey (SCNS) is a commonly used instrument for the identification of perceived supportive care needs of cancer patient[15, 1].

SCNS is one of the best, reliable, valid, complete and strong cancer specific needs assessment instrument it assesses the kind and extent of perceived supportive care needs of cancer patient covering the five domains (psychological, health system and information, physical and daily living, patient care and support, and sexuality)[16, 15].

At present, three versions of SCNS are available: SCNS: 59-item long-form (SCNS-LF59)[16], 34-item short-form (SCNS-SF34)[6] and 9-item screening tool (SCNS-ST9)[9].

SCNS-LF59 is the original form, developed from the Cancer Needs Questionnaire and it consists of 59 items[16]. SCNS-SF34 another version was developed by the original author after psychometric assessment for the further increment of practical utilization[6]. SCNS-SF34 consisted of 34 items across 5 factors of analytically originate domains which are same as the longer version: psychological (10 items), health system and information (11 items), physical and daily living (5 items), patient care and support (5 items), and sexuality (3 items) [6, 17].

SCNS-SF34 can reduce respondent burden in routine cancer care than SCNS-LF59[16, 6]. Till the date, the SCNS-SF34 has been translated and psychometrically validated in various languages, including Australia[6] in cancer patients, China [9] in cancer patients, Italy[18] in patients with melanoma, Turkey [12] in breast cancer patients, German[19] in cancer patients, Dutch[14] in head & neck cancer patients.

SCNS-SF34 is a frequently used patient-reported outcome measure (PROM) on generic cancer-related SC needs in which patients give the information regarding present need and degree of support for help in the previous month as a result of having cancer (1—no need, not applicable; 2—no need, satisfied; 3—low need; 4—moderate need; 5—high need). A high score in the tool indicates that perceived supportive care need is high level[6, 17].

When PROMs is going to be used in a different setting and different cancer population it may affect the psychometric characteristics so again psychometric validation of PROMs is essential and the importance [14].

Till the date no psychometrically validated Nepali version of SCNS-SF34 so we decided to assess the psychometric properties of Nepalese translated version of SCNS-SF 34 (N) in Nepalese population with having cervical cancer.

Methods

Setting, sample and participants

Bhaktapur Cancer Hospital (BCH), Bhaktapur, Nepal and Bisweswar Prasad Koirala Memorial Cancer Hospital(BPKMCH), Bharatpur, Chitwan, Nepal Cancer Hospital & Research Centre; Harisiddhi, National Hospital & Cancer Centre; Jawalakhel, Kathmandu Cancer Center; Tathali, Nepal were selected as the setting of the study. The population of the study consisted of patients diagnosed with cervical cancer and they were under treatment in selected hospital[12, 20]. The sample size was 340 as per rule of thumb at least 10 subjects per item of the instrument scale along with item analysis and exploratory factor analysis is suggested[21, 22]. Data were collected from patients' diagnosed with cervical cancer , undertaking cancer therapy, physically and mentally able to complete the questionnaire and able to understand the Nepali language[23, 24] from May 2020 to September 2020.

Process / Procedure

This study was formally approved by the School of Nursing & Health, Zhengzhou University, Henan China and Nepal Health Research Council. The eligible respondents were identified by the main researcher and trained survey interviewer nurses (Nurse having Bachelor degree) from in and outpatient departments of selected hospitals. The eligible respondents were informed about the purpose of the study and also assured the standard of care would not modify irrespective whether they participated in the study or not. After getting informed consent from the eligible respondents, they were requested to complete a set of self-report questionnaires on the same day either at the hospital (inpatients) or at home (outpatients). The main researcher and trained survey interviewer nurses checked the questionnaire thoroughly immediately after returning the questionnaire by the respondents to avoid the missing response. Participants who did not return the questionnaire were followed by phone a call.

Measures

Development of the SCNS-SF34-N (Nepali)

SCNS-SF 34 is recognized as a valid and reliable need assessment tool for identifying the supportive care needs through a self-reporting questionnaire regarding patients' perceived supportive care needs [25, 6, 26]. It assesses the existing need and the degree of need for supportive care on the last one month of 34 items by using five point and two level response scale (1—no need, not applicable; 2—no need, satisfied; 3—low need; 4—moderate need; 5—high need). The initial response scale comprises of two broad categories of need, i.e. 'no need' and 'need'. The "no need" scale is additionally subdivided into two categories namely "not applicable and satisfied". Not applicable indicates there were no problems to the patient on the related item and satisfied indicates that for that particular item patient needed support but this support was managed by himself. The "need" scale is additionally subdivided into three categories namely 'low need', 'moderate need' and 'high need' representing the level of supportive care need [6]. The 34 items are categorized in 5 domains (psychological needs (10 items), healthcare system and information needs (11 items), physical and daily living needs (5 items), patient care and support needs (5 items) and sexuality needs (3 items). A high score in the tool indicates that perceived supportive care need is high level [6].

Beaton's guideline was used to develop the SCNS-SF34-N (Nepali).it includes the seven scientific stage namely: 1. Translation into the target language 2. Synthesis of the forward translations 3. Backward translations, 4. Consensus conference, 5. pretest patient survey, 6. Approval of research team 7. approval of original authors [27, 28, 9]. Content validity was assessed by consulting 10 experts working and educating in oncology and research area, clarity of the questionnaire was assessed by consulting 15 respondents using Likert scale [12]. Correlation of the questionnaire was assessed employing the test-retest method by consulting 50 respondents[18].

The preliminary final version was pretested among 34(10% of the total sample) cervical cancer patients in Nepal to determine the understanding level, word appropriateness, identification of offensive or aggressive words, identification of simple words and acceptability of the translated questionnaire[27] .

Comparative measures for validity testing

To allow comparisons within each item, inter item correlation was assessed for the establishment of convergent validity through Spearman's rank correlation coefficients in between each item of SCNS-SF34-N [29, 30, 31].

Sociodemographic and clinical characteristics

The sociodemographic characteristics included the data about age, education, marital status, economic status, dietary status, family type, relationship status. The clinical characteristics included disease stage, treatment modalities, duration of disease.

Statistical analysis

Statistical Package for Social Science(SPSS) version 20(IBM, NY, USA) was used for the analysis of collected data. Sociodemographic and clinical characteristics of the respondents were analyzed by using descriptive statistics (frequency, percentage, mean, standard deviation)[9, 18].

Exploratory factor analysis (EFA, principal component analysis with varimax rotation) was used for the examination of factor validity. To test the suitability of the data for EFA, The Kaiser-Mayer-Olkin (KMO) and Bartlett's tests were used to identify the sample adequacy and appropriateness of sample size respectively[18].

The suitable parameter of KMO statistic (0.917), exceeded the threshold of 0.5, and Bartlett's test was significant ($\chi^2 = 26,958.140$, $p < 0.001$), which indicates that the data were suitable for factor analysis[9].

Factor loadings > 0.4 and Eigenvalues > 1.0 were taken into consideration for acceptance. Items were recognized to the factor with the priority of highest loading and the factor structure was calculated for the explanation of the variance. floor and ceiling effect occurred if more than 50% of the participants attained the lowermost (0) or uppermost (100) score for each factor. [32, 19, 9]. Cronbach's alpha with a coefficient value > 0.7 considered as acceptable which was calculated through internal consistency[32, 19, 9, 14, 13].

For the assessment of convergent validity, Spearman's rank correlation coefficients test was used between each item of SCNS-SF34-N (Nepali) [29, 30, 31].

For the assessment of discriminant validity, independent –sample t test was used to test the differences in the mean score for each domain between numerous subgroups of participants with different sociodemographic and clinical characteristics[19, 13, 33, 9].

Results

Demographics and clinical characteristics of respondents

A total of 98.2% (334/340) of eligible participants from selected hospitals and within the selected inclusion criteria provided informed consent and returned the completed questionnaires

A total of six eligible participants were missed because they leave hospital the without returning the questionnaire and they did not respond in phone call also.

Among 334 respondents 74.25% of the respondents were below 64 years, and the mean age was: 54.59 years and SD was:12.71. 49.4% of the respondents were in II stage of cervical cancer disease and 63.2% of respondents were on Radiation + Chemotherapy treatment. (Refer to Table 1).

Table 1
Demographics Characteristics of Respondents (n = 334)

Variables	Frequency	Percent
Age		
<= 64.00	248	74.25
65.00+	86	25.74
Mean: 54.59, SD:12.71		
Religion		
Hindu	284	85
Buddhist	33	9.9
Christian	11	3.3
Muslim	4	1.2
Kirat	2	0.6
Caste		
Brahman	54	16.2
Chettry	91	27.2
Newar	41	12.3
Madheshi	46	13.8
Dalit	18	5.4
Jamjati	72	21.6
Aadibasi	12	3.6
Education		
Illiterate	194	58.1
Literate without formal education	76	22.8
Primary	37	11.1
Secondary	15	4.5
Higher secondary	8	2.4
Bachelor or above	4	1.2
Marital_Status		
Married	239	71.6
Single/Widow	92	27.5
Unmarried	3	0.9
Residence		
Urban	112	33.5
Rural	222	66.5
Occupation		
Agriculture	167	50.0
Housewife	143	42.8
Job	13	3.9
Business	9	2.7
Factory	2	0.6
Economic_Status		
<i>The frequency (n) and proportion (%) were used for the analysis of participant's demographic characteristics</i>		

Variables	Frequency	Percent
Enough to eat for one year	235	70.4
Not enough to eat for 1 year	68	20.4
Extra Saving	31	9.3
Diatery_Status		
Vegetarian	77	23.1
Non vegetarian	257	76.9
Family_type		
Nuclear	131	39.2
Joint	181	54.2
Extended	22	6.6
Past_Exp_Cervix_Disease_Self		
N0	283	84.7
Yes	51	15.3
Name of disease		
Watery Discharge	31	9.3
Bleeding	10	3.0
Itching	2	0.6
Burning Micturation	5	1.5
Lower abdomen pain	3	0.9
Total	51	
Relationship_Status		
Not in a relationship	118	35.3
In a relationship - not living together	18	5.4
In a relationship - living together	198	59.3
Participated_in_Sexual_Activity		
No	232	69.5
Yes	102	30.5
Stage_of_Disease		
Stage I	35	10.5
Stage II	165	49.4
Stage III	115	34.4
Stage IV	9	5.6
Treatment Modalities		
Operation	4	1.2
Radiation	59	17.7
Operation + Chemotherapy	11	3.3
Operation + Radiation	13	3.9
Radiation + Chemotherapy	211	63.2
Operation + Chemotherapy + Radiation	36	10.8
Duration of Disease in year		
<i>The frequency (n) and proportion (%) were used for the analysis of participant's demographic characteristics</i>		

Variables	Frequency	Percent
<= 1.00 year	317	94.9
1.01+ year	17	5.08
Mean Duration = 0.46, SD = 0.66		
Total	334	100
<i>The frequency (n) and proportion (%) were used for the analysis of participant's demographic characteristics</i>		

Factor structure and factor loadings

The KMO statistics and Bartlett's test were used to identify the data were either suitable for factor analysis or not. The suitable parameter of KMO statistic (0.917), exceeded the threshold of 0.5, and Bartlett's test was significant ($\chi^2 = 26,958.140$, $p < 0.001$), which indicates that the data were suitable for factor analysis.

EFA extracted a seven factor structure loading however then considering higher loading factor for multiple loaded item and a five-factor structure was developed accounting for 65.48% of the total variance. The KMO measure of sampling adequacy value was 0.889, and Bartlett's test was significant (8240.401, p value < 0.001) indicating that the data were suitable for factor analysis.

Factor 1 included 10 items related to psychological needs, accounting for 33.026 of the total variance. Factor 2 included 11 items related to Health system and information needs accounting for 12.537 of the total variance. Factor 3 included 5 items related to physical and daily living, accounting for 9.766 of the total variance. Factor 4 included 5 items related to Patient care and support needs, accounting for 5.575 of the total variance. Factor 5 covered 3 items related to sexuality needs, accounting for 4.681 of the total variance. Floor or ceiling effects had not found (Refer to Table 2).

Table 2
Principle component analysis (EFA, Varimax rotation), reliability, and descriptive statistics of SCNS-SF34 (Nepali) (n = 334)

Item no.	Items	Factor structure and loadings				
		Psychological	Health system & Information	Physical and daily living	Patient care and support	Sexuality
32	Being treated like a person not just another case	0.819				
10	Worry that the results of treatment are beyond your control	0.818				
13	Keeping a positive outlook	0.701				
14	Feelings about death and dying	0.676				
11	Uncertainty about the future	0.749				
8	Feelings of sadness	0.740				
9	Fears about the cancer spreading	0.670				
6	Anxiety	0.638				
7	Feeling down or depressed	0.622				
33	Being treated in a hospital or clinic that is as physically pleasant as possible	0.605				
17	Concerns about the worries of those close to you	0.589				
12	Learning to feel in control of your situation	0.440				
26	Being adequately informed about the benefits and side-effects of treatments before you choose to have them		0.811			
27	Being informed about your test results as soon as feasible		0.785			
29	Being informed about things you can do to help yourself to get well		0.753			
24	Being given information (written, diagrams, drawings) about aspects of managing your illness and side-effects at home		0.735			
34	Having one member of hospital staff with whom you can talk to about all aspects of your condition, treatment and follow-up		0.717			
30	Having access to professional counselling (e.g., psychologist, social worker, counsellor, nurse specialist) if you, family or friends need it		0.714			
28	Being informed about cancer which is under control or diminishing (that is, remission)		0.708			
25	Being given explanations of those tests for which you would like explanations		0.638			
23	Being given written information about the important aspects of your care		0.579			
4	Work around the home			0.791		
2	Lack of energy/tiredness/Fatigue			0.721		
5	Not being able to do the things you used to do			0.709		
1	Pain			0.702		
3	Feeling unwell a lot of the time			0.701		
18	More choice about which cancer specialists you see				0.997	
19	More choice about which hospital you attend				0.828	
20	Reassurance by medical staff that the way you feel is normal				0.680	
21	Hospital staff attending promptly to your physical needs				0.599	
22	Hospital staff acknowledging, and showing sensitivity to, your feelings and emotional needs				0.520	

Factor loadings > 0.4 and Eigenvalues > 1.0 were taken into consideration for acceptance floor and ceiling effect were occurred if more than 50% of the participants attained the lowermost (0) or uppermost (100) score for each factor

Item no.	Items	Factor structure and loadings				
16	Changes in your sexual relationships					0.943
15	Changes in sexual feelings					0.938
31	To be given information about sexual relationships					0.920
% of the total variance		33.026	12.537	9.766	5.575	4.681
Alpha coefficient		0.912	0.921	0.884	0.78	0.929
Mean (0–100)		68.29	58.23	59.88	55.22	53.22
SD		3.77	3.12	5.49	4.74	17.84
Median		68.6	58.16	62.28	54.86	44.68
% lowest score (floor)		62.43	52.84	50.75	47.83	41.24
% highest score (ceiling)		73.73	62.35	64.82	59.58	73.73
<i>Factor loadings > 0.4 and Eigenvalues > 1.0 were taken into consideration for acceptance floor and ceiling effect were occurred if more than 50% of the participants attained the lowermost (0) or uppermost (100) score for each factor</i>						

Reliability

Internal consistency was achieved at an acceptable level, with Cronbach's alpha coefficients ranging from 0.789 to 0.929 for all five domains and 0.887 for the whole scale (Refer to Table 2).

Convergent validity

For the assessment of convergent validity inter- item, the correlation was assessed. Physical and daily living needs are strongly correlated with psychological (0.599**), patient care and support (0.469**) and health system information (0.400**). The psychological need is strongly correlated with physical and daily living (0.599**), patient care and support (0.480**) and health system information (0.526**). Sexuality need is correlated with physical and daily living need (0.115*).

Patient care and support need is strongly correlated with physical (0.469**), psychological (0.480**) and health system information (0.643**) needs. Health system & information need is strongly correlated with physical (0.400**), psychological (0.526**) and patient care and support (0.643**) needs (Refer to Table 3).

Table 3
Convergent Validity of Five Domains of SCNS-SF-34(N) Nepali (n = 334)

Components of SCNS-SF 34 N		Physical & Daily Living	Psychological	Sexuality	Patient care & Support	Health system & Information
Physical & Daily Living	r	1	.599**	.115*	.469**	.400**
	p-value		< 0.001	.036	< 0.001	< 0.001
Psychological	r	.599**	1	.056	.480**	.526**
	p-value	< 0.001		.311	< 0.001	< 0.001
Sexuality	r	.115*	.056	1	.054	.085
	p-value	.036	.311		.327	.122
Patient care & Support	r	.469**	.480**	.054	1	.643**
	p-value	< 0.001	< 0.001	.327		< 0.001
Health system & Information	r	.400**	.526**	.085	.643**	1
	p-value	< 0.001	< 0.001	.122	< 0.001	
<i>Spearman's rank correlation coefficients in between each item of SCNS-SF34-N</i>						
** . Correlation is significant at the 0.01 level (2-tailed).						
* . Correlation is significant at the 0.05 level (2-tailed).						

For the assessment of study convergence, a study in Nepal is compared with different same study carried out in 4 other different countries (German, China, Australia, Dutch) by setting null and alternative hypothesis. The study found that rejection of null hypothesis in all domain of SCNS-SF 34 (0.171, 0.197, 0.173, 0.445) country-wise respectively. Rejection of the null hypothesis means there is a similarity between the study of Nepal and selected four countries (Refer to Table 4).

Table 4
Correlations between SCNS-SF34-C (Nepal), and Different Country

Components of SCNS-SF 34	A1		A2		A3		A4		Study, Nepal	
	(German)		(China)		(Australia)		(Dutch)		Mean	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Psychological	32.98	28.12	48.46	23.98	39.1	29.1	54.91	23.13	68.29	3.77
Health System Information	38.71	33.11	53.21	21.15	39.0	29.0	58.98	22.93	58.23	3.12
Physical & Daily Living	26.69	27.02	38.98	22.14	36.6	26.6	55.93	23.75	59.88	5.49
Patient Care & Support	25.82	27.20	35.34	21.24	25.3	24.0	58.98	22.93	55.22	4.74
Sexuality	28.53	29.80	18.99	23.53	22.6	27.1	49.00	25.00	53.22	17.84
Convergence with Nepali study (current)										
	A1		A2		A3		A4			
	z-value	p-value	z-value	p-value	z-value	p-value	z-value	p-value		
Psychological	1.245	0.107	0.817	0.207	0.995	0.160	0.571	0.284		
Health System Information	0.587	0.279	0.235	0.407	0.659	0.255	0.032	0.487		
Physical & Daily Living	1.204	0.114	0.916	0.180	0.857	0.196	0.162	0.436		
Patient Care & Support	1.065	0.143	0.913	0.180	1.223	0.111	0.160	0.436		
Sexuality	0.711	0.239	1.159	0.123	0.944	0.173	0.137	0.445		
Overall	0.951	0.171	0.851	0.197	0.943	0.173	0.139	0.445		
<i>P-value > 0.05 are considered to be convergent.</i>										
<i>H0: Study is Convergent</i>										
<i>H1: Study is not convergent</i>										

Discriminant validity

For the analysis of dichotomous variable 't' test was used and as shown in Table 4, illiterate cervical cancer patients reported higher levels of supportive care needs than those with literate cervical cancer patients. Cervical cancer patients not living together with their partners reported a higher level of supportive care need than those cervical cancer patients who are living together with their partners on all domain except physical and daily living. Respondents who were younger than 65 years and respondents with a life partner reported higher level of sexuality needs than older patients and those without a partner. There was no significant difference in the level of supportive care needs either early or late stage of cancer except sexuality domain, respondents in the early stage of cervical cancer reported a higher level of supportive care need in sexuality domain than the respondent in the late stage of cervical cancer. There was no significant difference in the level of supportive care needs either patient receiving treatment with radiation or without radiation therapy except in health system information and sexuality domain, respondents receiving treatment with radiation reported a higher level of supportive care needs in health in health system information and sexuality domain than the respondents receiving treatment without radiation (Refer to Table 5).

Table 5
Comparison of SCNS-SF34-N (Nepali) mean domain scores between known subgroups (n = 334)

Variables	SCNS-SF34-C (Nepali) domain															
	Psychological			Health system & Information			Physical & Daily Living			Patient care & Support			Sexuality			
	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	
Age N																
<= 64.00	248	3.73	0.77	0.946	3.3	0.83	0.253	3.34	1	0.102	3.25	0.83	0.925	2.99	1.3	< 0.001
65.00+	86	3.73	0.87		3.42	0.85		3.55	0.98		3.24	0.83		2.17	1.32	
Religion																
Hindu	284	3.77	.79	0.059	3.32	.84	0.561	3.39	.99	0.897	3.27	.85	0.463	2.86	1.34	0.020
Other	50	3.54	.82		3.39	.80		3.41	1.06		3.17	.70		2.37	1.35	
Education																
Illiterate	194	3.83	0.74	.001	3.44	0.78	.000	3.53	0.98	.000	3.36	0.75	.000	2.64	1.37	.024
Literate	140	3.71	0.79		3.23	0.90		3.44	0.96		3.22	0.91		2.82	1.33	
Residence																
Urban	112	3.70	.81	0.584	3.27	.87	0.340	3.23	1.07	0.035	3.24	.76	0.871	2.74	1.41	0.644
Rural	222	3.75	.79		3.36	.82		3.48	.95		3.26	.87		2.81	1.33	
Marital Status																
With life partner	239	3.69	.82	0.106	3.29	.87	0.197	3.35	1.02	0.178	3.18	.86	0.018	3.27	1.12	< 0.001
Without life partner	95	3.84	.72		3.42	.75		3.51	.94		3.42	.71		1.55	1.09	
Economic Status																
Enough to eat for one year	266	3.76	.78	0.215	3.36	.83	0.177	3.48	.97	0.002	3.28	.84	0.245	2.83	1.34	0.172
Not enough to eat for 1 year	68	3.63	.84		3.21	.84		3.06	1.01		3.15	.78		2.58	1.39	
Dietary Status																
Vegetarian	77	3.72	.87	0.878	3.61	.75	0.001	3.34	1.12	0.582	3.55	.70	< 0.001	2.59	1.42	0.150
Non vegetarian	257	3.74	.77		3.24	.84		3.41	.96		3.16	.85		2.84	1.33	
Family Type																
Nuclear	131	3.65	.77	0.152	3.18	.83	0.010	3.23	1.03	0.014	3.24	.83	0.835	2.61	1.43	0.057
Joint	203	3.78	.81		3.42	.83		3.50	.96		3.26	.83		2.90	1.29	
Occupation																
Non House wife	191	3.88	.68	< 0.001	3.48	.78	< 0.001	3.64	.93	< 0.001	3.39	.86	< 0.001	2.95	1.31	< 0.001
Housewife	143	3.53	.89		3.12	.86		3.07	.98		3.07	.76		2.55	1.39	
Cancer stage																

SD standard deviation,

independent – sample t test was

P-value > 0.05 are considered to be significant.

Variables	SCNS-SF34-C (Nepali) domain															
	Psychological			Health system & Information			Physical & Daily Living			Patient care & Support			Sexuality			
	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	Mean	SD	P Value	
Early stage(I,II)	202	3.75	.78	0.594	3.33	.82	0.901	3.43	.87	0.475	3.23	.84	0.647	2.95	1.31	0.006
Advanced stage (III, IV)	132	3.70	.81		3.32	.86		3.35	1.16		3.28	.82		2.53	1.39	
Treatment Modalities																
Rx. With Radiation	319	3.73	.80	0.501	3.35	.82	0.010	3.40	.99	0.573	3.26	.81	0.256	3.19	2.74	0.004
Rx. Without Radiation	15	3.87	.54		2.79	1.00		3.25	1.13		3.01	1.23		3.15	3.76	
Duration of disease																
<= 1.00 year	317	3.73	.80	0.817	3.36	.84	0.002	3.39	1.01	0.639	3.28	.84	0.018	2.76	1.33	0.158
1.01+ year	17	3.69	.76		2.71	.56		3.51	.76		2.79	.55		3.24	1.73	
Relationship status																
Not Living together	136	3.89	0.74	.020	3.45	0.78	.053	3.46	0.96	.368	3.39	0.73	.038	3.84	0.79	.000
living together	198	3.66	0.80		3.24	0.87		3.34	1.00		3.16	0.88		3.23	1.16	
Sexual contact																
No	232	3.77	.76	0.167	3.34	.88	0.684	3.46	.97	0.071	3.27	.84	0.543	2.38	1.34	< 0.001
Yes	102	3.64	.86		3.30	.73		3.25	1.04		3.21	.82		3.71	.81	
<i>SD standard deviation,</i>																
<i>independent –sample t test was</i>																
<i>P-value > 0.05 are considered to be significant.</i>																

Discussion

Translation procedure and content validity were separately written in another paper, so here mainly focuses on internal consistency, structural, convergent and discriminant validity.

In this study, more than 95% filled all the 34 items of questionnaire and a missing data rate lower than 5%. Thus, our findings are similar to the study done in German found that nearly 80% filled all the 34 items of questionnaire and a missing data rate lower than 10%[19].

The SCNS- SF34-N (Nepali) maintained a high level of Internal consistency which was achieved at an acceptable level, with Cronbach's alpha coefficients ranging from 0.789 to 0.929 for all five domains and composite reliability score was 0.887 for the whole scale. These findings are supported by other studies: Internal consistency was high with Cronbach's alpha coefficients for the five factors ranging from 0.86 to 0.96 [6], Cronbach's alpha values ranged from 0.82 to 0.94[19], Cronbach's alpha coefficients ranged from 0.854 to 0.942 for the five domains and 0.947 for the whole scale [9] and these findings are also supported by another study in which split half method that was used for the internal consistency with the α value for the first half is 0.87 while it is 0.92 for the second half, the Spearman-Brown coefficient for the whole of the scale is 0.74 and The Guttman Split-Half coefficient is 0.73 [12].

For the measurement of sampling adequacy, The Kaiser–Meyer–Olkin test was used and the Bartlett test of sphericity test was use to confirm the sufficiency of data for conducting explanatory factor analysis. This findings are consistent with some other studies done in German, China, and Turkey respectively [19, 9, 12] in which factor structure of the SCNS- SF done by Kaiser–Meyer–Olkin test, Bartlett test of sphericity test and explanatory factor analysis. These findings are contrast with other study done in China in which the factorial structure of the Chinese version of the SCNS- SF using confirmatory factor analysis in two different colorectal cancer samples, Hong Kong Chinese and Taiwan Chinese patients[13].

Principal component analysis through EFA of the SCNS-SF34-N discovered five dimensions explaining 65.48% of the total variance that are almost same as the original English version (Psychological, health system and information, physical and daily living, patient care and support, and sexuality needs) German [19], China(Mainland),[9] and Turkey[12]. Findings of our study are contrast with the study Dutch version of the SCNS-SF34 which discovered a four-factor structure, which combined the health systems and information domain and the patient care and support domain into a single domain[14].

The Bartlett's sphericity test that was used to assess the structural validity of the SCNS-SF 34 gave out a value of 8240.401 and a level of < 0.001. This result shows that the data set is appropriate for a factor analysis. KMO sample value was 0.889. The fact that the KMO criterion is 0.88 means that the sample size is quite appropriate for factor analysis. These findings are consistent with the findings of these study done in German, China and Turkey German [19], China(Mainland),[9] and Turkey[12].

Due to unavailability of Nepali version of psychometrically validated questionnaire "The 30-item European Organization for Research and Treatment of Cancer Quality of Life (EORTC QLQ) Core Questionnaire, The 25-item EORTC QLQ information module, the 14-item Hospital Anxiety and Depression Scale (HADS), The 10-item Social Support Rating Scale (SSRS)" Convergent validity was assessed in terms of inter- item correlation through Spearman's rank correlation coefficients in between each item of SCNS-SF34-N. This was a similar methodology for the assessment of convergent validity used in other studies in other countries for the assessment of convergent validity[29, 30, 31]. The differences of other studies where convergent validity was assessed by comparing with previously validated Questionnaire in the similar language "30-item European Organization for Research and Treatment of Cancer Quality of Life (EORTC QLQ) Core Questionnaire, The 25-item EORTC QLQ information module, the 14-item Hospital Anxiety and Depression Scale (HADS), The 10-item Social Support Rating Scale (SSRS)" [6, 14, 18, 9]. While in a study done in Turkey, the author had not mentioned about convergent validity[12].

The discriminant validity of SCNS-SF34-N (Nepali) was confirmed by comparison with known subgroups. According to the findings of this study respondents who were younger than 65 years and respondents with a life partner reported a higher level of sexuality needs than older patients and those without a partner this finding is consistent with other studies [9, 13] respondents younger than 60 years reported a higher level of sexuality needs[19]. This study found that respondents in early stage of cervical cancer reported higher level of supportive care need in sexuality domain than the respondent in late stage of cervical cancer and no significant difference in the level of supportive care needs an either early or advanced stage of cancer. These findings are consistent with a previous study[19] except sexuality domain but findings are contrary to the study done in mainland China found that respondents with advanced disease reported more needs across all domains except sexual needs[9].

Conclusions

The Short-Form Supportive Care Needs Survey Questionnaire in Nepali (SCNS-SF 34N) is a valid and reliable instrument in the context of Nepal in terms of identifying the supportive care needs of cervical cancer patients. The scale contains a total of 34 items. Its validity and reliability have been established via language validity, content validity, internal consistency, structure validity, discriminant validity and Alpha coefficient. Further study is ongoing for the assessment of supportive care needs of cervical cancer patients by using this survey questionnaire (SCNS-SF 34N). We would like to recommend to use this SCNS-SF 34 N for the identification of other cancer patients' supportive care needs for the arrange of intervention according to priority basis.

Abbreviations

SCNS-SF34: Supportive Care Needs Survey Short Form, **SCNS –SF34N:** Supportive Care Needs Survey Short Form Nepali, **SCNS-LF59:** Supportive Care Needs Survey Long Form, **EFA:** Exploratory factor analysis, **KMO:** Kaiser-Mayer-Olkin, **LMICs:** Low and Middle- Income Countries, **SCNS-ST9:** Supportive Care Needs Survey – Screening Tool, **PROM:** Patient-Reported Outcome Measure, **SPSS:** Statistical Package for Social Science, **SD:** Standard Deviation, **EORTC QLQ:** European Organization for Research and Treatment of Cancer Quality of Life Questionnaire, **HADS:** Hospital Anxiety and Depression Scale, **SSRS:** Social Support Rating Scale, **NHRC:** Nepal Health Research Council

Declarations

Ethical approval and Consent to Participate:

Ethical approval was taken from the School of Nursing and Health, Zhengzhou University, Henan, China (ZZU IRB 2019-028), Nepal Health Research Council, Nepal (Ref. No 1706). Formal permission was also taken from selected cancer specific hospitals and informed consent was taken from participants before the data collection. Informed consent was taken from all individual participants included in the study

Consent for publication:

Informed consent for publication was taken from participants all individual participants included in the study, Nepal Health Research Council, Nepal and School of Nursing and Health, Zhengzhou University, Henan China

Availability of Data and Material:

The authors are highly responsible for the safety and security of the primary data and upon the request primary data can be review by the journal

Competing interests:

All the authors declared that they have no competing interests for the announcements of this manuscript.

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Authors' contributions:

Kamala Dhakal, Panpan Wang, Joanes Faustine Mboineki, Mikiyas Amare Getu and Changying Chen, Bijesh Raj Ghimire worked to develop the proposal of study. Bibhav Adhikari and Kamala Dhakal, Abish Adhikari and Daya Laxmi Shrestha were involved in data collection and analysis. Kamala Dhakal, Allison Boyes, Changying Chen and Panpan Wang involved in the preparation and finalization of the report. Kamala Dhakal, Daya Laxmi Shrestha and Joanes Faustine Mboineki, worked out to prepare the manuscript and the manuscript is reviewed and approved by all the authors.

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