RESEARCH ARTICLE

Reliability and validity of Nepalese version of Spence Children's Anxiety Scale.

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Manuscript Info	*Abstract*
	Objectives:- To establish a valid and reliable translated version of Spence Children's Anxiety Scale (SCAS) for Nepalese population. **Methods**:- A standard translation-back-translation procedure was used followed by evaluation of semantic, conceptual and society equivalence by the committee and changes were made according to recommendations. This corrected version was pretested and a final version was developed. Reliability was assessed by Cronbach's alpha value and the retest reliability was also tested using correlation coefficient between items and scale. **Results**:- The results indicated excellent internal consistency (Cronbach's alpha = 0.85). **Conclusion**:-A valid and reliable Nepalese version of Spence Children's Anxiety Scale (SCAS) was developed which can be used for research and clinical assessment of child patients with anxiety.

Introduction:-

Successful dentistry for children depends not only upon the dentist's technical skills but also upon his ability to acquire and maintain a child's cooperation. Most children strive to be cooperative; in these instances the dentist should support the child's behavior. When a child is uncooperative, however, his behavior must be altered and controlled.

Freud first attempted to explicate the concept of anxiety in the context of science (Spielberger, 1966). According to Freud (1936), anxiety is regarded as an unpleasant affective state or condition, which is characterized by all that is covered by the word, 'nervousness'.

Dental anxiety is widely seen in both children and adults. It is known that many people are uncomfortable visiting dental clinics. Different studies have reported prevalence of severe dental anxiety to be 5% and that of moderate dental anxiety to be between 20-30%. There are degree of dental anxiety varies in each individual –some have more trouble going to the dentist than others, and some are not capable of going there at all. The extent of the fear reaction is increasing from "fear" through "anxiety" to "phobia".

Anxiety has been increasingly discussed and recognized by a number of researchers as one of the most significant indicators of psychological adjustment to chronic disease in children (Lähteenmäki, Sjöblom, Korhonen, & Salmi, 2004; Moore & Mosher, 1997).

Research indicates that 5-33% of children experience at least one toothache during childhood (Slade, 2001). The prevalence rate of toothaches is higher for older children and for children of lower socioeconomic status, though rates vary widely across countries (Slade).

The present study was carried out to obtain a reliable and valid translated version of Spence Children Anxiety Scale in order to facilitate the understanding of clinician towards anxiety issues faced by children visiting dental clinic. Thus by understanding the nature of problem, it would help clinician to alleviate anxiety and fear from child and in turn would help them to accept dental treatment with ease thereby installing a positive dental attitude.

Materials and Methods:-

The study was approved by the institutional ethical review board and consent was obtained from the parents of students participating in the study. The study was carried out on 100 students of which 90 students participated from Delhi Public School, B.P Koirala Institute of Health Sciences, Dharan, Nepal. The age of children who participated in the study was 8-12 years.

The original scale was translated by the English Language University teacher whose mother tongue was Nepali and was retranslated by a different group of English language teachers back into English and the questionnaires was checked for similarity and was resolved for issues in translation. A group of Pedodontists help was also used to clarify any issues in translation. The reliability and validity was tested using Cronbach's alpha.

Administration of the Nepalese Version of Spence Children Anxiety Scale:-

Spence Children Anxiety Scale (Spence, 1998), is a forty six point questionnaire which evaluates symptoms relating to separation anxiety, social phobia, obsessive-compulsive disorder, panic-agoraphobia, generalized anxiety, and fears of physical injury.

The scale was completed by asking the child to read and follow the instructions on the printed form. The child was asked to rate on a 4-point scale: 'never', 'sometimes', 'often', or 'always' to indicate how often each of the items happens to them. There is no set time period over which the judgment has to be made. The response was made by circling the appropriate frequency word.

Scoring

Only the 38 anxiety items are scored.

The responses are scored:

Never = 0

Sometimes = 1

Often = 2

Always = 3

This yields a maximum possible score of 114.

Total Score Calculation:-

The total score is the sum of items 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 12 + 13 + 14 + 15 + 16 + 18 + 19 + 20 + 21 + 22 + 23 + 24 + 25 + 27 + 28 + 29 + 30 + 32 + 33 + 34 + 35 + 36 + 37 + 39 + 40 + 41 + 42 + 44.

Alternatively, the Total Score may be computed from adding together all the subscale scores.

Subscale Calculation:-

The sub-scale scores are computed by adding the individual item scores on the set of items as follows:

Subscale	SCAS ITEMS								
Separation anxiety	+5	+8	+12	+15	+16	+44			
Social phobia	+6	+7	+9	+10	+29	+35			
Obsessive compulsive	+14	+19	+27	+40	+41	+42			
Panic/agoraphobia	+13	+21	+28	+30	+32	+34	+36	+37	+39
Physical injury fears	+2	+18	+23	+25	+33				
Generalized anxiety	+1	+3	+4	+20	+22	+24			

The positive filler items that are not scored in either the total score or the subscale scores include item numbers 11, 17, 26, 31, 38, and 43.

Statistical Analysis:-
The data was entered in SPSS Version 19. Reliability of the scale was tested by Cronbach's alpha coefficient and coefficient of correlation.

Results:-
Reliability: The scale demonstrated good reliability and internal consistency as shown by overall Cronbach's alpha value of 0.899. Thus the SCAS-NP as used in the pilot evaluation was deemed appropriate for more extensive investigation.
Domain wise, the Cronbach's alpha of 0.730, 0.732, 0.746, 0.730, 0.771 and 0.729 was obtained with confidence interval of ±1.76, ±1.76, ±1.78, ±1.76, ±1.81 and ±1.76 respectively. (Table 1)

The Cronbach's alpha if item deleted showed that deleting an item will not increase the Cronbach's alpha hence all the items to be retained. (Table 2)

Since all the domains exhibited an internal consistency of >0.70, therefore it was concluded that the translated questionnaire was reliable for further study in the Nepalese population.

Discussion:-
The main concept assessed by the SCAS is childhood anxiety. As mentioned before, this concept is based on diagnostic criteria set forth in the DSM-IV (Nauta MH et al., 2004) for childhood anxiety disorders. Specifically, the SCAS assesses symptoms related to the following anxiety disorders: separation anxiety disorder, social anxiety disorder or social phobia, obsessive-compulsive disorder, panic disorder and agoraphobia, generalized anxiety disorder, and specific phobias.

The internal consistency of this study showed Cronbach alpha value of 0.89 which was in correlation to the internal consistency (reliability) of the original scale (Cronbach alpha = .93) (S.H. Spence et al. 2003)

The internal consistency value obtained in Japanese study using similar scale (Cronbach alpha=0.94) also correlated with the present study. (Shin-ichi Ishikawa et al., 2009). Also the Cronbach alpha obtained in Greek study (Cronbach alpha=0.86) was in concurrence with the current study. (R.C. Mellon, A.G. Moutavelis, 2007). The internal consistency co-efficient for the subscale scores was also adequate,(.712, .541,.651, .350, .712) whereas for the original study was (.74, .74, .76, .82, .77).for separation anxiety, social phobia, obsessive compulsive, Panic/Agoraphobia, and Generalized Anxiety respectively which shows similarity after translation. The internal consistency was lower for the Physical Injury Fears (alpha = .35) in current study and (alpha=.60) in the original study reflecting lower response in both the studies. (Spence SH, 1997)

Table 3 depicts the comparison of reliability of the present study with different studies and shows similarity in the results found. (Spence SH, 1998) (S.H. Spence et al., 2003) (Muris, 2000) (Muris, 2002) (Mousavi R et al., 2007)

Table 4 depicts inter-item correlation between various domains which are Panic/agoraphobia, Social phobia, Separation anxiety, generalized anxiety, Obsessions and Fear of physical injury and the results show that the questionnaire developed is valid and is in concurrence with the original study. (S.H. Spence et al. 2003)

Table 1

Domains	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SCASSEP	133.30	.712	.730
SCASSOC	132.75	.655	.732
SCASOCD	131.98	.541	.746
SCASPAN	131.34	.651	.730
SCASPHY	136.02	.350	.771
SCASGAD	132.66	.712	.729
TOTAL	72.55	1.000	.767

Table 2

Domains	Cronbach's Alpha if Item Deleted
SCASSEP	0.73
SCASSOC	0.732
SCASOCD	0.746
SCASPAN	0.730
SCASPHY	0.771
SCASGAD	0.729
TOTAL	0.767

Table 3 Comparison of reliability of the scale in different studies

Domains	Spence (1998) N =2052	Spence, Barrett & Turner (2003) N = 875	Muris(2000) N = 1011	Muris (2002) N = 521	Current Study N=90
Panic/agoraphobia	0.82	0.80	0.81	0.83	.712
Social phobia	0.70	0.72	0.73	0.75	.655
Separation anxiety	0.70	0.71	0.74	0.62	.541
Generalized anxiety	0.73	0.77	0.77	0.81	.651
Obsessions/compulsions	0.73	0.75	0.75	0.76	.350
Fear of physical injury	0.60	0.60	0.57	0.54	.712
Total score	0.92	0.92	0.92	0.9	1.000

Table 4 Inter-item correlation

Domains	SCASSEP	SCASSOC	SCASOCD	SCASPAN	SCASPHY	SCASGAD	TOTAL
SCASSEP	1.000	.492	.403	.476	.343	.427	.767
SCASSOC	.492	1.000	.392	.380	.115	.518	.725
SCASOCD	.403	.392	1.000	.272	.010	.410	.629
SCASPAN	.476	.380	.272	1.000	.246	.515	.726
SCASPHY	.343	.115	.010	.246	1.000	.238	.436
SCASGAD	.427	.518	.410	.515	.238	1.000	.768
TOTAL	.767	.725	.629	.726	.436	.768	1.000

Conclusion:-

The SCAS-Nepali is presented as a new instrument for the assessment of childhood anxiety symptoms. The scale can be used in community settings, serving as a screening tool to identify children at risk for developing anxiety disorders, assisting in preventive interventions. It can also be used in academic settings, in studies designed to assess anxiety indicators or symptoms in terms of their frequency, severity, or structure among children visiting various clinical setups.

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